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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army											Date: April 2022	
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 2: Applied Research					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research							
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	-	-	6.597	41.588	-	41.588	41.582	37.740	41.034	42.661	0.000	211.202
CL5: Air Platform Enabling University Applied Research	-	-	0.698	0.905	-	0.905	0.524	0.952	1.283	1.283	0.000	5.645
CL8: Aviation Teaming Autonomy Concepts & Technologies	-	-	3.945	4.168	-	4.168	4.230	4.354	4.355	4.354	0.000	25.406
CN1: Disruptive Countermeasure Concepts for Aviation	-	-	1.954	7.387	-	7.387	7.513	7.610	7.184	7.182	0.000	38.830
CU7: Control & Autonomy for Tactical Superiority Tech	-	-	-	4.485	-	4.485	4.175	4.410	5.606	4.514	0.000	23.190
CU8: Structures Tech for Enduring Efficient Resilience	-	-	-	1.648	-	1.648	1.675	1.040	1.041	1.040	0.000	6.444
CU9: Systems Design Technology	-	-	-	3.109	-	3.109	3.121	3.009	5.193	5.296	0.000	19.728
CW3: Advanced Rotors Applied Technology	-	-	-	2.589	-	2.589	2.602	-	-	2.625	0.000	7.816
CW4: Air Vehicle Structures and Dynamics Tech	-	-	-	2.985	-	2.985	3.029	3.055	3.057	3.056	0.000	15.182
CW5: Experimental and Computational Aeromechanics Tech	-	-	-	6.600	-	6.600	6.805	6.865	6.868	6.866	0.000	34.004
CW6: Future UAS Propulsion Technology	-	-	-	3.414	-	3.414	3.544	3.575	3.575	3.574	0.000	17.682
CW7: High Speed and Efficient VTOL Vehicle Tech	-	-	-	1.549	-	1.549	1.573	1.571	1.572	1.572	0.000	7.837
CW8: Next Generation Aviation Transmission Apl Tech	-	-	-	1.482	-	1.482	1.504	-	-	-	0.000	2.986

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DC2: <i>High Performance Computing for Rotorcraft Apl Tech</i>	-	-	-	1.267	-	1.267	1.287	1.299	1.300	1.299	0.000	6.452

A. Mission Description and Budget Item Justification

This Program Element (PE) undertakes applied research 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 applied research is conducted in 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 0603043A (Air Platform Advanced Technology).

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	6.597	0.000	-	0.000
Current President's Budget	0.000	6.597	41.588	-	41.588
Total Adjustments	0.000	0.000	41.588	-	41.588
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	41.588	-	41.588

Change Summary Explanation

Fiscal Year 2023 (FY23) funding increase reflects the fact that the FY22 President's Budget request did not include out-year funding.

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

Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CL5 / Air Platform Enabling University Applied Research
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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
CL5: Air Platform Enabling University Applied Research	-	-	0.698	0.905	-	0.905	0.524	0.952	1.283	1.283	0.000	5.645

A. Mission Description and Budget Item Justification

This Project focuses on applied research 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 perform discovery research 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 Project conducts applied research and development leading to all the potential emerging technologies in 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 & materials, etc., by bringing competitively selected Universities with research and development teams into Technical Alliances. The Project will also 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 Future Vertical Lift Army Modernization Priority 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.

This research is done in coordination with and transitions to Program Element 0602148A (Future Vertical Lift Technology), Program Element 0603465A (Future Vertical Lift Advanced Technology Development) and Program Element 0603043A (Air Platform Advanced Technology) and is also coordinated with its sister project in Program Element 0602144A (Ground Technology).

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

	FY 2021	FY 2022	FY 2023
<p>Title: Advanced Teaming</p> <p>Description: Develop 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.</p> <p>FY 2022 Plans:</p>	-	0.321	-

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Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CL5 / Air Platform Enabling University Applied Research		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Will investigate and develop 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 develop decentralized interactions that will provide knowledge bases, reasoning, planning, sensing and control tools that reside inside the entire vehicle team and mobile computational resources.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Realigned funds to the new task "Vertical Lift Applied Research" within this Project.</p>				
<p>Title: Coordinated Air-Ground Vehicle Maneuvering</p> <p>Description: Develop the technology for a fleet of ground and air vehicles to have the capabilities required to perform an autonomous reconnaissance mission in a relevant environment.</p> <p>FY 2022 Plans: Will investigate level coordinated landing/take off of unmanned aerial system from stationary platform near ground vehicle in simulations. Will develop software algorithms for air-ground coordination software support autonomous reconnaissance. Will perform applied research on developing coordination strategies for autonomous ground and air vehicles to perform tactical reconnaissance mission.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Realigned funds to the new task "Vertical Lift Applied Research" within this Project.</p>		-	0.352	-
<p>Title: Vertical Lift Applied Research</p> <p>Description: Conduct applied research in academia to elevate Vertical Lift research and continue to investigate promising and emerging technologies</p> <p>FY 2023 Plans: Will conduct applied research in 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.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Combined/realigned tasks "Advanced Teaming" and "Coordinated Air-Ground Vehicle Maneuvering" from this Project to this "Vertical Lift Applied Research" effort.</p>		-	-	0.905
<p>Title: SBIR/STTR Transfer</p> <p>FY 2022 Plans:</p>		-	0.025	-

