Heterogeneous Integration as an Enabler To System Modernization

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The National Defense Strategy (NDS) highlights the strategic importance of modernizing Department of Defense (DoD) warfighting systems. Advanced microelectronics packaging methodologies, such as 2.5D Heterogeneous Integration (HI), are recognized in the microelectronics industry as a means to increase microelectronics performance. 2.5D HI will allow for significant SWAP-C reductions, which will facilitate increases in system functional density and performance. HI microelectronics packaging, as a foundational element to system hardware, will enable modernization of key DoD capabilities.

BIO: Dr. Crum began his career with the Department of the Navy (DoN) at Naval Surface Warfare Center, Crane Division. Early in his career he managed three microelectronics focused engineering branches, including the Component Engineering Branch, the Obsolescence Management Branch, and the Electronics Design Branch.

In 2006, Dr. Crum became the Naval Sea Systems (NAVSEA) Command Anti-Tamper Technical Warrant Holder, and then in 2009 he became the DoN Anti-Tamper Technology Coordinator. In this role, he focused on identifying technical gaps and leading the development of new technologies to protect microelectronics.

In 2021, Dr. Crum became the Microelectronics Advanced Packaging & Test Lead and the Technical Lead of the SOTA Heterogeneous Integrated Packaging (SHIP) program for OUSD(R&E) – Modernization Microelectronics. In this role, he is responsible for executing technology development efforts to support the DoD Microelectronics Roadmap.

Dr. Crum has a BSEE (1990) from the University of Kentucky, a MA (2000) in Public Administration from Indiana University, and a doctorate (2006) in Organization & Management from Capella University.