

Leveraging semiconductor technology for the benefit of society

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Electron devices, thanks to relentless scaling, coupled along with advances in material science, have enabled the exponential growth of the information technologies that have transformed society. This increased information content gives us a unique path to alleviate and find solutions to the problems of many of the most important issues facing the world today. These advances must remind us that we are all now connected – economically, technically and socially. But we are also learning that just being connected may not be sufficient. We must solve many problems. As engineers, we have the knowledge and the responsibility to do so. The level of instrumentation grows daily with ever increasing intelligence and ability to communicate and automate many processes and industries in what is now known as the Internet of Things (IoT). Thanks to these advances the world is smaller and flatter. The reality of living in a globally integrated world is upon us and is presenting us with many opportunities and challenges. In this talk, we will discuss how Semiconductor technology and electron devices have benefited society and the world in which we live. The multiple advances in devices and materials have provided us with unprecedented amounts of information at continually decreasing costs. We will provide tangible evidence that illustrates how electron devices are influencing society, changing our interaction with other people near and far, while providing many people the ability to have access to light and information technology even in the most remote corners of the planet. We must leverage these advances to expand educational opportunities while helping to preserve a sustainable and greener environment. We will provide information on initiatives and access to funding for engineering projects at the local level. Ultimately we must always bear in mind that the large number of scientific and technological advances must produce tangible results for the benefit and progress of humanity.



Dr. Fernando Guarín is a Distinguished Member of Technical Staff at Global Foundries in East Fishkill NY and Adjunct Lecturer at SUNY New Paltz. He retired from IBM's SRDC after 27 years as Senior Member of Technical Staff. He earned his BSEE from the "Pontificia Universidad Javeriana", in Bogotá, Colombia, the M.S.E.E. degree from the University of Arizona, and the Ph.D. in Electrical Engineering from Columbia University, NY. He has been actively working in microelectronic reliability for over 35 years.

From 1980 until 1988 he worked in the Military and Aerospace Operations division of National Semiconductor Corporation. In 1988 he joined IBM's microelectronics division where he worked in the reliability physics and modeling of Advanced Bipolar, CMOS and Silicon Germanium BiCMOS technologies.

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