Fall 2018 ECE Distinguished Seminar

Microelectronics Innovation for National Security & Economic Competitiveness (MINSEC)

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Research Hall 163

Abstract

Microelectronics technologies are a fundamental component of the national security of the United States (U.S.) and serve as the backbone of commercial innovation. However, current industry trends, have threatened availability of U.S.-based trusted foundry services for advanced nodes, and the integrity of DoD systems reliant on foreign microelectronics. The Trusted and Assured Microelectronics (T&AM) program, initiated in 2017, is one aspect of the Department's strategy to address these concerns. T&AM is developing methods and capabilities to provide alternate means of intellectual property protection and raise the level of assurance (confidence that the parts are free of vulnerabilities) for application-specific integrated circuits (ASICs) and commercial-off-the-shelf parts. Delivering these capability to programs will open up many new means of producing and acquiring advanced microelectronics. However, a larger strategic concern also exists that, through massive investments in research, development, design, and manufacturing capabilities, global adversaries and competitors could further erode U.S. leadership in microelectronics technologies and manipulate supply chain control to their advantage and our detriment. In recognition of the critical role of microelectronics, the DoD is making investments through the Department of Defense's Microelectronics Innovation for National Security and Economic Competitiveness (MINSEC) initiative to protect U.S. intellectual property from adversaries and lower the barriers to express and capture new designs and disruptive technologies in an assured domestic ecosystem. As a result, the U.S. will maintain an edge in critical technology and the marketplace. This presentation will describe these efforts and discuss their status and the overarching management approach.

Biography

Dr. Jeremy Muldavin received his BSE in Engineering Physics from the University of Michigan in 1995 where he performed research in the area of high-energy spin physics. He went on to receive his MSE and PHD (2001) in Electrical Engineering with a major in Electromagnetics and a minor in Communications. His graduate research focused on micro-machined circuits and devices for RF and millimeter-wave circuit and antenna applications. He has worked at MIT Lincoln Laboratory since 2001 researching advanced microelectronics, semiconductor fabrication, embedded systems, and open and distributed architectures. He is currently on an IPA assignment to the Office of the Under Secretary of Defense for Research and Engineering (OUSD (R&E)), where he serves as Deputy Director assigned to address near-term and longer term access to trusted and assured foundry capabilities.

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