Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense	Date: March 2023
Appropriation/Budget Activity 0403D: *Creating Helpful Incentives To Produce Semi-Conductors (CHIPS) for America I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602669D8Z *I Microelectronics Commons*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	65.062	65.062	-	65.062	72.188	79.709	72.979	0.000	Continuing	Continuing
825: *Microelectronics Research Maturation-Development*	-	0.000	63.395	63.395	-	63.395	60.521	57.487	60.201	0.000	Continuing	Continuing
827: *Workforce Development*	-	0.000	1.667	1.667	-	1.667	11.667	22.222	12.778	0.000	Continuing	Continuing

Note

Funding begins in FY 2023 as provided in the Creating Helpful Incentives to Produce Semiconductors (CHIPS) Act of 2022 appropriation, not in the FY 2023 annual Defense appropriation.

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Build Sustainable and Long-Term Advantage, Defend the Homeland, and Deter Aggression.

The Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) is standing up the Microelectronics (ME) Commons activity pursuant to the Fiscal Year (FY) 2021 National Defense Authorization Act (NDAA) (Pub. L. 116-283), including the CHIPS (Creating Helpful Incentives to Produce Semiconductors) for America Act, and funded through the CHIPS for America Defense Fund established by the CHIPS Act of 2022. The FY 2021 NDAA legislation significantly emphasizes solutions that promote the domestic on-shoring of capabilities to address economic and technology security concerns. Under FY 2021 NDAA Sec. 9903(b), DoD is directed to establish a National Network for Microelectronics Research and Development (NNMRD) to enable the laboratory-to-fabrication transition of microelectronics innovations in the United States and to expand the global leadership in microelectronics of the United States. Specifically, DoD is addressing a component of the NNMRD, the ME Commons, through a public-private partnership consisting of regional innovation hubs distributed across the U.S. to foster a pipeline of innovative ideas and talent residing in university labs and small business R&D teams.

Background

U.S. technological dominance in ME materials, processes, devices, and architectural designs can only be sustained through the development of a robust domestic innovation ecosystem that fosters the rapid development and transition of novel concepts into commercially viable manufacturing processes. The U.S. innovation ecosystem has long been the driver of our nation’s technology leadership throughout the world. U.S. R&D kick-started the enormous semiconductor industry and continues to lead the world in developing the next generation of disruptive technologies including: new materials, devices, circuits, architectures, and design tools.

In recent years, the efficient domestic adoption of U.S. chip innovation has been threatened as emerging hardware technologies have become increasingly reliant on offshore sources for State of the Art (SOTA) manufacturing, prototyping, and investment. There are several significant hurdles that hardware startups face, including limited or expensive access to necessary facilities and design infrastructure, high costs of design intellectual property, limited expertise with hardware engineering, and high costs of prototyping. As a result, the number of U.S. hardware startups has dropped significantly and foreign investment in U.S.-based technology startups has enabled offshore fabrication and maturation of emerging technologies.

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To address these needs, OUSD(R&E) is standing up the ME Commons as a public private partnership, consisting of regional innovation hubs distributed across the U.S. to foster a pipeline of innovative ideas and talent residing in university labs and small business R&D teams. The partnership will provide resources for and access to specialized lab equipment, technical expertise, and connections to existing or upgraded low-volume prototyping facilities. These low-volume fabrication and packaging facilities will help mature promising technologies and demonstrate the manufacturing and economic benefits of these innovations for dual-use application for defense and commercial sectors.

The ME Commons will focus on critical, on-shore prototyping to transition innovation from universities, start-ups, and small companies to manufacturing. Key features are:
• Creates and connects “Lab-to-Fab” testing/prototyping hubs to form a network focused on maturing emerging microelectronics technologies
• Provides broad access to these prototyping hubs, potentially by augmenting academic facilities and enabling access to facilities within local semiconductor companies or FFRDCs.
• Facilitates ME education and training of students at local colleges and universities, and provide a potential pipeline to bolster local semiconductor economies and contribute more broadly to the growth of a domestic semiconductor workforce.

