

DoD Microelectronics Commons

A National Network for Defense Microelectronics Innovation

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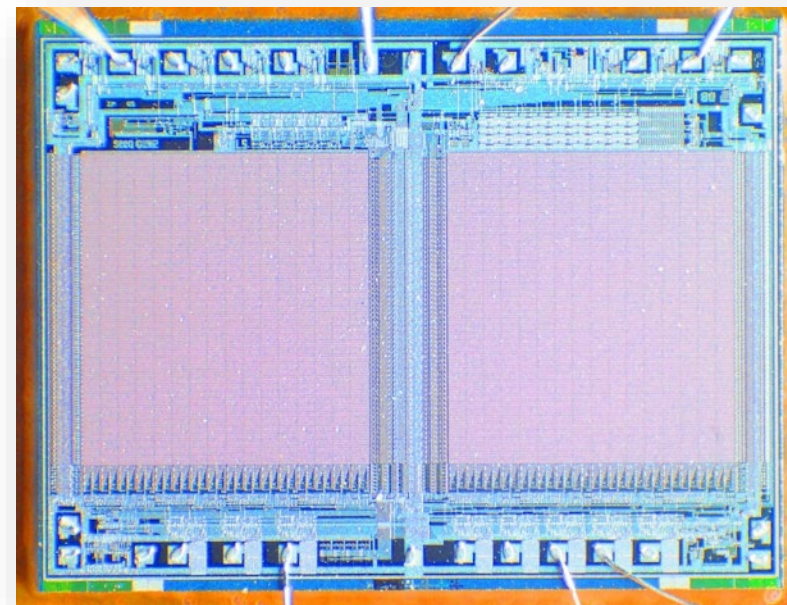
If there is any inconsistency between the material presented here and the Request for Solutions (RFS), **the RFS shall take precedence.**

The Microelectronics Commons RFS will be posted on www.sam.gov and <https://nstxl.org/microelectronics>



The United States is an Innovative Designer but NOT an Innovative Producer

- The United States is a world leader in microelectronics design.
- But the United States is responsible for only 12% of microelectronics production globally. Most of that production is in Asia.
- Two major roadblocks to domestic production are:
 - Establishing viability and marketability of new microelectronics technologies. Once established, US firms have incentive to invest.
 - Access to facilities for innovators. Researchers in industry and academia do not have access to facilities to explore, prototype, and demonstrate leap-ahead technological advancements.
- The result is significant risk to our microelectronics supply chains leading to:
 - loss of key intellectual property
 - loss of market influence
 - dependency on foreign economies





Lab-to-Fab Transition of Microelectronics Technologies



Research Universities, Start-ups have facilities for Lab prototyping but face barriers to Technology Demonstration.

Core Facilities or Foundries/Fabs provide access to early stage Fab prototyping.

Microelectronics Commons aims to enable lab-to-fab prototyping— evolve microelectronics laboratory prototyping to fabrication prototyping – in domestic facilities.



The Microelectronics Commons: Innovation from Lab-to-Fab

The Microelectronics Commons is a CHIPS-funded national network that will create direct pathways to commercialization for US microelectronics researchers and designers from “lab to fab.”

The Commons is designed to:

- Enable sustained partnerships between emerging technology sources, manufacturing facilities, and interagency partners
- Develop a pipeline of talent to bolster local semiconductor economies and contribute more broadly to the growth of a domestic semiconductor workforce
- Bridge the microelectronics technological “Valley of Death”
- Expand domestic microelectronics fabrication capability
- Enhance microelectronics education and training pipeline to bolster the microelectronics engineering workforce



The Microelectronics Commons: Three Main Elements

Regional Hubs

- Hubs connect researchers and designers to prototyping capabilities targeted to regional strengths in the Hub's technical topic area.
- Will be competitively selected based on expertise and capabilities in the region.
- Hubs will concentrate on one of six application areas including: Secure Edge/IoT Computing, 5G/6G Technology, Artificial Intelligence Hardware, Quantum Technology, Electronic Warfare, and Commercial Leap-Ahead Technologies.