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Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CL5 / Air Platform Enabling University Applied Research		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
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				
Accomplishments/Planned Programs Subtotals		-	0.698	0.905
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CL8 / Aviation Teaming Autonomy Concepts & Technologies			
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
CL8: Aviation Teaming Autonomy Concepts & Technologies	-	-	3.945	4.168	-	4.168	4.230	4.354	4.355	4.354	0.000	25.406

A. Mission Description and Budget Item Justification

This Project establishes multi-level simulations, physics-based models, and artificial intelligence/machine learning (AI/ML) algorithms and methods to inform and advance capabilities for heterogeneous advanced teaming concepts to support operations in complex and peer contested environments. Innovative solutions, knowledge, and understanding generated from this effort informs Program Element (PE) 0602148A Future Vertical Lift Technology / Project AK9 (Adv Teaming for Tactical Aviation Operations Tech).

Research in this Project is fully coordinated with PE 0602148A (Future Vertical Lift Technology) and PE 0603465A (Future Vertical Lift Advanced Technology Development).

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

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

	FY 2021	FY 2022	FY 2023
Title: Intelligent Unmanned Aerial System Teaming Technologies	-	3.801	4.168
<p>Description: Enables the establishment of component technologies to support resilient, multi-modal, survivable Unmanned Aircraft System (UAS) teams that can plan and act on time-scales beyond human capability and have a robust shared understanding of contested and dynamic environments to support effective tactical engagement. Specific topics include 1) novel artificial-intelligence algorithms and methods for adaptive team composition and control, 2) increased team knowledge base and understanding of local and global world models, 3) hierarchical, composable, and adaptive learning methods for increased mission resilience, and 4) understanding interaction and scalability between, amongst, and across heterogeneous team members and the environment.</p> <p>FY 2022 Plans: Will develop methods and technologies to provide heterogeneous unmanned teams increased endurance; enable unmanned air and ground vehicle teams to adapt energy usage in dynamic situations; develop algorithms to help predict energy demand between unmanned teams; expand simulation hardware and software to client and server model to enable concurrent simulations; integrate simulation environments with established Department of Defense (DoD) terrain modeling data; investigate techniques to</p>			

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Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CL8 / Aviation Teaming Autonomy Concepts & Technologies		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>achieve robust unmanned aerial system homing performance in Global Positioning System (GPS)-denied environment; develop simulated agent-level behaviors that achieve coordinated multi-agent target homing through emergent multi-agent interactions; develop threat resilient autonomous tactical behaviors contextualized in perimeter defense and pursuit-evasion, accounting for team maneuver relative to defending agents and anticipated attrition.</p> <p>FY 2023 Plans: Will develop methods and technologies to enable teams of unmanned air vehicles to autonomously detect, identify, locate, and report radio frequency (RF) signals of opportunity; will develop physics based models for Air-Launched Effects (ALE) simulation and advanced ALE/ Future Attack Reconnaissance Aircraft (FARA) teaming simulation; will simulate ALE multi-agent tactics for RF homing and will assess multi-operator, multi-agent simulation with real human operators replacing simulated operators; will investigate algorithms for detection, localization, and navigation on a s-UAS; will create control algorithms for high speed obstacle avoidance, GPS-denied localization, and cooperative tactical teaming behaviors; will examine efficacy of wireless power transfer hardware and battery management electronics for s-UAS; will determine power requirements for s-UAS and will examine effects of platform design variables, control methodologies, and autonomous functions on performance; will investigate s-UAS endurance with optimized mission planning logistics under fixed energy constraints.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding change reflects planned lifecycle of this effort.</p>				
<p>Title: SBIR/STTR Transfer</p> <p>Description: Funding transferred in accordance with Title 15 USC ?638</p> <p>FY 2022 Plans: Funding transferred in accordance with Title 15 USC ?638</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638</p>		-	0.144	-
Accomplishments/Planned Programs Subtotals		-	3.945	4.168
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CN1 / Disruptive Countermeasure Concepts for Aviation			
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
CN1: <i>Disruptive Countermeasure Concepts for Aviation</i>	-	-	1.954	7.387	-	7.387	7.513	7.610	7.184	7.182	0.000	38.830

A. Mission Description and Budget Item Justification

This Project investigates advanced technologies to reduce Future Vertical Lift (FVL) platform susceptibility and vulnerability to damage from guided and unguided threats, as well as technologies to defeat small arms, rocket, and missile threats. This Project performs research and develops innovative detect and defeat technologies against next-generation threats to the FVL. Areas of research include new laser materials and designs for in-band, low size, weight, power, and cost (SWaP-C) precision laser soft-kill countermeasures operating in the mid- and long-wave infrared, lethality effects of ultrashort pulsed lasers, and sensitive radio frequency (SeRF) detection modality for use as aircraft survivability equipment (ASE). In addition, this Project will also perform research and development on the use of remotely-deployed, passive multi-modal sensors to localize threat ground vehicles and discriminate decoys.

