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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army **Date:** April 2022

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605625A / <i>Manned Ground Vehicle</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	-	162.390	202.320	589.762	-	589.762	1,238.951	553.275	376.107	379.760	0.000	3,502.565
CF6: <i>Next Generation Combat Vehicle (OMFV)</i>	-	162.390	202.320	589.762	-	589.762	1,238.951	553.275	376.107	379.760	0.000	3,502.565

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Next Generation Combat Vehicle Army Modernization Priority. The Optionally Manned Fighting Vehicle (OMFV), as part of an Armored Brigade Combat Team (ABCT), will replace the Bradley Infantry Fighting Vehicle to provide the capabilities required to defeat a future near-peer competitor's force. The Army is seeking a transformational increase in warfighting capability, not simply another incremental improvement over the current Bradley Fighting Vehicle. The OMFV is a purpose built manned platform that maneuvers Soldiers to a point of positional advantage to engage in close combat. It is designed to operate with a two-Soldier crew or remotely and without a crew based on the commander's decision. It delivers decisive lethality during the execution of combined arms maneuver while also controlling maneuver robotics and semi-autonomous systems. The platform will be optimized for Life Cycle Environmental Profiles, both natural and induced, to remain safe, suitable and effective and with significantly reduced logistical burdens. The vehicle will be built in compliance with the recently approved government owned ground vehicle open architecture standard. The OMFV open architecture is the key enabler to rapid and cost effective future upgrades independent of the prime contractor. The rapidly changing character of warfare and pace of technology innovates the Army to change how it will deliver, operate and sustain the OMFV.

As part of an ABCT, the OMFV will not fight alone, but rather as part of a section, platoon, and company of mechanized infantry. These companies will execute cross-domain maneuver and defeat pacing threats in the close area while maneuvering Soldiers to tactical objectives. Once the unit has transitioned to an integrated mounted and dismounted fight, the OMFV supports our Soldiers with advanced sensors, lethality, protection, and mission command.

The total cost of the Optionally Manned Fighting Vehicle Middle Tier of Acquisition effort is \$1,432.1 million RDT&E from FY2021 to FY2024. The Optionally Manned Fighting Vehicle is fully funded across the Future Years Defense Program.

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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	171.890	225.106	0.000	-	0.000
Current President's Budget	162.390	202.320	589.762	-	589.762
Total Adjustments	-9.500	-22.786	589.762	-	589.762
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-22.786			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-9.500	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	589.762	-	589.762

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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Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605625A / Manned Ground Vehicle				Project (Number/Name) CF6 / Next Generation Combat Vehicle (OMFV)			
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
CF6: Next Generation Combat Vehicle (OMFV)	-	162.390	202.320	589.762	-	589.762	1,238.951	553.275	376.107	379.760	0.000	3,502.565
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding line is directly aligned to the Next Generation Combat Vehicle Army Modernization Priority. The Optionally Manned Fighting Vehicle (OMFV), as part of an Armored Brigade Combat Team (ABCT), will replace the Bradley Infantry Fighting Vehicle to provide the capabilities required to defeat a future near-peer competitor's force. The Army is seeking a transformational increase in warfighting capability, not simply another incremental improvement over the current Bradley Fighting Vehicle. The OMFV is a purpose built manned platform that maneuvers Soldiers to a point of positional advantage to engage in close combat. It is designed to operate with a two-Soldier crew or remotely and without a crew based on the commander's decision. It delivers decisive lethality during the execution of combined arms maneuver while also controlling maneuver robotics and semi-autonomous systems. The platform will be optimized for Life Cycle Environmental Profiles, both natural and induced, to remain safe, suitable and effective and with significantly reduced logistical burdens. The vehicle will be built in compliance with the recently approved government owned ground vehicle open architecture standard. The OMFV open architecture is the key enabler to rapid and cost effective future upgrades independent of the prime contractor. The rapidly changing character of warfare and pace of technology innovates the Army to change how it will deliver, operate and sustain the OMFV.

As part of an ABCT, the OMFV will not fight alone, but rather as part of a section, platoon, and company of mechanized infantry. These companies will execute cross-domain maneuver and defeat pacing threats in the close area while maneuvering Soldiers to tactical objectives. Once the unit has transitioned to an integrated mounted and dismounted fight, the OMFV supports our Soldiers with advanced sensors, lethality, protection, and mission command.

