Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army											Date: April 2022	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603043A *I Air Platform Advanced Technology*							
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	-	-	0.754	17.946	-	17.946	18.557	20.486	17.036	15.635	0.000	90.414
CL4: *Air Platform Enabling University Adv Development*	-	-	0.754	1.251	-	1.251	1.361	1.455	1.157	1.157	0.000	7.135
CV1: *Control & Autonomy for Tactical Superiority Adv*	-	-	-	1.140	-	1.140	1.248	1.247	1.144	1.143	0.000	5.922
CV2: *Structures Platform Int Resilience & Efficiency*	-	-	-	3.124	-	3.124	3.343	5.109	6.507	5.110	0.000	23.193
CX1: *Advanced Rotors Advanced Tech*	-	-	-	2.618	-	2.618	2.645	2.669	2.670	2.669	0.000	13.271
CX2: *Next Generation Aviation Transmission Adv Tech*	-	-	-	4.389	-	4.389	4.455	4.450	-	-	0.000	13.294
DC3: *HPC For Army Aviation Concepts*	-	-	-	5.424	-	5.424	5.505	5.556	5.558	5.556	0.000	27.599

Note

In Fiscal Year 2023 (FY23), Project CV1 (Control & Autonomy for Tactical Superiority Adv) and Project CV2 (Structures Platform Int Resilience & Efficiency) are New Start Projects.

Project CX1 (Advanced Rotors Advanced Tech) is a realignment from Program element (PE) 0603465A (Future Vertical Lift Advanced Technology) / Project AJ7 (Advanced Rotors Advanced Technology).

Project CX2 (Next Generation Aviation Transmission Adv Tech) is a realignment from PE 0603465A (Future Vertical Lift Advanced Technology) / Project AJ3 (Next Generation Rotorcraft Transmission Adv Tech).

Project DC3 (HPC For Army Aviation Concepts) is a realignment from PE 0603465A (Future Vertical Lift Advanced Technology) / Project AL3 (Next Generation Rotorcraft Transmission Adv Tech).

A. Mission Description and Budget Item Justification

This Program Element (PE) undertakes advanced technology efforts that support and enable the overall Army Aviation portfolio in general, and the Army's modernization priority for Future Vertical Lift (FVL). Vital and enduring research into advanced technologies is conducted pertinent to the air portfolio that supports mid-to-long

term requirements in contested operational environments and technologies that have broad application to FVL modernization, as well as overall Army and specific Department of Defense (DoD) aviation needs.

Research in this PE contributes to the Army Science and Technology (S&T) air systems portfolio and is fully coordinated with efforts in PE 0602148A (Future Vertical Lift Technology), PE 0603465A (Future Vertical Lift Advanced Technology) and PE 0602183A (Air Platform Applied Research).

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

Research in this PE is performed by the United States Army Futures Command (AFC).

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	0.754	0.000	-	0.000
Current President's Budget	0.000	0.754	17.946	-	17.946
Total Adjustments	0.000	0.000	17.946	-	17.946
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	17.946	-	17.946

Change Summary Explanation

FY23 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603043A / *Air Platform Advanced Technology*	Project (Number/Name) CL4 / *Air Platform Enabling University Adv Development*	

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
CL4: *Air Platform Enabling University Adv Development*	-	-	0.754	1.251	-	1.251	1.361	1.455	1.157	1.157	0.000	7.135
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project focuses on experimentation and demonstration of advanced technologies originating from extramural applied research in academia pertaining to navigation/ routing, autonomous robotic vehicles, artificial intelligence and machine learning as applied to aerial mobility and maneuver, holistic survivability, teaming, integrated mission systems, air-launched effects, and other innovative air enabling applied research technologies, that will accelerate the Army modernization in next generation aerial vehicles. This Project will mature and integrate advanced efforts to focus more on mid to far-term Army modernization priorities while also maintaining delivery of near-term technologies fundamental to the modernization priorities. This effort conducts and demonstrates advanced technology efforts arising from academic research in all areas of strategic importance to Army Aviation in artificial intelligence / machine learning (AI/ML), autonomous teaming systems, survivability, aeromechanics, advanced vertical take-off and landing (VTOL) design & concepts, flight dynamics, vibration & noise control, propulsion, human factor engineering and structures and materials, etc., by bringing competitively selected Universities with research and development teams into Technical Alliances. The Project will continuously experiment with methods to identify, demonstrate and transition novel technology from entities that might not otherwise collaborate with the Department of Defense (DoD), with the end goal of accelerating the adoption of cutting-edge applied research technology for the warfighter in the Army aviation portfolio.

Research in this Project supports the Army Modernization Priority Future Vertical Lift and the overall aviation portfolio.

