S²MARTS
AWARENESS DAY

Transparent Accessibility • Live Exchange

FOR

Project 22-16
Microelectronics Commons

November 9th at 1:00 PM ET

Webinar Agenda

Project 22-16
Microelectronics Commons

Project Discussion

Q&A Open Exchange

Closing Reminders

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About the Q&A

Q&A Review Process

1. Questions can be submitted two ways:
    - By visiting www.slido.com on any device and entering event code **#MEC**
    - By scanning the QR code shown on any slide
2. Questions will then be captured, moderated, and if approved, shared with the audience in real time

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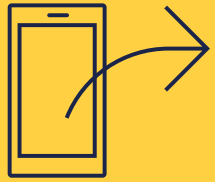

Speaking Today

- **Mr. Doug Crowe |** NSTXL, S²MARTS Director
- **Mr. Tony Kestranek |** NSTXL, S²MARTS Deputy Director
- **Dr. Dev Shenoy |** Office of the Under Secretary of Defense for Research and Engineering, Principal Director for Microelectronics and Defense Microelectronics Cross Functional Team, Director
- **Dr. Alison Smith |** Naval Surface Warfare Center - Crane Division, Microelectronics Commons Lead (OUSD R&E) and Defense Microelectronics Cross Functional Team, Workforce Development Lead
- **Mr. Shaun Davis |** Naval Surface Warfare Center - Crane Division, S²MARTS OTA Program Manager
- **Mr. Bryan Smith |** Naval Surface Warfare Center - Crane Division, Microelectronics Commons Execution Lead

Interested in submitting a question?
Go to **slido.com** and enter event code:

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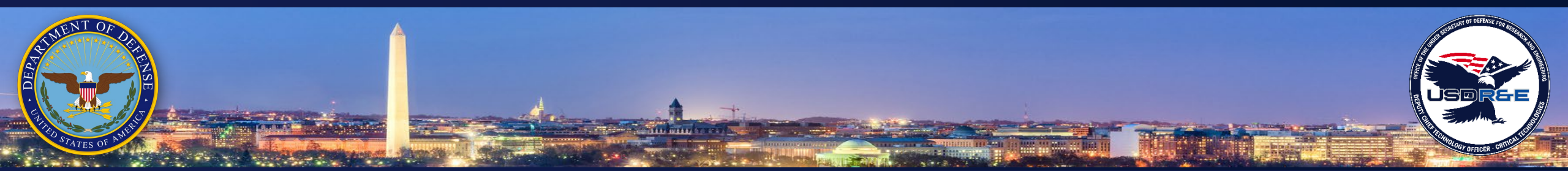


DoD Microelectronics Commons

A National Network for Defense Microelectronics Innovation

October 25, 2022

Dr. Dev Shenoy,
PD Microelectronics, Director Defense Microelectronics Cross Functional Team
OUSD (R&E) Microelectronics Modernization

HTTPS://WWW.CTO.MIL @DODCTO @OUSDRE

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

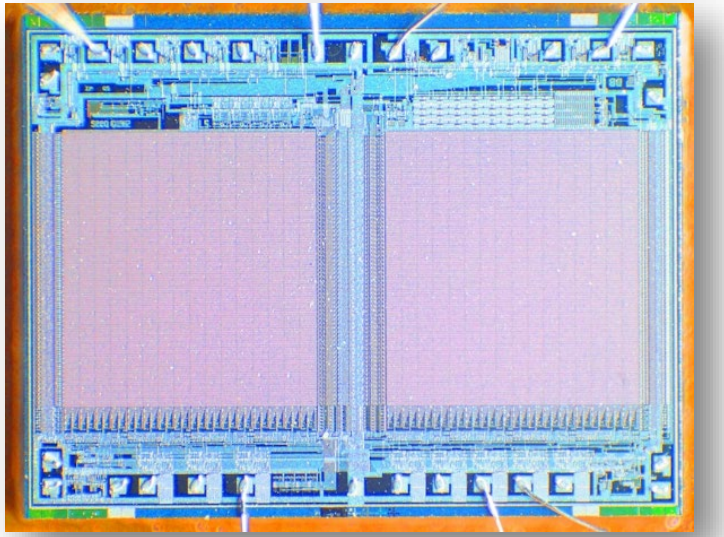
The Microelectronics Commons RFS will be posted on *www.sam.gov* and *https://nstxl.org/microelectronics*

