

Scaling National Security: The SCALE Program's Role in Growing the Nation's Skilled Microelectronics Workforce

Peggy E. Williams, Ph.D.

NSWC Crane

peggy.e.williams11.civ@us.navy.mil

A skilled technical workforce is vital to ensuring successful execution of Department of Defense (DoD) modernization initiatives. The DoD faces significant challenges in developing a skilled microelectronics workforce due to the unique requirements of national security interests, competition with industry for talent, and a shortage of domestic students in key disciplines. Due to unique mission sets, the DoD faces challenges in filling roles and developing specialized technologies which are not supported by commercial markets, including but not limited to radiation hardened microelectronics and other extreme environments, advanced packaging, and system-on-chip security.

The Scalable Asymmetric Life Cycle Engagement (SCALE) program was established to address these challenges by providing an immersive educational program, combining tailored curricula, internships in the government and defense industrial base sectors with aligned research, and mentoring for undergraduate and graduate students. SCALE aims to attract, develop and maintain a ready DoD microelectronics workforce. A consortium-based approach achieves national reach to the top universities in targeted microelectronics technical areas for scaling and replication of the program, while allowing a regional focus. SCALE combines DoD governance with inputs from government and industry partners in all microelectronics-related sectors, delivering

- a set of national curriculum standards aligned with DoD requirements in specialty technical areas that go beyond current ABET practice
- a pipeline of clearable talent equipped with the necessary KSAs identified by developed through curricula and work-based learning experiences
- cohesive messaging and recruiting tailored for students from K-12 through Ph.D.
- an industry-supported Center for Secure Microelectronics Ecosystem (CSME) to engage students in transitioning research to specific missions; iterative adaptation of curricula and standards
- systematic programmatic evaluation to ensure increased effectiveness and government workforce targets in quality and quantity.

SCALE was designed to be scalable, replicable, and asymmetric in its effect, with a focus on training US students in areas of high need. Attending this session will provide you with greater detail about the SCALE program and how it can help scale your organization's microelectronics workforce.