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

Research in this Project is performed by the United States (US) Army Futures Command.

Research in this Project is done in coordination with and transitions to Program Element (PE) 0603465A (Future Vertical Lift Advanced Technology) and PE 0603119A (Ground Advanced Technology), and is also coordinated with its sister project in PE 0602148A (Future Vertical Lift Technology) and PE 0602183A (Air Platform Applied Research).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Advanced Teaming	-	0.320	-
Description: Demonstrate and integrate capabilities to self-organize and coordinate large teams of unmanned vehicles participating in long-term reconnaissance operation using distributed command/control architectures despite communication delays and/or failures and showcasing resilience to wide-area jamming.			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603043A / *Air Platform Advanced Technology*	**Project (Number/Name)** CL4 / *Air Platform Enabling University Adv Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
FY 2022 Plans: Will further mature and demonstrate decentralized self-organization AI/ML algorithms among large team of unmanned heterogeneous autonomous assets deployed inside contested environments that are robust to emerging threats, lost links, or change in mission priorities. Will integrate and provide decentralized interactions that will provide knowledge bases, reasoning, planning, sensing and control tools that reside inside the entire vehicle team and mobile computational resources. Will implement scalable approaches for perception to allow for rapid evaluation and recognition of previously detected landmarks ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Realigned funds to new task "Vertical Lift Advanced Technologies" in this Project.			
Title: Coordinated Air-Ground Vehicle Maneuvering ***Description:*** Demonstrate and integrate a technology prototype platform consisting of a fleet of ground and air vehicles that will perform an autonomous reconnaissance mission in a relevant environment. ***FY 2022 Plans:*** Will demonstrate level coordinated landing/take-off of unmanned aerial system from stationary platform near ground vehicle in simulations. Will further mature and deploy software for air-ground coordination software support autonomous reconnaissance. Will integrate and demonstrate coordination strategies for autonomous ground and air vehicles to perform tactical reconnaissance mission. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Realigned funds to new task "Vertical Lift Advanced Technologies" in this Project.	-	0.407	-
Title: Vertical Lift Advanced Technologies ***Description:*** Conduct advanced development within academia to mature and integrate Vertical Lift research of promising and emerging technologies. ***FY 2023 Plans:*** Will mature and integrate emerging technologies in areas of autonomous teaming systems, survivability, aeromechanics, advanced VTOL design & concepts, flight dynamics, vibration & noise control, propulsion, human factor engineering and structures & materials. ***FY 2022 to FY 2023 Increase/Decrease Statement:***	-	-	1.251

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603043A / *Air Platform Advanced Technology*	**Project (Number/Name)** CL4 / *Air Platform Enabling University Adv Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Combined tasks "Advanced Teaming" and "Coordinated Air-Ground Vehicle Maneuvering" from FY22 to "Vertical Lift Advanced Technologies"			
Title: SBIR/STTR Transfer ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC ?638 ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC ?638	-	0.027	-
Accomplishments/Planned Programs Subtotals	-	0.754	1.251

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603043A / *Air Platform Advanced Technology*	Project (Number/Name) CV1 / *Control & Autonomy for Tactical Superiority Adv*	

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
CV1: *Control & Autonomy for Tactical Superiority Adv*	-	-	-	1.140	-	1.140	1.248	1.247	1.144	1.143	0.000	5.922
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2023.

This is a New Start Project in Fiscal Year 2023 (FY23).

A. Mission Description and Budget Item Justification

This Project will deliver advanced flight controls, autonomy technologies, and new handling qualities criteria are implemented and tested in a realistic environment to demonstrate their functionality and increase their technical readiness level (TRL). This Project also delivers demonstrated and matured flight controls and autonomy technologies at TRL 6 to transition partners.

Research in this Project is fully coordinated with Program Element (PE) 0602183A (Air Platform Applied Technology).

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

Research in this Project is performed by the United States Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Adaptive Tactical Autonomy and Control (ATAC) Technology Demonstration	-	-	1.140
Description: Mature, integrate, and demonstrate advanced flight control technologies and state-of-the-art autonomy algorithms that provide Future Vertical Lift (FVL) aircraft with enhanced maneuverability and agility, reduced cognitive workload, improved survivability through damage tolerance, and the ability to operate on an autonomy spectrum from piloted to fully autonomous and exploit degraded environments as a force multiplier.			
FY 2023 Plans: Will demonstrate advanced high-speed flight control algorithms within the flight-envelop-limits of Army flying laboratories. Will demonstrate control strategies for seamless hand-off from pilot to autonomous system, and back, for optionally piloted operations.			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603043A / *Air Platform Advanced Technology*	**Project (Number/Name)** CV1 / *Control & Autonomy for Tactical Superiority Adv*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Will collaborate with the original equipment manufacturers (OEM?s) to mature and flight test new high-speed handling qualities criteria and Mission Task Elements (MTE). ***FY 2022 to FY 2023 Increase/Decrease Statement:*** This is a New Start in FY23.			
Accomplishments/Planned Programs Subtotals	-	-	1.140

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603043A / *Air Platform Advanced Technology*	Project (Number/Name) CV2 / *Structures Platform Int Resilience & Efficiency*	

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
CV2: *Structures Platform Int Resilience & Efficiency*	-	-	-	3.124	-	3.124	3.343	5.109	6.507	5.110	0.000	23.193
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2023.

