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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Army **Date:** March 2024

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603041A / <i>All Domain Convergence Advanced Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	40.955	33.332	23.722	-	23.722	27.764	28.804	28.831	29.633	0.000	213.041
CL9: <i>Collab Battlefield Networked Leth Sys Adv Tech</i>	-	11.831	-	-	-	-	-	-	-	-	0.000	11.831
CM2: <i>Collaborative Convergence Adv Tech Development</i>	-	4.993	18.381	23.722	-	23.722	24.758	26.800	26.827	27.629	0.000	153.110
CM8: <i>Convergence Battlefield Integration</i>	-	7.831	1.049	-	-	-	-	-	-	-	0.000	8.880
DA4: <i>All Domain Convergence Engineering & Architectures</i>	-	16.300	13.902	-	-	-	3.006	2.004	2.004	2.004	0.000	39.220

A. Mission Description and Budget Item Justification

The Program Element (PE) develops, matures, and demonstrates as part of a campaign of learning, technologies in an operational environment, learning from early failure and re-scope research to improve speed of response, scalability, interoperability and range of engagement. This PE will deliver technologies that will enable sensor to shooter applications, from tactical to strategic level, taking a system design approach in support of Army experimentation events and Department of Defense (DoD) Combined Joint All-Domain Command and Control (CJADC2). The research will enable optimal lethal and non-lethal effects across all domains using artificial intelligence and machine learning to improve how we recognize threats, augment and enhance leader decision-making, and replicate tactical behaviors to enable autonomous capabilities.

Work in this PE complements PE 0603465A (Future Vertical Lift Advanced Technology), PE 0603462A (Next Generation Combat Vehicle Advanced Technology), and PE 0603463 (Network C3I Advanced Technology).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering Priority focus areas.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603041A / <i>All Domain Convergence Advanced Technology</i>
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B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	45.377	33.332	54.853	-	54.853
Current President's Budget	40.955	33.332	23.722	-	23.722
Total Adjustments	-4.422	0.000	-31.131	-	-31.131
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.767	-			
• SBIR/STTR Transfer	-1.655	-			
• Adjustments to Budget Years	-	-	-31.131	-	-31.131

Change Summary Explanation

Decrease due to realignment to Sensor to Shooter PE 0602141A and PE 0603116A to accelerate efforts in Indirect Fires PE 0603116A and Long Range Maneuverable Fires, PrSM Inc 4 PE 0603464A.

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603041A / All Domain Convergence A Advanced Technology				Project (Number/Name) CL9 / Collab Battlefield Networked Leth Sys Adv Tech			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
CL9: Collab Battlefield Networked Leth Sys Adv Tech	-	11.831	-	-	-	-	-	-	-	-	0.000	11.831
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates dynamic Weapon-Target Pairing (WTP) fires planning and execution for maneuver forces, integration of fires and intelligence technologies, Artificial Intelligence (AI)-based decision aid implementation, and integration & demonstration of a role-based networked lethality architecture.

Work in this Project compliments PE 0602181A (All Domain Convergence Applied Research)/CM1 (Collab Battlefield Networked Leth Sys App Tech).

Work in this Project supports Next Generation Combat Vehicle, Tactical Network, Future Vertical Lift, and Long Range Precision Fires Army Modernization Priorities.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

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

	FY 2023	FY 2024	FY 2025
Title: Distributed Lethality Architecture	3.568	-	-
Description: This effort provides a decision aid architecture that will integrate with current and future sensors and weapon systems to network fires for a mounted/dismounted and tactical operation center capability for Combined Arms Maneuvers. Matures and demonstrates distributed architecture and data transmission for sensor to shooter to optimize effects-based WTP.			
Title: Integrated Sensor to Shooter System	3.434	-	-
Description: Demonstrates software that ingests intelligence, sensor cueing, tasking and target hand off data from/to higher and lower echelons for sensor to shooter integration. Integrates software on combat platforms to enable on-board sensor and weapon systems to execute fires missions based on decision aids' recommendations with minimal operator input.			
Title: Fires Synchronization	4.829	-	-
Description: Provides real-time, joint airspace integration between airspace users and fires at various echelons to de-conflict airspace for emerging long range munitions. Matures and demonstrates algorithms for modeling adversary behavior for autonomous engagement using prior knowledge and real-time sensor data.			
Accomplishments/Planned Programs Subtotals	11.831	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army		Date: March 2024
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603041A / <i>All Domain Convergence A dvanced Technology</i>	Project (Number/Name) CL9 / <i>Collab Battlefield Networked Leth Sys Adv Tech</i>

