

## THURSDAY KEYNOTE ADDRESS



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### **Design without Borders – A Tribute to the Legacy of A. Richard Newton**

**Abstract:** Electrical engineers have learned how to build amazingly complex systems by assembling transistors, wires, and passive components into intricate networks. While solidly founded in semiconductor physics, pure engineering has made possible the design of multi-billion transistor chips in a repetitive, reliable and cost-effective way. A comprehensive “design methodology” was developed based on modularization, hierarchy and abstraction.

Today this story is repeating itself. Physicists, chemists and biologists are exploring entirely different components such as molecules, atoms, and enzymes. Systems built from those will most probably impact our lives and society in a profound way. Outcomes will influence the ways we build mechanical structures, do computing, make drugs, generate energy and take care of our environment.

Yet, while the basic components are dramatically different from our silicon devices, the basic strategy for building very complex systems from them remains unchanged. The art of design, as was developed in the silicon era, is just as applicable to these nano- or bio-constructions. Design methodology is a legacy that will live long after Moore’s law has come to a halt. To quote Richard, “The Future is BDA (Bio Design Automation)”.

**Biography:** Jan M. Rabaey received the EE and Ph.D. degrees in applied sciences from the Katholieke Universiteit Leuven, Belgium. From 1983 until 1985, he was connected to the University of California, Berkeley as a Visiting Research Engineer. From 1985 until 1987, he was a research manager at IMEC, Belgium, and in 1987, he joined the faculty of the Electrical Engineering and Computer Science department of the University of California, Berkeley, where he now holds the Donald O. Pederson Distinguished Professorship. He was the associate chair of the EECS Dept. at Berkeley from 1999 until 2002, and is currently the Scientific co-director of the Berkeley Wireless Research Center (BWRC), as well as the Director of the GigaScale Systems Research Center (GSRC). Prof. Rabaey serves on the advisory board of a range of companies and research institutes in the areas of design automation, semiconductor intellectual property and wireless systems. He is an IEEE Fellow. Prof. Rabaey’s main interests are in the exploring of limits in low-power design, and the conception and implementation of future-generation wireless systems.