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

THE OFFICE OF THE DEPUTY TECHNOLOGY OFFICER FOR CRITICAL TECHNOLOGIES

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

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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

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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
- Bridge the microelectronics technological "Valley of Death"
- Expand domestic microelectronics fabrication capability
- Enhance microelectronics education and training pipeline to bolster the microelectronics engineering workforce
- Develop a pipeline of talent to bolster local semiconductor economies and contribute more broadly to the growth of a domestic semiconductor 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 or more of six technology 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 ≥100 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 Consortium Manager

- Administers the Microelectronics Commons program.

Microelectronics Commons Addresses the Valley of Death

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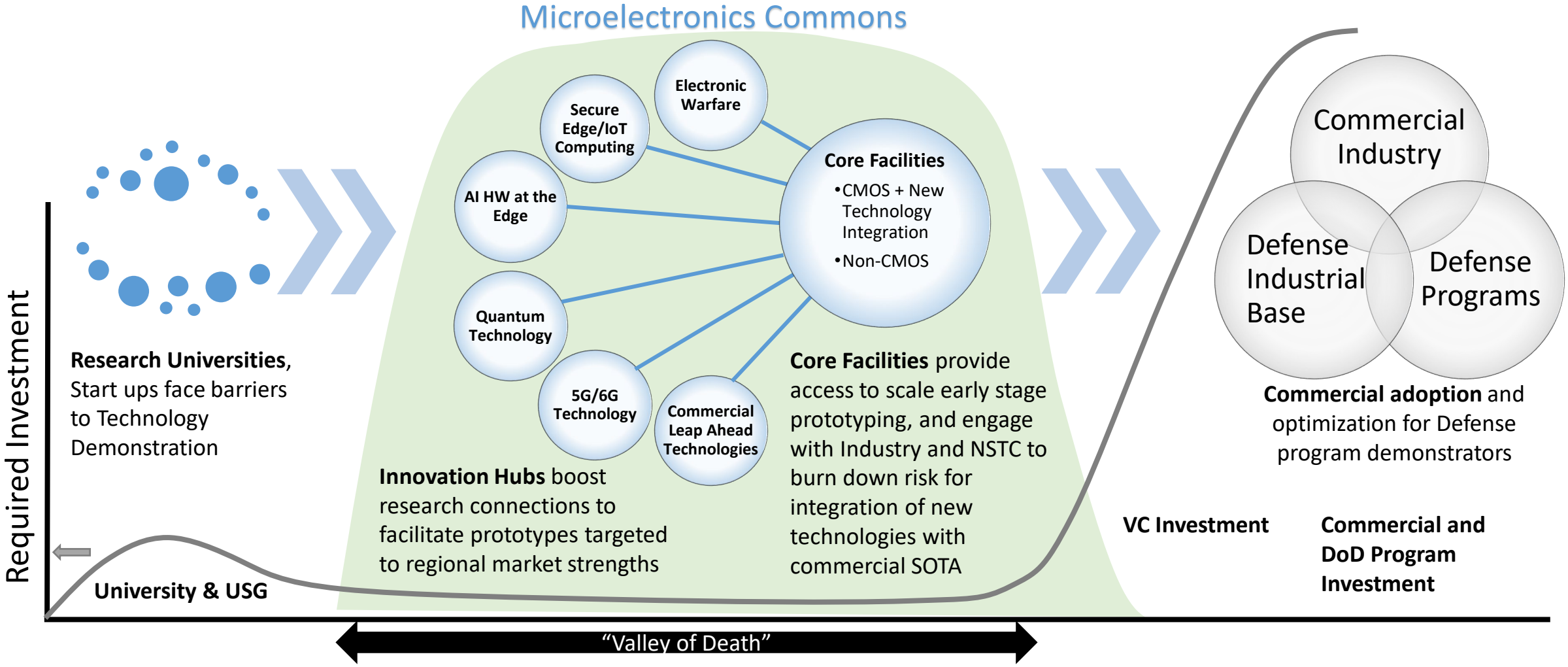