The total cost of the Optionally Manned Fighting Vehicle Middle Tier of Acquisition effort is \$1,432.1 million RDT&E from FY2021 to FY2024. The Optionally Manned Fighting Vehicle is fully funded across the Future Years Defense Program.

This program supports the Next Generation Combat Vehicle Cross Functional Team.

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

	FY 2021	FY 2022	FY 2023
Title: Government Engineering & Program Management	13.366	17.066	34.823
Description: Provides Government System Engineering and Program Management support. Funding will cover the costs of government and direct support contractor labor, travel, training, supplies, equipment and facilities to effectively manage Project Management Office, Maneuver Combat Systems (PM MCS).			
FY 2022 Plans:			

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Provides Government System Engineering and Program Management support. Costs include matrix and SETA contractors within PM MCS as well as SSEB expense for the detailed design contracts. This funding will include the cost of government and direct support contractor labor, travel, training, supplies, equipment and facilities to effectively manage the PM MCS program.</p> <p>FY 2023 Plans: Provides Government System Engineering & Program Management Support. This funds the efforts to include contract close-outs of Concept Design contracts for up to 5 vendors and covers the management support requirements pre and post award of Detailed Design contracts for up to 3 vendors. These costs reflect the RDTE funded costs for Matrix within the PM MCS PMO includes the of SETA support in critical areas of the design of an open-architected OMFV including cyber security, software development and system architecture. These funds also support the execution of a source selection board for up to 3 vendors for the Phase 3 and 4 contracts for Detailed Design / Prototype Build and Test. This funding will include the cost of digital engineering tools, government and direct support contractor labor, travel, training, supplies, equipment and facilities to effectively manage the PM MCS program.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The increase from FY 2022 to FY 2023 is reflective of the creation of the digital engineering environment to manage the program across 3 vendors, increase in labor rates, inflation, and the additional pre and post award of contracts for up to 3 vendors.</p>				
<p>Title: Digital Engineering</p> <p>FY 2023 Plans: This funding will includes the costs to establish and maintain a cloud-based Digital Engineering (DE) environment. DE costs include individual software (SW) licenses for the required Product Lifecycle Management (PLM) software. Integration costs include the creation of Automatic Program Interfaces (API) between the PLM software and various government owned modeling and simulation tools to accelerate the pace of analysis of the up to 3 Phase 3 OMFV contractors. Integration of these tools within the DE environment enables frequent, continuous, and iterative assessment of a contractor?s digital design with a view towards identifying and addressing technical risk as early and cost effectively as possible.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The increase from FY 2022 to FY 2023 is reflective of the creation of the digital engineering environment to manage the program across 3 vendors, increase in labor rates, inflation, and the additional pre and post award of contracts for up to 3 vendors.</p>		-	-	5.500
<p>Title: Product Development</p> <p>Description: Costs include the continuation of Concept Design efforts including System Functional Review (SFR) and development towards PDR. Contractor efforts include Development Engineering, Producibility Engineering and Planning, Development Tooling, System Engineering and Program Management, Data and Special Equipment.</p>		133.055	166.398	509.782

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>FY 2022 Plans: Costs include the remaining funding for the contract award of up to 5 vendors. These costs include the continuation of concept design efforts including System Readiness Review (SRR) and development towards System Functional Review (SFR). Contractor efforts include development engineering, producibility engineering and planning, development tooling, system engineering, initial logistics data and product development, and data and special equipment.</p> <p>FY 2023 Plans: As the program transitions from Contractor Concept Design to Contractor Detailed Design, this effort funds the initial funding period of Detailed Design contracts for up to 3 vendors. This includes labor and material costs for Design Engineering pre and post PDR, System Engineering and Program Management and Technical Data Development. This funding will support the development of a System Integration Laboratory for the vendors to test and deploy critical software improvements for government verification. The funding also procures hardware necessary for up to 3 vendors to build and integrate critical subsystems as part of an early risk reduction prototype delivery.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The increase from FY 2022 to FY 2023 is reflective of the increase in the development efforts for 3 vendors through Preliminary Design Review (PDR) with work towards Critical Design Review (CDR).</p>				
<p>Title: Modeling Simulation & Analysis</p> <p>Description: Government Modeling,Simulation and Analysis in support of requirements analysis and concept refinement.</p> <p>FY 2022 Plans: Costs include government modeling, simulation, and analysis in support of requirements analysis and concept refinement, includes but not limited to activities that provide results on mobility, lethality, survivability, human cognitive performance, and human systems integration.</p> <p>FY 2023 Plans: FY 2023 funds the Modeling and Simulation and Subsystem Testing of awarded Contractor Designs and their respective components in support of PDR with efforts towards CDR. This also funds the development and verification, validation, and accreditation of new models to support future testing. This funding will also support execution of the Army?s formal Analysis of Alternatives.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The increase from FY 2022 to FY 2023 is reflective of the increase in model-based evaluation of contractor designs.</p>		6.075	3.571	9.235
<p>Title: Other Support Cost</p>		4.594	2.600	-