This is a New Start Project in Fiscal Year 2023 (FY23).

A. Mission Description and Budget Item Justification

This Project will ensure a continuous stream of transition-ready critical structures advanced technologies for improvement of performance (via weight efficiency and multifunctionality for parasitic weight avoidance) and resilience (survivability, sustainment, and operational availability).

Research in this Project is fully coordinated with Program element (PE) 0602183A (Air Platform Applied Technology).

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

Research in this Project is performed by the United States Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Adaptive Resilient Engineered Structures (ARES)	-	-	3.124
Description: Mature, integrate, and demonstrate advanced structures technologies providing performance, survivability, and sustainment benefits with broad applicability across platform scale and role, enabling mission success for manned/unmanned Future Vertical Lift (FVL) platforms in the contested environment of multi-domain operations.			
FY 2023 Plans: Will further mature, test, and integrate advanced structures technologies, quantifying their contribution to improved efficiency, performance, survivability, and sustainment (reliability and availability). Will leverage trade study results to design an integrated demonstration exploiting the synergy of technologies including weight-saving, fatigue-tolerant, affordable, multifunctional, and damage-tolerant configurations for primary and secondary structure.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603043A / *Air Platform Advanced Technology*	**Project (Number/Name)** CV2 / *Structures Platform Int Resilience & Efficiency*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
This is a New Start in FY23.			
Accomplishments/Planned Programs Subtotals	-	-	3.124

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603043A / *Air Platform Advanced Technology*	Project (Number/Name) CX1 / *Advanced Rotors Advanced Tech*	

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
CX1: *Advanced Rotors Advanced Tech*	-	-	-	2.618	-	2.618	2.645	2.669	2.670	2.669	0.000	13.271
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In Fiscal Year 2023 (FY23) this Project is administratively realigned from:
Program Element (PE) 0603465A / Future Vertical Lift Advanced Technology
* Project AJ7 / Advanced Rotors Advanced Technology

A. Mission Description and Budget Item Justification

This Project investigates Future Vertical Lift (FVL) and other Army and Department of Defense (DoD) advanced drive train technologies that increase performance and double current drivetrain life cycles while improving their reliability and maintainability.

Research in this Project is fully coordinated with PE 0602183A (Air Platform Applied Technology).

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

Research in this Project is performed by the United States Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: High Speed Highly Efficient Rotors	-	-	2.618
Description: This effort demonstrates full scale, integrated rotor system technologies through the assessment of alternative designs aimed to satisfy future capability needs for aviation and FVL increased system durability, efficiency, speed, range, and payload. Potential technologies include: integrated high speed, low drag rotor technologies for high speed configurations; interactional aerodynamics tailoring between rotor and body & auxiliary lift/ propulsors; light weight, low volume, efficient and high authority electro-mechanical actuators (EMAs); reliable and robust actuators/hubs/controls for Independent Blade Control (IBC)/ swashplateless rotors; active/passive flow control; and automated track and balance.			
FY 2023 Plans: Will complete fabrication of demonstration hardware. Will conduct rotor blade and hub structural testing. Will conduct full scale whirl test planning.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603043A / *Air Platform Advanced Technology*	**Project (Number/Name)** CX1 / *Advanced Rotors Advanced Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
In FY23 this effort is realigned from PE 0603465A (Future Vertical Lift Advanced Technology) / Project AJ7 (Advanced Rotors Advanced Technology).			
Accomplishments/Planned Programs Subtotals	-	-	2.618

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603043A / *Air Platform Advanced Technology*	Project (Number/Name) CX2 / *Next Generation Aviation Transmission Adv Tech*	

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
CX2: *Next Generation Aviation Transmission Adv Tech*	-	-	-	4.389	-	4.389	4.455	4.450	-	-	0.000	13.294
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In Fiscal Year 2023 (FY23) this Project is administratively realigned from:
Program Element (PE) 0603465A / Future Vertical Lift Advanced Technology
* Project AJ3 / Next Generation Rotorcraft Transmission Adv Tech

A. Mission Description and Budget Item Justification

This Project develops and ground demonstrates variable-speed advanced transmission technologies that can be matured and integrated into the development of Future Vertical Lift (FVL) platforms and other Army and Department of Defense (DoD) aviation systems.