Microelectronics Commons will Draw Participation from a Geographically Diverse set of Hubs Across the Defense Innovation Ecosystem

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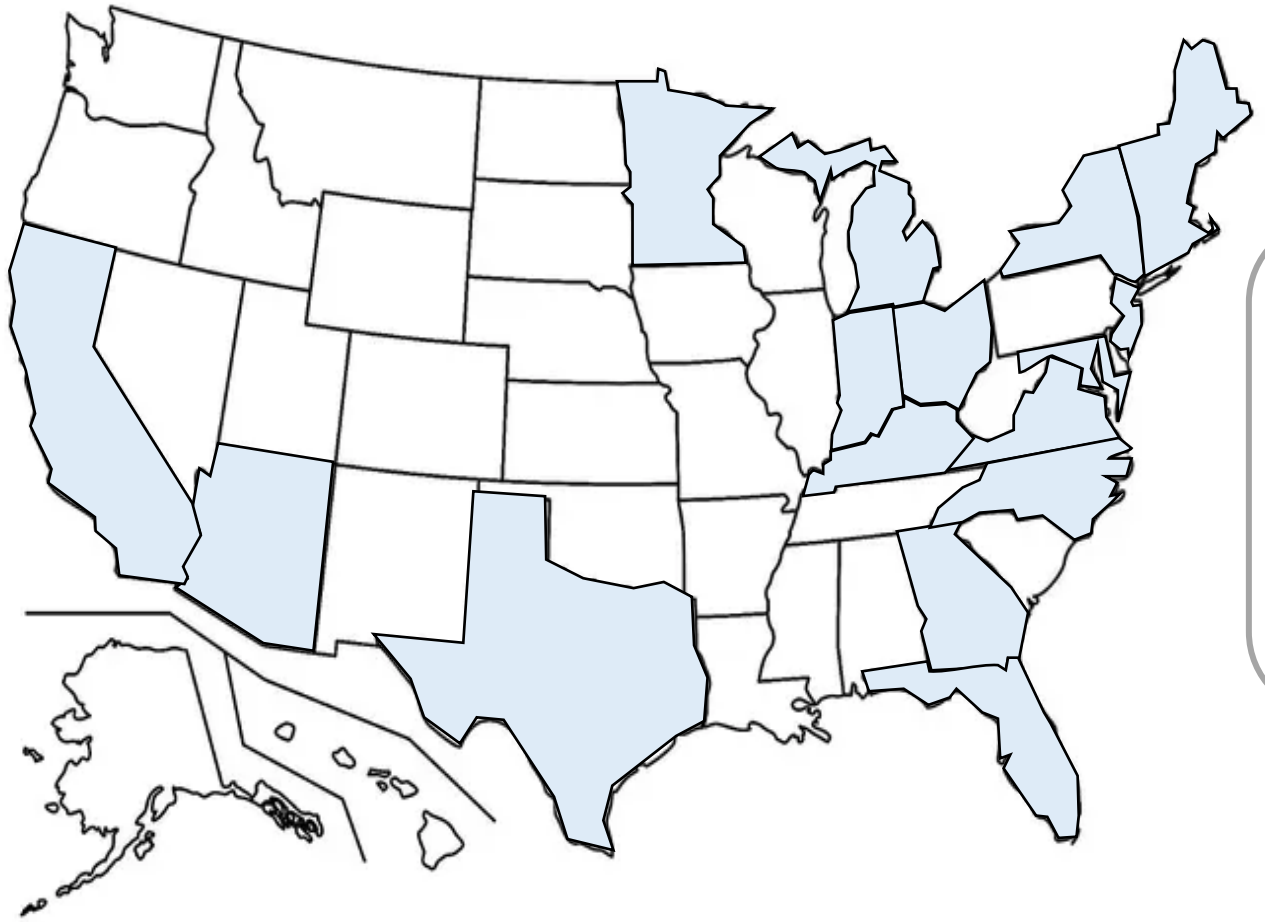