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Description: OMFV studies and research which includes the completion of the AoA, completion of milestone documentation development, and detailed trade space studies and analysis.</p> <p>FY 2022 Plans: Costs includes continued OMFV studies and research, completion of milestone documentation development, and detailed trade space studies, analysis, and subsystem studies in critical areas.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The decrease from FY 2022 to FY 2023 is reflective of the accomplishments/categories being better defined. Costs have been reallocated to Technology Maturation & Government Architecture.</p>				
<p>Title: Government Architecture</p> <p>Description: Develop the USG baseline architecture by enhancing PEO GCS Common Infrastructure Architecture (GCIA) based on Modular Open Systems Approach (MOSA) to guide the OMFV system development. The effort is directed by the Army Acquisition Executive to achieve transformational capabilities for OMFV via Modular, Open and Scalable Architecture, and by using applicable open standards. The effort will be executed by PEO GCS, PM MCS, and ASA (ALT)'s Chief Technology Officer teams cohort with applicable CCDC and ARL teams, and industry consortium</p> <p>FY 2022 Plans: Costs include the continued development of the Common Infrastructure Architecture to guide the development of the OMFV, including, but not limited to, digital modeling, Architecture Integration Laboratory, and the Architectural Description.</p> <p>FY 2023 Plans: This effort funds the continued refinement of the ground vehicle open architecture standard and maintenance of the Architectural Foundry to guide the development of the OMFV, including, but not limited to, digital modeling, Architecture Integration Laboratory, and the Architectural Description.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The decrease from FY 2022 to FY 2023 is reflective of the accomplishments/categories being better defined. Costs have been reallocated to Technology Maturation & Analysis.</p>		5.300	5.301	4.602
<p>Title: Technology Maturation & Analysis</p> <p>FY 2023 Plans: This effort funds the Detailed Design parallel efforts focused on maturation of key subsystems and demonstration of transformational capabilities for future rapid integration using DE principles. These efforts include, but are not limited to: reliability improvements and of qualification testing of the XM913 50mm cannon based on an independent technical assessment, initial</p>		-	-	25.820

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
integration by a University Affiliated Research Center (UARC) of key subsystems across the open architecture standard to demonstrate organic OMFV counter unmanned aerial system (C-UAS) and counter antitank guided missile (C-ATGM) applications on a technology demonstrator platform, and initial work to transition existing government owned autonomy and reduced crew operation software into a format that is agnostic of a vehicle?s operating system and able to operate with the open architecture standard. <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> The increase from FY2022 to FY2023 is reflective of the technology improvements necessary to accelerate integration of key enabling technologies following independent technical assessments by Johns Hopkins Applied Physics Laboratory and Georgie Tech Research Institute.			
<i>Title:</i> SBIR/STTR Transfer <i>FY 2022 Plans:</i> SBIR/STTR Transfer <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred in accordance with Title 15 USC 638.	-	7.384	-
Accomplishments/Planned Programs Subtotals	162.390	202.320	589.762