Research in this Project is fully coordinated with PE 0602183A (Air Platform Applied Technology).

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

Research in this Project is performed by the United States Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: High Reduction Ratio Transmission (HRT)	-	-	4.389
Description: This effort will mature and demonstrate the technologies necessary for development, design, fabrication, and testing of a high reduction-ratio transmission in two stages or less (60:1 reduction ratio) with high efficiency and improved reliability against corrosion and seal leakage. Technology demonstrations from this effort will be applicable to FVL platforms.			
FY 2023 Plans: Will perform component level fabrication, assembly, and risk reduction testing of transmission technologies that produces a 60:1 reduction ratio two-stage gearbox design for significant weight and volume reduction enabling extended range and component life while improving reliability and reducing life-cycle costs for manned and unmanned applications.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603043A / *Air Platform Advanced Technology*	**Project (Number/Name)** CX2 / *Next Generation Aviation Transmission Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
In FY23 this effort is realigned from PE 0603465A (Future Vertical Lift Advanced Technology) / Project AJ3 (Next Generation Rotorcraft Transmission Adv Tech).			
Accomplishments/Planned Programs Subtotals	-	-	4.389

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603043A / *Air Platform Advanced Technology*	Project (Number/Name) DC3 / *HPC For Army Aviation Concepts*	

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
DC3: *HPC For Army Aviation Concepts*	-	-	-	5.424	-	5.424	5.505	5.556	5.558	5.556	0.000	27.599
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In Fiscal Year 2023 (FY23), this Project is realigned from Program Element (PE) 0603465A (Future Vertical Lift Advanced Technology) / Project AL3 (HPC for Rotorcraft Applications Adv Tech).

A. Mission Description and Budget Item Justification

This Project develops and demonstrates the use of high-fidelity computational fluid dynamics for Future Vertical Lift (FVL) platforms through the utilization of Department of Defense (DoD) High- Performance Computing (HPC) and software tools for cutting-edge modeling and simulation, as well as adding software capabilities for workflow automation and design space exploration. Efforts in this Project are also applicable to the family of FVL and Future Unmanned Aircraft System (FUAS) platforms.

Work in this Project is fully coordinated with PE 0602183A (Air Platform Applied Research).

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

Research is performed by the United States (US) Army Engineer Research and Development Center and coordinated with US Army Futures Command.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Engineered Resilient Systems (ERS) for Army Aviation	-	-	2.359
Description: This effort supports Future Vertical Lift by exploiting advancements in physics-based software tools to provide rapid engineering analysis of proposed rotorcraft platforms, providing high-fidelity computational modeling of candidate Future Attack Reconnaissance Aircraft (FARA) platforms during the FARA down-selection, increasing the speed of simulations by automating simulation setup and execution on DoD HPC systems, and maturing and demonstrating the use of advanced machine learning techniques for aviation datasets to inform both the development of FVL systems and current operations.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603043A / *Air Platform Advanced Technology*	**Project (Number/Name)** DC3 / *HPC For Army Aviation Concepts*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Will provide automated tools and plugins to evaluators to support FARA / Future Long-Range Assault Platforms (FLRAA) design evaluations. Will expand computational modeling and optimization efforts to include additional domains, e.g., advanced rotor blade material and acoustic considerations. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** In Fiscal Year (FY) 2023, this effort is realigned from Program Element (PE) 0603465A (Future Vertical Lift Advanced Technology) / Project AL3 (HPC for Rotorcraft Applications Adv Tech).			
Title: Advanced Computational Technologies for Army Aviation ***Description:*** This effort supports FVL by utilizing advanced machine-assisted design algorithms to explore design spaces and choose resilient platform variants. Advanced computational techniques will leverage automated design processes to expand computational testbeds in support of testing and evaluation. Increase high accuracy physics in modeling and simulation to optimize platforms for all operational environments and mission scenarios. Provide multi-fidelity computational models of candidate FARA, FLRAA, and FTUAS platforms to support acquisition decision-makers. ***FY 2023 Plans:*** Will couple engineering design evaluation with simulated mission scenario performance for mission-effectiveness design evaluation. Will expand computational modeling capability to secret and/or above secured high-performance computing. Will evaluate the usability of physics-informed machine learning methods and approaches to impact design and analysis of rotorcraft systems. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** In Fiscal Year (FY) 2023, this effort is realigned from Program Element (PE) 0603465A (Future Vertical Lift Advanced Technology) Project AL3 (HPC for Rotorcraft Applications Adv Tech).	-	-	3.065
Accomplishments/Planned Programs Subtotals	-	-	5.424

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A