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

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603041A / All Domain Convergence A Advanced Technology				Project (Number/Name) CM2 / Collaborative Convergence Adv Tech Development			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
CM2: Collaborative Convergence Adv Tech Development	-	4.993	18.381	23.722	-	23.722	24.758	26.800	26.827	27.629	0.000	153.110
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project develops and integrates critical Project Convergence technologies and the architecture through which the Project Convergence technologies will operate. This is accomplished using adaptive data fusion and task allocation algorithm to support the development of Artificial Intelligence (AI) decision support agents. This Project includes development of advanced methods for processing and information extraction for mission oriented tasks in support of tactical decision makers. Additionally, this Project will develop the scalable architecture solutions necessary to facilitate tactical data collection, movement, processing, storage and modeling and simulation necessary to enable mission command in multi-domain operations. Also, the Project will shape early programs to accelerate technologies and achieve sensor to shooter dominance.

Work in this Project complements Program Element (PE) 0602181A (All Domain Convergence Applied Research).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the Analysis Center, Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance and Reconnaissance (C5ISR) Center, Ground Vehicle Systems Center (GVSC), and Aviation & Missile Center (AvMC).

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

	FY 2023	FY 2024	FY 2025
Title: Effects in the Joint Kill Web	4.993	-	-
Description: Virtually demonstrate kinetic and non-kinetic actions in a contested, Multi-Domain environment at all echelons. This effort seeks to ensure that the Army can readily contribute to the Joint Force in the land, air, maritime, cyber, space, and electromagnetic domains in an integrated and coordinated fashion.			
Title: Joint Systems Integration	-	7.300	11.085
Description: This effort integrates and demonstrates tactical network and associated command, control, communication, computers, cyber, intelligence, surveillance and reconnaissance (C5ISR) technologies in Multi-Domain Operations (MDO) laboratory experiments through live, virtual, and constructive environments. The effort will integrate these technologies for? tactical ground, air, air and missile defense, fires, network platforms and other missions to demonstrate system of systems integration and evaluate operational performance in representative MDO scenarios during laboratory experiments.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army		Date: March 2024
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603041A / <i>All Domain Convergence A Advanced Technology</i>	Project (Number/Name) CM2 / <i>Collaborative Convergence Adv Tech Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<p><i>FY 2024 Plans:</i> Will demonstrate advancing C5ISR technologies in risk reduction events, such as communication exercises, in advance of field experiments (e.g. Project Convergence); will mature and demonstrate integrated risk reduction capability between laboratory and field, such as inclusion of tactical units connected to laboratory environments; will provide advanced network replication environments, such as the inclusion of electronic warfare injection.</p> <p><i>FY 2025 Plans:</i> Will evaluate and demonstrate advancing C5ISR technologies through persistent lab-based risk reduction experimentation for Army; identify and mitigate, Joint and Coalition challenges with recommendations for experimentation in persistent environment. Improve lab-based risk reduction for larger scale demonstration events by resolving specific interoperability issues prior to capstone event; continue to enhance replicated network environments under demanding and complex mixed electro-magnetic environments.</p> <p><i>FY 2024 to FY 2025 Increase/Decrease Statement:</i> Funding increase reflects planned support of persistent and iterative testing of Science and Technology (S&T) technologies for Army capstone events.</p>			
<p><i>Title:</i> Analytics for Convergence Technology Integration</p> <p><i>Description:</i> Validate maturity of battlefield integration of Army ground and air assets with all sensor and command assets via the Tactical Network (TN) by collecting, providing, optimizing, and fully exploiting available data concerning system and system-of-systems interface performance and effectiveness.</p> <p><i>FY 2024 Plans:</i> Will provide threat environments for validated demonstration of the highest Army priority battlefield systems in FY24. Will mature and demonstrate the technical connectivity and tactical integration between those systems and all other relevant Army and Joint systems. Will optimize technologies under advanced development by scientists, technologists, system developers, and system analysts.</p> <p><i>FY 2025 Plans:</i> Will provide cyber threat representations and cyber vulnerability mitigation recommendations for design improvement; provide Denied, Degraded, Intermittent, and/or Limited (DDIL) electromagnetic environments to qualify emerging technologies for inclusion in the conduct of integrated Army Futures Command (AFC) experiments; reduce risks through laboratory-based / field-based technology integration experiments to optimize scalability of architecture solutions, to improve interface designs, and to exploit available data for mitigation recommendations.</p> <p><i>FY 2024 to FY 2025 Increase/Decrease Statement:</i></p>	-	3.000	5.038

