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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Office of the Secretary Of Defense **Date:** April 2022

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602230D8Z / <i>Defense Technology Innovation (Beyond 5G)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.000	17.109	17.428	20.634	0.000	20.634	10.339	12.406	12.667	12.920	Continuing	Continuing
230: <i>Defense Technology Innovation (Beyond 5G)</i>	0.000	17.109	17.428	20.634	0.000	20.634	10.339	12.406	12.667	12.920	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program will build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in emerging wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

B. Program Change Summary (\$ in Millions)

	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	17.109	22.918	0.000	0.000	0.000
Current President's Budget	17.109	17.428	20.634	0.000	20.634
Total Adjustments	0.000	-5.490	20.634	0.000	20.634
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-5.418			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• FFRDC	-	-0.072	-	-	-
• Adjustments to Budget Year	-	-	19.922	-	19.922
• Economic Assumption	-	-	0.712	-	0.712

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Office of the Secretary Of Defense **Date:** April 2022

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602230D8Z / <i>Defense Technology Innovation (Beyond 5G)</i>	Project (Number/Name) 230 / <i>Defense Technology Innovation (Beyond 5G)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>230: Defense Technology Innovation (Beyond 5G)</i>	0.000	17.109	17.428	20.634	0.000	20.634	10.339	12.406	12.667	12.920	Continuing	Continuing

Note
Funding in FY 2022 will be under new Project Code 230, to change the Project Code title to "Beyond 5G." The requirement and efforts remain unchanged.

A. Mission Description and Budget Item Justification

This program will build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in emerging wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Beyond 5G	FY 2021	FY 2022	FY 2023
<p>Description: Build upon the technology foundation that underlies fifth-generation cellular network (5G) systems as a basis to create the next generation of wireless cellular network and security technologies for military applications. Working in concert with other U.S. Government science and technology agencies, this DoD program will enable the U.S. to regain leadership in upcoming wireless technology standards including sixth generation (6G) and beyond by investing in research and workforce development in critical technologies. The development of an engagement plan with other Departments, agencies, industry, and universities will ensure continued U.S. influence in both the international commercial marketplace as well as Government sectors.</p> <p>FY 2022 Plans: DoD will continue this investment through the collaborative mechanisms with NSF and NIST noted above – in early-stage technology testbeds, novel hardware and software components, and fellowship/training programs. DoD will broadly continue initiatives in the FY 2021 areas:</p> <ul style="list-style-type: none"> • Radio Frequency (RF) and massive MIMO technology. • Spectrum reuse/network resource utilization based on novel machine learning concepts. • Highly dynamic spectrum sharing using multiple degrees of freedom in contested/congested scenarios. • Robust, reconfigurable, and secure software-defined networking. • Edge computing for ultra-reliable, low latency applications. 	17.109	17.428	20.634

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Office of the Secretary Of Defense		Date: April 2022		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602230D8Z / <i>Defense Technology Innovation (Beyond 5G)</i>	Project (Number/Name) 230 / <i>Defense Technology Innovation (Beyond 5G)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>DoD will adapt its R&D investment strategy/award mix based on the companion Prototyping and Experimentation testbed deployments.</p> <p>FY 2023 Plans: DoD will continue to invest in technology testbeds, novel hardware and software components, and fellowship/training programs with new and existing partners.</p> <p>DoD will broadly continue initiatives from FY 2022, specifically Radio Frequency (RF) and massive MIMO technology, spectrum reuse/network resource utilization based on novel machine learning concepts, and highly dynamic spectrum sharing using multiple degrees of freedom in contested/congested scenarios. Other continued work in robust, reconfigurable, and secure software-defined networking, as well as edge computing for ultra-reliable, low latency applications will continue to be supported.</p> <p>DoD will continue to adapt its R&D investment strategy/award mix based on the companion Prototyping and Experimentation testbed deployments.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase is due to budget fluctuation.</p>				
Accomplishments/Planned Programs Subtotals		17.109	17.428	20.634
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				