This program element focuses on the applied research activities of the ME Commons, including staffing at ME Commons hub facilities, early technology identification, preliminary microelectronics prototyping planning, and experimental tools.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	65.062	65.062	-	65.062
Total Adjustments	0.000	65.062	65.062	-	65.062
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• CHIPS Act of 2022 Appropriation	-	65.062	65.062	-	65.062

Change Summary Explanation

This PE is funded by the CHIPS for America Defense Fund special appropriation established by the CHIPS Act of 2022, not the annual Defense appropriation. The CHIPS Act appropriates funds for this effort from FY 2023 through 2027.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0403D / 2	R-1 Program Element (Number/Name) PE 0602669D8Z / *Microelectronics Commons*	Project (Number/Name) 825 / *Microelectronics Research Maturation-Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
825: *Microelectronics Research Maturation-Development*	-	0.000	63.395	63.395	-	63.395	60.521	57.487	60.201	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project focuses on the applied research activities of the ME Commons including the early research and development of new ME materials, processes, devices, and architectural designs. It seeks to answer how new models, science, and technology can be leveraged to create a different manufacturing paradigm based on proven process tools in agile ME fabrication facilities (fabs). It also supports the establishment of the ME Commons Hubs, which will be new strategic partnerships with existing academic facilities and research labs. The Hubs will be augmented to enhance intrinsic specializations in emerging areas of ME. This project also supports the establishment of strategic relationships with Core facilities, which are existing state-of-the-art ME productions facilities (foundries or fabs). The Cores will be connected to the regional Hubs and open to all ME Commons users.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Microelectronics Research Maturation – Development	0.000	63.395	63.395
Description: This effort focuses on the identification of promising new ME materials, processes, devices, and architectural designs with potential DoD applications, and early research into these technologies. It will also support the initial selection of regional ME Commons Hubs and network-wide ME Commons Cores, in conjunction with activities funded by PEs 0603669D8Z and 0604669D8Z. ***FY 2023 Plans:*** • Select initial ME Commons Hubs and Cores • Initiate applied research into new ME technologies (materials, processes, devices, architectural designs, etc.) ***FY 2024 Plans:*** • Select remaining ME Commons Hubs to build out ME Commons network • Continue applied research into new ME technologies (materials, processes, devices, architectural designs, etc.) ***FY 2023 to FY 2024 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	0.000	63.395	63.395

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0403D / 2	R-1 Program Element (Number/Name) PE 0602669D8Z / *Microelectronics Commons*	Project (Number/Name) 827 / *Workforce Development*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
827: *Workforce Development*	-	0.000	1.667	1.667	-	1.667	11.667	22.222	12.778	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project focuses on workforce development activities that are inherent to the operation of the ME Commons, particularly in the applied research phase of new technologies under investigation. It will facilitate ME education and training of students at local colleges and universities that are part of the Commons network, and provide a pipeline to bolster local semiconductor economies and contribute more broadly to the growth of a domestic semiconductor workforce.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Workforce Development	0.000	1.667	1.667
Description: This effort will directly support early workforce development activities through the ME Commons network. Activities include establishment of PhD internships and post-doc training at Hub facilities and internships at Core facilities. Additionally, it will develop training for the existing ME Commons workforce with potential for impact beyond the entities participating directly in the ME Commons Core and Hub entities. ***FY 2023 Plans:*** • Develop and establish internships and post-doc training programs for Hub facilities • Develop and establish internships for Core facilities • Develop training for existing non-student ME Commons workforce ***FY 2024 Plans:*** • Continue and expand internships and post-doc training programs for Hub facilities • Continue and expand internships for Core facilities • Continue and expand training for existing non-student ME Commons workforce ***FY 2023 to FY 2024 Increase/Decrease Statement:*** N/A			
Accomplishments/Planned Programs Subtotals	0.000	1.667	1.667

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0403D / 2	**R-1 Program Element (Number/Name)** PE 0602669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 827 / *Workforce Development*

D. Acquisition Strategy

N/A