The most important thing is everything – building chips in an interconnected world

The CHIPS act and other announced government spending are designed to rebuild advanced semiconductor manufacturing capability in the US for national security and other purposes. This is an ambitious and laudable goal, with a huge number of interacting and interconnected technologies needed to bring it to fruition. This talk focuses on three of those: 3D integration of heterogeneous multi-die systems, advanced design technology, and novel computing system architectures. Each of these enables advances in performance and energy efficiency but even higher gains are attainable by co-developing all three together. These examples are not unique – the chips of the future will need a workforce with a broad range of skills and expertise to extract benefits from silicon that is increasingly challenged to provide them.