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 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604669D8Z *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	65.682	65.682	-	65.682	62.704	59.560	62.373	0.000	Continuing	Continuing
832: *Microelectronics Research Maturation – Advanced Prototyping*	-	0.000	65.682	65.682	-	65.682	62.704	59.560	62.373	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 advanced component development and advanced prototyping activities of the ME Commons, including staffing at ME Commons Hub facilities, prototype development, and the establishment and development of a path for successful Lab-to-Fab technology transition. This will require significant industry buy-in from state-of-the-art ME fabrication facilities (fabs). The ME Commons will establish early and sustained engagement with industry and academic stakeholders to build consensus on technology roadmaps to guide maturation and delivery of innovation into a given commercial fabricator’s pilot line and production plans.

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	65.682	65.682	-	65.682
Total Adjustments	0.000	65.682	65.682	-	65.682
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• CHIPS Act of 2022 Appropriation	-	65.682	65.682	-	65.682

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 / 4	R-1 Program Element (Number/Name) PE 0604669D8Z / *Microelectronics Commons*	Project (Number/Name) 832 / *Microelectronics Research Maturation – Advanced Prototyping*	

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
832: *Microelectronics Research Maturation – Advanced Prototyping*	-	0.000	65.682	65.682	-	65.682	62.704	59.560	62.373	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project focuses on the advanced component development and advanced prototyping activities of the ME Commons. Additionally, it focuses on providing cost-effective ways to capture and incentivize domestic R&D for various semiconductor technologies in a low-volume production environment and transition them for DoD and commercial market applications. Specifically, it works to transition developments from ME Commons Hubs resulting from technology identification and research funded by ME Commons PEs 0602669D8Z, and matured by activities funded by ME Commons PE 0603669D8Z.

The project 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 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 – Advanced Prototyping	0.000	65.682	65.682
Description: This effort focuses on the advanced prototyping of promising new ME technologies and enabling the transition of these technologies to into tightly controlled high-volume fabrication processes. It will also support initial selection and operation 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 advanced prototyping efforts for new ME technologies with potential DoD or dual-use applications • Develop pathways to transition novel concepts matured in a low-volume production environment into commercially viable high-volume manufacturing processes.			
FY 2024 Plans: • Select remaining ME Commons Hubs to build out ME Commons network • Continue and expand advanced prototyping efforts for new ME technologies with potential DoD or dual-use applications			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0403D / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
• Maintain and expand pathways to transition novel concepts matured in a low-volume production environment into commercially viable high- volume manufacturing processes.			
Accomplishments/Planned Programs Subtotals	0.000	65.682	65.682

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense			Date: March 2023
Appropriation/Budget Activity 0403D / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Microelectronics Research Maturation – Advanced Prototyping	C/Various	Air Force, Army, Navy: Various : Various	-	-		65.682	Mar 2023	65.682	Mar 2024	-		65.682	Continuing	Continuing	-
		Subtotal	-	-		65.682		65.682		-		65.682	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		65.682		65.682		-		65.682	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0403D / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*

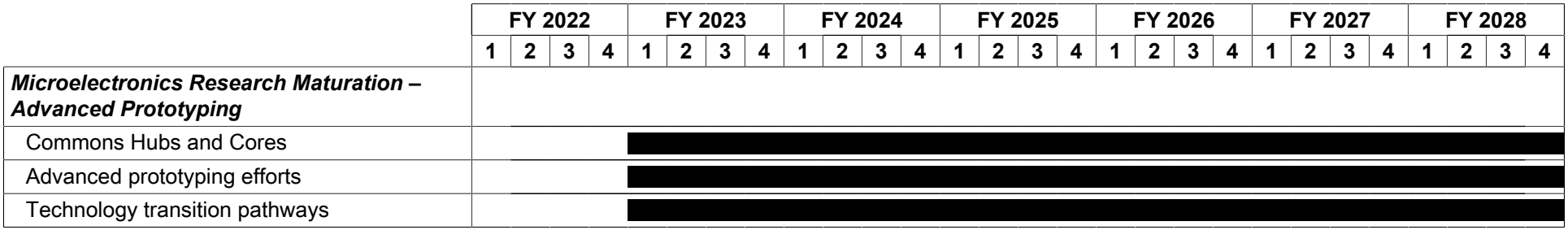

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
Appropriation/Budget Activity 0403D / 4	**R-1 Program Element (Number/Name)** PE 0604669D8Z / *Microelectronics Commons*	**Project (Number/Name)** 832 / *Microelectronics Research Maturation – Advanced Prototyping*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Microelectronics Research Maturation – Advanced Prototyping				
Commons Hubs and Cores	1	2023	4	2028
Advanced prototyping efforts	1	2023	4	2028
Technology transition pathways	1	2023	4	2028