UNCLASSIFIED

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Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603041A / All Domain Convergence A Advanced Technology	Project (Number/Name) CM2 / Collaborative Convergence Adv Tech Development		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2023	FY 2024	FY 2025
Funding increase reflects planned support of additional laboratory-based and field-based integration efforts.				
Title: Convergence Ground and Aviation Platform Integration		-	8.081	7.599
Description: Integration of ground and aviation efforts in direct support of maturing and demonstrating Project Convergence capabilities. This effort matures and demonstrates ground vehicle technologies as an integrated system and system of systems to reduce sensor to shooter targeting time, increase real-time battlefield understanding and ensure communications across all echelons. It also integrates capabilities such as geo-location and identification of targets from Army aviation assets, air to ground situational awareness and target data exchange, exchange of unmanned asset control, advanced tactical and teaming behaviors, synchronized data management, and efficient usage of air lethality assets. Lastly it focuses on the integration of ground and aviation capabilities to demonstrate Multi-Domain Operations as part of Project Convergence.				
FY 2024 Plans: Will mature and demonstrate additional ground vehicle and aviation integration, multi-platform, and multi-service network communication and perform analytics to inform requirements for both present and future tactical and combat military air and ground vehicles and against a complex moving enemy in a Multi-Domain Operational environment. The Army's modernization enterprise is integrated with that of the Joint Force. Networked aided target detection and recognition, networked survivability, autonomous tactical behaviors, AI-enabled decision support agent, and data management technologies on multiple ground and aviation platforms are critical to success on the modern battlefield.				
FY 2025 Plans: Will mature and demonstrate additional ground vehicle platforms, aviation integration, and applicable multi-service network communication and perform analytics to inform requirements for both present and future tactical and combat military air and ground platforms against a complex moving enemy in a Multi-Domain Operational environment.				
FY 2024 to FY 2025 Increase/Decrease Statement: Funding change reflects planned lifecycle of this effort.				
Accomplishments/Planned Programs Subtotals		4.993	18.381	23.722
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
N/A				
D. Acquisition Strategy				
N/A				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2025 Army										Date: March 2024		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603041A / All Domain Convergence A dvanced Technology				Project (Number/Name) CM8 / Convergence Battlefield Integration			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
CM8: <i>Convergence Battlefield Integration</i>	-	7.831	1.049	-	-	-	-	-	-	-	0.000	8.880
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project integrates and demonstrates aided target detection and recognition, autonomous tactical behaviors, Artificial Intelligence (AI)-enabled decision support agent, and data management technologies in Multi-Domain Operations (MDO) field experiments. This Project integrates these technologies on tactical ground, air, air and missile defense, fires, network platforms and other missions to demonstrate reduced sensor to shooter timelines and evaluate operational performance in representative MDO scenarios during annual field experiments.

