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CMOS Technology Scaling for the Next 10 Years: Device-Technology Interaction and Scaling Value Proposition

Dr. Ghavam Shahidi
IBM Semiconductor

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Within the last few years, there has been speculation about the slow-down and even the end of Moore's Law. In this talk we review the benefit of the Moore's Law (with regard to low power and/or performance) over the last 20-30 years, and how the benefit has evolved over the last few years. It will be shown that there is a tight coupling between the choice of transistor and the node-to-node product benefit (using products from Intel and IBM as benchmark). As we move to the 14 nm and beyond, we will discuss device challenges and trade-offs. We will argue that the CMOS technology scaling will continue through 10 nm, 7 nm, and beyond nodes for the next 10 years.

Ghavam Shahidi received his B.S., M.S., and Ph.D. Degrees, all in electrical engineering, from MIT. In 1989 he joined the IBM Thomas J. Watson Research Center, where he initiated the SOI development program in IBM Research. The work ultimately resulted the first mainstream use of SOI. Ghavam Shahidi was the Director of High-Performance Logic Development in IBM Microelectronics until 2003. He is currently the Director of Silicon Technology in IBM Research Division and an IBM Fellow. His work is focused on 10 nm and beyond.