Core Facilities

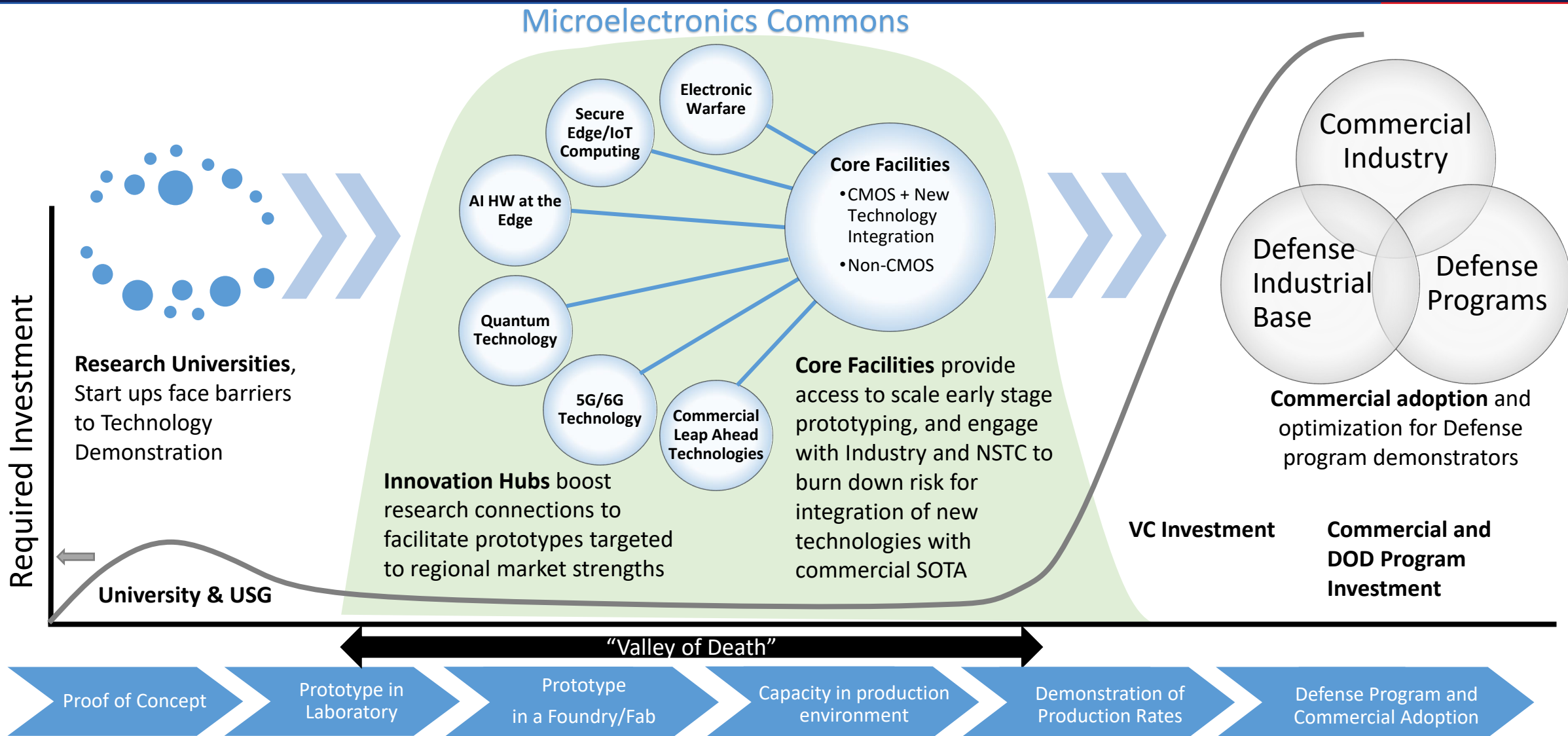
- Core facilities are existing facilities that have scalable capacity beyond what the regional hubs can provide.
- Dual function:
 - To further complement and amplify the work of the regional hubs; for example, 200 mm wafer fab for Silicon CMOS-compatible technologies and 150 mm wafer fab for compound semiconductors.
 - To engage with commercial fabs and align them better to commercial processes to facilitate transition to commercial companies.
- Cores provide access to repeatable processes, back-end manufacturing/integration and full flow-fabrication.