Work in this Project complements Program Element (PE) 0602181A (All Domain Convergence Applied Research).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

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

	FY 2023	FY 2024	FY 2025
Title: Convergence Ground Platform System Integration	5.433	-	-
Description: Integration of ground efforts in direct support of maturing and demonstrating Project Convergence capabilities. This effort matures and demonstrates ground vehicle technologies as an integrated system and system of systems to reduce sensor to shooter targeting time, increase real-time battlefield understanding and ensure communications across all echelons.			
Title: Convergence Aviation Platform Integration	2.396	-	-
Description: Integration of Aviation/Future Vertical Lift efforts in direct support of maturing and demonstrating Project Convergence capabilities. Focus is on integration of capabilities such as geo-location and identification of targets from Army aviation assets, air to ground situational awareness and target data exchange, exchange of unmanned asset control, advanced tactical and teaming behaviors, synchronized data management, and efficient usage of air lethality assets.			
Title: Convergence Joint and Multinational Integration	0.002	-	-
Description: Integration with Joint and Multi-National Partner technologies to demonstrate cross domain capabilities and concepts.			
Title: Coordinated Lethality Advanced Development	-	1.049	-

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<p>Description: This effort investigates commercial off the shelf items to determine those with high reward for use in achieving lethality across domains.</p> <p>FY 2024 Plans: Investigate commercial off the shelf technologies with the intent of achieving increased lethality through reconnaissance and surveillance capabilities.</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Funding decrease due to life cycle evolution.</p>			
Accomplishments/Planned Programs Subtotals	7.831	1.049	-

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

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

UNCLASSIFIED

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Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603041A / All Domain Convergence A Advanced Technology				Project (Number/Name) DA4 / All Domain Convergence Engineering & Architectures			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
DA4: All Domain Convergence Engineering & Architectures	-	16.300	13.902	-	-	-	3.006	2.004	2.004	2.004	0.000	39.220
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project enables critical engineering and architecture support to all Army modernization priorities as the Army pursues convergence. Full development of mature system and system of systems level architectures ensure objective and data-driven analyses can be performed on new Army technologies and modernization efforts. Development of digital engineering products for new Army technologies currently under development enable digital analyses and assessments to be performed rapidly and repeatedly prior to full scale field tests like Project Convergence.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

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

	FY 2023	FY 2024	FY 2025
Title: Engineering for Architectures	11.300	13.902	-
Description: The engineering and architecture project provides critical systems engineering and codesigning of systems at the design phase in a digital engineering environment to improve performance and integration. This includes development and integration of architecture and engineering products from system level to a full system of systems level, models and simulations, software engineering, and other key efforts to support senior leader decisions.			
FY 2024 Plans: Will develop and integrate system and system of systems level architectures of signature modernization priorities into a full Army Materiel Enterprise architecture baseline. Will leverage system of systems architecture in performing assessments of new and evolving system requirements to ensure system of systems integration in support of the Army of 2030 and 2040. Will perform portfolio health assessment modeling and simulation to inform Project Convergence and generate digital engineering artifacts. Will leverage system of systems architectures and engineering artifacts to inform cross warfighting function assessments to support senior leader decisions. Will leverage system of systems architectures and engineering artifacts to support AFC's mission of Delivering Army 2030 and Designing Army 2040. Designing Army 2030 support includes documenting DOTMLPF-P integrated architecture to ensure Army 2030 is delivered on time. Designing Army 2040 support includes assessing new formation based requirements against the baseline architecture to assess changes in performance between Army 2030 and Army 2040.			
FY 2024 to FY 2025 Increase/Decrease Statement: Funding decrease due to integration of the software modules into broader requirements software for sustainment.			
Title: Technology Integration Analysis for Army Modernization Priorities	2.000	-	-

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Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603041A / <i>All Domain Convergence A dvanced Technology</i>	Project (Number/Name) DA4 / <i>All Domain Convergence Engineering & Architectures</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
Description: Conduct independent assessments of the feasibility, scalability and interoperability of technologies evaluated in an all-domain convergence environment. Primary focus will be to develop and assess architectures, develop models and simulations to support trade studies and decision making across the Army Modernization Priority technologies, and evaluation of planned demonstration efficacy.			
Title: Army Capability Architecture Development and Integration Environment (ArCADIE)	3.000	-	-
Description: ArCADIE will develop and demonstrate the Army's authoritative cloud-based data source for Army Architectures, data and tools. This effort develops ArCADIE enhancements, architectures, and dashboards to enable experimentation, capability development, and S&T efforts in support of Army modernization.			
Accomplishments/Planned Programs Subtotals	16.300	13.902	-

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

N/A

Remarks

D. Acquisition Strategy

N/A