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Optionally Manned Fighting Vehicle (OMFV) is a Middle Tier Acquisition - Rapid Prototyping Program and is designed to maneuver Soldiers in the Forward Operating Environment to a position of advantage to engage in close combat and deliver decisive lethality during the execution of combined arms maneuver. The OMFV must exceed current capabilities while overmatching similar threat class systems. It must be optimized for urban and rural terrain areas, while also defeating pacing threats, and be characterized by the ability to spiral in advanced technologies as they mature. The capabilities desired focus to improve lethality, protection, mobility, range, survivability.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army												Date: April 2022			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605625A / Manned Ground Vehicle				CF6 / Next Generation Combat Vehicle (OMFV)							
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		7.384	Mar 2022	-		-		-	0.000	7.384	-
Subtotal			-	-		7.384		-		-		-	0.000	7.384	N/A
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Other Support Costs	TBD	TBD : TBD	8.962	4.594	Mar 2021	2.600	Apr 2022	-		-		-	0.000	16.156	-
Product Development	TBD	TBD : TBD	-	133.055	Jul 2021	166.398	Jun 2022	509.782	Mar 2023	-		509.782	0.000	809.235	-
Government Architecture	TBD	TBD : TBD	-	5.300	Jul 2021	5.301	Apr 2022	4.602	Jun 2023	-		4.602	0.000	15.203	-
Technology Maturation & Analysis	TBD	TBD : TBD	-	-		-		25.820	Mar 2023	-		25.820	0.000	25.820	-
Digital Engineering	TBD	TBD : TBD	-	-		-		5.500	Jan 2022	-		5.500	0.000	5.500	-
Subtotal			8.962	142.949		174.299		545.704		-		545.704	0.000	871.914	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering & Program Management	MIPR	Warren, MI : TBD	8.412	13.366	Jun 2021	17.066	Jun 2022	34.823	Apr 2023	-		34.823	0.000	73.667	-
Subtotal			8.412	13.366		17.066		34.823		-		34.823	0.000	73.667	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Modeling Simulation & Analysis	TBD	TBD : TBD	-	6.075	Jun 2021	3.571	Apr 2022	9.235	Mar 2023	-		9.235	0.000	18.881	-
Subtotal			-	6.075		3.571		9.235		-		9.235	0.000	18.881	N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605625A / <i>Manned Ground Vehicle</i>	Project (Number/Name) <i>CF6 / Next Generation Combat Vehicle (OMFV)</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Request for Proposal development	[Redacted]																											
	RFP Development																											
Request for Proposal Release	▲ 1																											
	RFP release																											
Decision Point #1					▲ 2																							
					Contract award up to 5 OEMs																							
A-CDD					[Redacted] A-CDD																							
Concept Design (5 OEMs)					[Redacted]																							
					Concept Design (5 OEMs)																							
Request for Proposal Development #2					[Redacted]																							
					RFP Development #2																							
Request for Proposal Release #2					▲ 3																							
					RFP Release																							
Decision Point #2									▲ 4																			
									Contract award up to 3 OEMs																			
Detailed Design (3 OEMs)									[Redacted]																			
									Detailed Design (3 OEMs)																			
Preliminary Design Review									▲ 5																			
									PDR																			
Critical Design Review													▲ 6															
													CDR															
CDD													[Redacted] CDD															
													CDD															
Outcome Determination Milestone B																	▲ 7											
																	MS B											

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605625A / <i>Manned Ground Vehicle</i>	Project (Number/Name) CF6 / <i>Next Generation Combat Vehicle (OMFV)</i>

Event Name	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Prototype Build / Integration																	[Redacted]															
PPT Vehicle Test																									[Redacted]							
Decision Point #3																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Request for Proposal development	2	2020	1	2021
Request for Proposal Release	1	2021	1	2021
Decision Point #1	4	2021	4	2021
A-CDD	1	2022	2	2022
Concept Design (5 OEMs)	4	2021	1	2023
Request for Proposal Development #2	1	2022	3	2022
Request for Proposal Release #2	3	2022	3	2022
Decision Point #2	2	2023	2	2023
Detailed Design (3 OEMs)	2	2023	4	2024
Preliminary Design Review	4	2023	4	2023
Critical Design Review	4	2024	4	2024
CDD	1	2024	2	2024
Outcome Determination Milestone B	4	2024	4	2024
Prototype Build / Integration	4	2024	2	2026
PPT Vehicle Test	2	2026	4	2027
Decision Point #3	4	2027	4	2027