Regional Innovation Hubs

- Microelectronics Commons will be open to competition from 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)

How to Participate in the Microelectronics Commons

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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 Microelectronics Commons

The Microelectronics Commons Consortium Manager, 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/*

Questions & Answers

- Today's topics will be captured in the Q&A posting on S2MARTS.org
- Slido Event Code: **#MEC**

Interested in submitting a question?
Go to **slido.com** and enter event code:

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QUESTION 1

Question: What is the Commons definition of a prototype? Does Commons only include devices? What TRLs will be supported?

Response: By definition, a prototype developed through OTA may include a physical or virtual model used to evaluate the technical or manufacturing feasibility or military utility of a particular technology or process, concept, end item, or system. The intent of the Microelectronics Commons is to establish a network of Regional Hubs to evolve laboratory prototypes to fabrication prototypes (lab-to-fab). In particular, innovative prototype demonstrations in Department of Defense (DoD) microelectronics materials, processes, devices, and architectural designs will be supported. Peripheral activities pursued as stand-alone topics are not within scope of the Commons Hubs unless they are essential for lab-to-fab demonstration of the prototype. Activities executed within Microelectronics Commons shall primarily fall under Budget Activity 3. Although activities that fall under Budget Activities 2 and 4 will also be supported if they are in support of the lab-to-fab prototype (TRL 3-7).

QUESTION 2

Question: Please provide additional clarity about the distinction between Cores and Hubs.

Response: A Hub is a network of regional entities with lab prototyping capabilities and sources of Microelectronics talent for onshore, lab-to-fab transition of semiconductor technologies—including Department of Defense-unique applications—and semiconductor workforce training. Hub facilities typically include ≤100-millimeter (mm) and ≤200-mm for compound semiconductor and silicon-based technologies, respectively. The role of the Regional Hubs is to connect researchers and designers to prototyping capabilities targeted to regional strengths in the Hub's technical topic areas. Finally, Hubs will concentrate on one or more of the six technology areas.
Cores are existing fabs/foundries that have scalable capacity beyond what the Regional Hubs can provide. Cores are facilities that can demonstrate prototypes with the volume and characteristics required to ensure reduced risk for manufacturing. They serve a dual function: First, they serve to further complement and amplify the work of the Regional Hubs; for example, they provide capabilities at ≥200 mm wafer fab for Silicon CMOS-compatible technologies and ≥100 mm wafer fab for compound semiconductors. Second, they serve to engage with commercial fabs and better align Regional Hubs to commercial processes to facilitate transition of technologies. Cores may be Hub members and/or Hub leads. Cores may also provide services to Hubs, of which they are not formal members, through fee for service agreements.

QUESTION 3

Question: Can a Hub or a Core participate in multiple areas of research?

Response: Yes, a Hub, which may include Core facilities as Hub members or Hub leads, will designate which of the six technology areas they will focus on. Hubs may concentrate on one or more of the six technology areas.

QUESTION 4

Question: Will you be addressing workforce development for the Microelectronics Commons?

Response: Yes, the end-state goal is a network of regional entities with lab prototyping capabilities and sources of Microelectronics talent for onshore, lab-to-fab transition of semiconductor technologies—including Department of Defense-unique applications—and semiconductor workforce training.