Non-profit management company

- Administers the Microelectronics Commons program

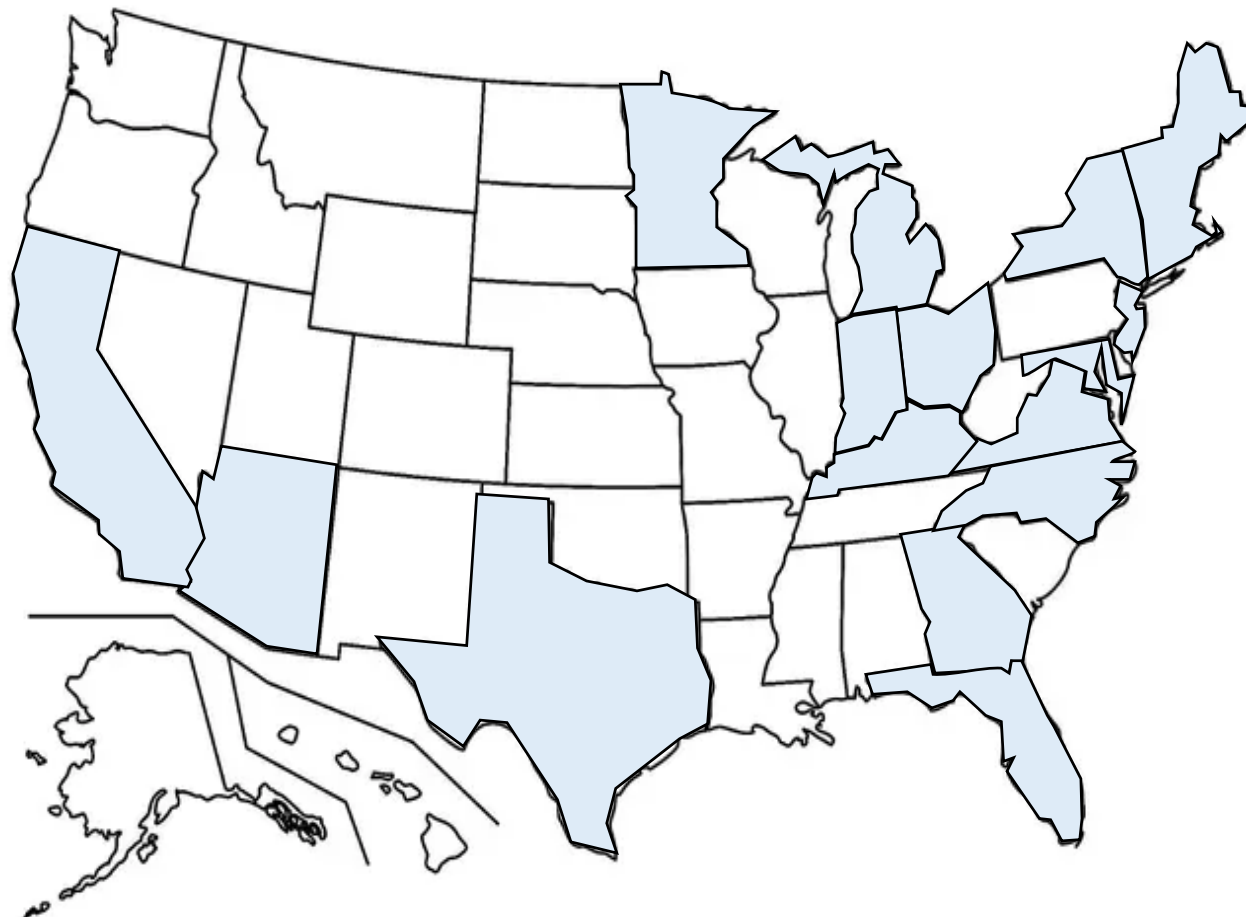


Microelectronics Commons Addresses the Valley of Death





Microelectronics Commons will Draw Participation from a Geographically Diverse set of Hubs Across the Defense Innovation Ecosystem



Regional Innovation Hubs

- Microelectronics Commons will be open to competition from research organizations across the U.S.
- More information can be found at the National Security Technology Accelerator website*

* <https://nstxl.org/opportunity/microelectronics-me-commons/>

States Representing Organizations Responding to Microelectronics Commons RFI (Notice ID: N0016422SNB42)



Microelectronics Commons development notional timeline

<i>Program Elements</i>	<i>FY23 Q1</i>	<i>FY23 Q2</i>	<i>FY23 Q3</i>	<i>FY23 Q4</i>	<i>FY24 Q1</i>
Announcements	Coming Soon Announced via NSTXL/S2MARTS Industry Awareness Day		NSTXL Call for Projects		
Acquisition	RFS for 9 Regional Hubs via NSTXL/S2MARTS	9 Hubs selected	Awards to 9 Regional Hubs	Project Selection Finalized	Project Awards

Notes:

- Hub Request for Solutions (RFS) (in light orange on Fiscal Year (FY) 2023 Quarter 1 Acquisitions line) will also go to prospective Core Facilities. They will be part of the Hub RFS responses.
- In responses to the RFS, Hubs may:
 - Also propose a Core Facility with which they will work, either directly or on a fee-for-service basis
 - Core Facilities may respond to be considered as a Hub lead



How to Participate in the Microelectronics Commons

- The Naval Surface Warfare Center – Crane (NSWC Crane) Strategic & Spectrum Missions Advanced Resilient Trusted Systems ([S2MARTS](#)) Other Transaction Authority (OTA) will be the primary contract vehicle for the ME Commons
- The Microelectronics Commons Management Company, the National Security Technology Accelerator ([NSTXL](#)), will make program announcements (Industry Day, RFS, etc.) on the S2MARTS site and on www.sam.gov
- Important Links
 - Microelectronics – DoD Research & Engineering, OUSD(R&E) (cto.mil): <https://www.cto.mil/ct/microelectronics/>
 - Microelectronics Commons NSTXL – : <https://nstxl.org/opportunity/microelectronics-me-commons/>



CHIPS Act Background

- The Department of Defense (DoD) received a total of \$2 billion in funding within Division A, Sec. 102(b) -- CHIPS for America Defense Fund. This Fund is established to provide for those requirements that are necessary to carry out Section 9903(b) of the William M. (Mac) Thornberry National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2021 (15 U.S.C. 4653(b)). The Fund consists of \$400 million per year in FY 2023 through 2027. The appropriated funds remain available until the end of each FY only. FY 2023 funds are to remain available until September 30, 2023, and so on.
- The NDAA for FY 2021 Sec. 9903(b) described a National Network for Microelectronics Research and Development (NNMRD) that the Secretary of Defense may establish, subject to availability of appropriations. The NDAA for FY 2022 (Public Law 117-81) Sec. 217 amended this guidance to explicit direction to the Secretary of Defense to establish the NNMRD, subject to the availability of appropriations for such purposes.