

VLSI Challenges to more Energy Efficient Devices

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Abstract. Delivering power efficiently to advanced technology VLSI is a top challenge and priority for mobile platforms. In addition, nearly 50% of the real estate on a typical mobile platform, such as a handheld, is used to convert power to the low voltages required by the advanced technology. This is so because as voltage continues to scale down with technology, the tolerances required by these circuits for reliable and energy efficient operation continues to tighten. In this presentation we review the state of the art and show a large gap between today's VLSI technology and the trends in form factor, energy efficiency regulatory specifications, and battery life requirements. We will also show how integration of the power delivery circuitry presents an opportunity for a non-linear improvements in energy efficiency of mobile devices. We will demonstrate the value of integration with models and experimentally with testchips. Finally, We will present our view of the required advancements in circuit technology, VLSI testing technology, and process technology needed to achieve such integration.

Biography

Dr. Arabi is a senior principal engineer in the Mobility Group at Intel Corporation. He is responsible for defining low power technologies for the next generation notebook platform. Dr. Arabi is the recipient of many Intel and IEEE awards including 6 Intel Achievement award (Intel most prestigious given by the executive staff to only a handful of teams every year). Dr. Arabi is an IEEE fellow and has over 100 Journal and conference publications. He supported and directed research programs between Intel and several leading universities in the US and abroad. He is the founder and director of Intel's Middle East Energy Efficiency Research Initiative. Dr. Arabi Graduated from AUB in 1985 with a BS.E.E and a PhD from Syracuse University in 1991.