QUESTION 5

Question: How will sensitive (e.g., EW) prototypes be handled?

Response: Security requirements will be handled on a per project basis.

QUESTION 6

Question: How will funding for Projects work?

Response: All projects will be competed amongst the Hubs. Project awards will be made between NSWC Crane and NSTXL. NSTXL, as the Consortium Manager, will then have a Performers Agreement with the Hub Lead, noting all performers.

QUESTION 7

Question: What is the process for small non-traditional technology providers to learn about and then be accepted to participate in Regional Technology Hubs? (How can small business participate in this?)

Response: All companies, including small non-traditional technology providers and other small businesses, are encouraged to reach out to NSTXL to discuss your capabilities. The NSTXL Team has multiple opportunities for teaming arrangements, community outreach, etc. that will provide benefits for increased awareness on Regional Hubs.

QUESTION 8

Question: Can a company participate in more than one Regional Technology Hub and/or have multiple projects in a single Regional Technology Hub? Do universities submit separate proposals for each university, or can the universities submit a joint proposal with more than one university?

Response: Yes, companies would be able to participate in more than one Regional Technology Hub and be supporting more than one project in a single Regional Technology Hub. Universities would be allowed to submit a joint proposal, whether they're proposing as a Hub lead or a Hub member.

QUESTION 9

Question: Does DoD expect universities to partner with industry on the submitted proposal?

Response: Hubs are expected to leverage their regional market strengths. The DoD will not dictate the composition of the Hubs.

QUESTION 10

Question: What do you see as the role for Defense Contractors in supporting capability needs and prototype demonstrations?

Response: Defense contractors, along with academia, non-traditional companies, small business, etc. will all play a key role in the success of Microelectronics Commons.

QUESTION 11

Question: What entities can be a Hub Lead? What is the role of a Hub Lead?

Response: Any eligible entities may be a Hub Lead. It is key to emphasize the prototyping authority, 10 US Code 4022 and meeting the definition of a prototype. Dr. Shenoy touched on the role of a Hub today, which is: Hubs connect researchers and designers to prototyping capabilities targeted to regional strengths in the Hub's technical topic area.

Hubs will be competitively selected based on the success criteria in the upcoming Request for Solutions.

QUESTION 12

Question: Will participating small technology providers be required to provide any IP or data rights to any other Non-Government entity (such as hub administrators)?

Response: All IP and data rights will be negotiated on a project-by-project basis.

QUESTION 13

Question: How can USG labs, such as DoD and DoE labs, and FFRDCs be involved within my proposed Hub?

Response: If you are partnering with a USG Lab or FFRDC, you should indicate their required contributions under Government Furnished Equipment within your proposal.

QUESTION 14

Question: Will the awarded Hubs have the flexibility to add members over the 60-month execution?

Response: Yes, Hub membership must be flexible.

QUESTION 15

Question: Can you share any additional details on the type or focus of advances within the six key technology areas?

Response: The Commons will support prototyping capabilities for six technical areas that are critical to the DoD. Those areas are: Secure Edge/IoT Computing, 5G/6G Technology, Artificial Intelligence Hardware, Quantum Technology, Electronic Warfare, and Commercial Leap Ahead Technologies. The RFS will include Technical Guidance w.r.t. advances needed across these technology areas .

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Join via web or scan the QR code using your smartphone

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Reminders

- All Q&A is publicly available via www.S2MARTS.org
- Any discrepancies? Documentation takes precedence
- Ensure your membership is active
- Engage with other potential partners using NSTXL Community

Upcoming Events

Save the Dates:

- Nov 29 – Dec 1: Virtual Core Pitch Days
- December 7 – 8: Industry Day in the D.C. Area

For more information, please visit:

- Upcoming Events Registration
- Microelectronics Commons opportunity page

Teaming Request

- Fill out the Teaming List Request form

S²MARTS AWARENESS DAY

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Thank you for joining!

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