Preface
Special Issue on
System-on-a-Chip

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The ongoing efforts to keep up with Moore's law and scaling rules have made it possible to integrate more than 100 million transistors on a single silicon chip, and we are witnessing the aggressive pursuit of 65 nm and 45 nm CMOS technologies throughout the world. This trend has enabled the integration of high-performance processor cores, large-size memories, and various functional blocks into a single chip called a system-on-a-chip (SoC).

SoCs have opened up a new age of ubiquitous IT and have been changing our quality of life. However, the complexity, variety, and short time-to-market required for SoCs have made it necessary to change the styles of development and business models.

This special issue summarizes Fujitsu's solutions for meeting these requirements. The first paper describes a strategy for SoC development that cultivates a system/software synergy between the Electronic Devices Business Unit and the other Units.

The next 11 papers report on the latest SoC R&D results in the rapidly growing areas of multimedia and networks. These papers are presented in three parts: Multimedia, Network and Communication, and Design Methodologies.

The Multimedia part covers the device platform approach for various graphics applications. It includes a paper about a single-chip multicore processor that provides a low-power-consumption software solution for various multimedia applications.

The Network and Communication part focuses on high bandwidth and security. The second paper in this part describes the world's first single-chip 10-Gigabit Ethernet switch, which was made possible due to innovations in digitally controlled analog CMOS I/O circuits. The fifth

FUJITSU Sci. Tech. J., **42**,2,p.169-170(April 2006)

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paper describes the new concept of the digital content protection LSI, which has paved the way for the introduction of a new line of PC-based digital TV receivers. The sixth paper describes the reconfigurable circuit approach for multi-standard wireless SoCs.

The Design Methodologies part of this special issue presents two papers about signal integrity issues such as timing closure and noise analysis.

I would like to express my thanks to each and every author of these papers and to all the reviewers. I also wish to thank the editorial committee members.

Finally, I want to thank you for reading this special issue and hope you will join us in exploring and expanding this exciting new world of SoCs.

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