

From the EIC

Towards More Digital Content in Wireless Systems



■ **WIRELESS COMMUNICATION IS** a cornerstone of today's electronic systems, especially in automotive electronics, handheld devices, portable and mobile computing, sensor networks, and biomedical implant devices. Motivated by the availability of high-performance and inexpensive digital electronics, recent years have seen a steady increase in the replacement of analog, RF and mixed-signal functions in wireless systems by digital content. In addition to performance and cost benefits, the move towards digital implementation also enhances testability and leads to smaller factors, which are key market drivers in many applications.

One of the important challenges in wireless systems is the need for accurate calibration to reduce yield loss. In this context, a further benefit of digitization is that digitally enhanced wireless chips can integrate calibration as part of the test process to optimize performance metrics. It is, therefore, evident that digitally assisted design and test methods must be developed across all layers of the communication system such that the resulting wireless chips and systems are resilient, low cost, and flexible in terms of their applicability. These requirements are particularly challenging for emerging networking applications such as machine-to-machine communication.

This issue of *IEEE Design & Test of Computers* is focused on the theme of digitally enhanced wireless systems. Guest Editors Haralampos Stratigopoulos and Alberto Valdes-Garcia have worked diligently to put together this special issue with a set of four

selected articles, which were selected after peer review from a larger set of submitted papers. These articles include a survey and look-ahead to the future, direct-sampling receiver design, self-healing in mixed-signal SOCs, and self-healing transceiver architectures.

This issue also includes five nontheme articles and, after a long hiatus, an Interview column featuring Lip-Bu Tan, the President and CEO of Cadence Design Systems. The Standards and The Road Ahead columns are also included.

■ **I THANK HARALAMPOS** and Alberto for serving as Guest Editors of this special issue, the authors for their contributions, and the reviewers for their adherence to a tight review schedule. As my EIC term winds down at the end of 2012, this is my last "From the EIC" column for *IEEE Design & Test of Computers*. Andre Ivanov will be the next EIC and I am happy to hand over the reins of the magazine to him. I have enjoyed my experience as EIC for three years, and I look forward to my continued association with D&T in other roles. In 2013, this magazine will be published under the new name of "*IEEE Design & Test*" instead of "*IEEE Design & Test of Computers*," but it will retain its familiar look and feel, and remain the premier magazine for the design and test technical community. ■

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Digital Object Identifier 10.1109/MDT.2012.2228601

Date of current version: 17 January 2013.