

Rethinking engineering research and education for post-pc systems-on-a-chip

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Abstract:

Deep-Submicron (DS) technology is rapidly leading to Systems-on-a-Chip (SoC) designed at the processor-memory level and containing a lot of mixed-signal and even RF architectures. However, exploitation of DS technology will depend critically on the availability of global system engineers able to bridge the gap between software-centric system thinking and hardware-software implementation in novel silicon architectures. This requires a rethinking of present engineering schools which are not well equipped to tackle global system engineering aspects. The concept of design institute is introduced where, based on visionary system design demonstrators, new methodologies, tools, libraries and courses are created and distributed over the global network. Design institutes provide a learning school for new design paradigms and form the ideal environment for the education of global system designers and system design minded faculty.

Biography:

Hugo De Man is professor in electrical engineering at the Katholieke Universiteit Leuven, Belgium since 1976. He was visiting associate professor at U.C.Berkeley in 1975. His early research was devoted to mixed-signal, switched capacitor and DSP simulation tools. In 1984 he was one of the cofounders of IMEC, which, today, is the largest independent semiconductor research institute in Europe with over 800 employees. From 1984-1995 he was Vice-President of IMEC, responsible for research in design technology for DSP and telecom applications. In 1995 he became a senior research fellow of IMEC, working on strategies for education and research on design of future post-PC systems. His research at IMEC has lead to many novel tools and methods in the area of high level synthesis, hardware-software codesign and C++ based design. Many of these tools are now commercialized by spin-off companies like Coware, Frontier Design and Target Compilers. His work and teaching also resulted in a cluster of DSP oriented companies in Leuven now known as DSP Valley where more than 1100 DSP engineers work on design tools and on telecom, networking and multimedia integrated system products. In 1999 he received the Technical Achievement Award of the IEEE Signal Processing Society, The Phil Kaufman Award of the EDA Consortium and the Golden Jubilee Medal of the IEEE Circuits and Systems Society. Hugo De Man is an IEEE Fellow and a member of the Royal Academy of Sciences in Belgium.