Research in this Project is fully coordinated with Program Element (PE0 0602148A (Future Vertical Lift Technology) and PE 0603465A (Future Vertical Lift Advanced Technology).

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

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

	FY 2021	FY 2022	FY 2023
Title: Cognitive Countermeasures Technology Development	-	1.882	2.064
Description: This effort investigates and matures novel materials, components, and techniques to counter legacy and emerging threats to FVL platforms. Emphasis will be placed on technologies and approaches to enable a robust, holistic countermeasure capability for target defeat, regardless of threat characteristics or guidance mode.			
FY 2022 Plans:			
Will investigate dual-wavelength pumping, enabling beyond quantum defect limit efficiency, towards a diode pumped, in-band Midwave Infrared (MWIR) laser source for infrared countermeasures; conduct experiments exploring Ultra-Short Pulse Laser (USPL) out-of-band optical and electro-optical lethality effects; identify necessary USPL power/intensity/wavelength requirements			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CN1 / Disruptive Countermeasure Concepts for Aviation

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>for effective counter-threat lethality capability; design and develop research sensor for detection of specific targets and validate models against select targets.</p> <p>FY 2023 Plans: Will investigate a range of rare earth-doped laser materials based on low-phonon hosts; will conduct comprehensive spectroscopic research aiming at directly diode-pumped, in-band MWIR laser source; will conduct laser material selection among the studied materials aimed at avoidance of two-photon pump absorption by hosts ? thus ensuring laser device longevity for military use; will investigate temperature dependence of device laser parameters aiming at drastic efficiency improvements; will investigate USPL optical effects against realistic surrogate target system and validate sensor Disrupt/Damage/Defeat using non-optical USPL effects; will develop and validate sensor hardware with algorithms for detection of specific targets and perform breadboard validation and assessments against select targets.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding increase supports planned lifecycle for this effort.</p>			
<p>Title: Deep Autonomous Sensing</p> <p>Description: This effort investigates the ability to localize and recognize the formation of threat ground vehicles deep in the battlefield in support of the FVL platform. Emphasis will be placed on developing novel, passive multi-modal sensors on aerial, ground, and re-locatable platforms to enable high fidelity, low false alarm target recognition and counter concealment and camouflage with decoy discrimination.</p> <p>FY 2023 Plans: Will generate processing and algorithms for layered hybrid networks of multi-modal, multi-component aerial and ground sensors that can autonomously deploy, localize, and track near-peer ground threat vehicles and explore techniques for discriminating decoys; will develop low size, weight, and power (SWaP) electric- and magnetic-field, acoustic, seismic, and infrasonic sensing capabilities to capture target signatures insensitive to obscurant, camouflage, and jamming; will explore sensor performance characteristics with metrics, fusing distributed data to enable efficient processing at the edge and information dissemination over low SWaP optical communication systems with the ability to operate in several data conditions including high rate burst; will investigate technologies and capabilities for emplacement and retrieval of ground sensors in challenging operational environments such as rugged terrain or mega-cities. Will advance approaches to remotely emplace sensors in optimal locations to maximize coverage and increase the likelihood of detection of threats and decoy discrimination.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>	-	-	5.323

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CN1 / Disruptive Countermeasure Concepts for Aviation

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding administratively realigned from PE 0602146A (Network C3I Technology) / Project AR1 (Robust, Resilient and Intelligent C3I Technology) to support Deep Autonomous Sensing research.			
Title: SBIR/STTR Transfer	-	0.072	-
Description: Funding transferred in accordance with Title 15 USC ?638			
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			
Accomplishments/Planned Programs Subtotals	-	1.954	7.387

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CU7 / Control & Autonomy for Tactical Superiority 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
CU7: Control & Autonomy for Tactical Superiority Tech	-	-	-	4.485	-	4.485	4.175	4.410	5.606	4.514	0.000	23.190

Note

This is a new start in FY 2023.

A. Mission Description and Budget Item Justification

This Project will develop and flight-validate new approaches and tools applicable to advanced high-speed configurations being considered for Future Vertical Lift (FVL) and transition to industry to ensure that FVL aircraft meet Army requirements. Work in this Project may also address and be applied to the needs of other Army and specific Department of Defense (DoD) aviation systems.

Research in this Project is fully coordinated with Program Element (PE) 0603043A (Air Platform Advanced 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) Tech	-	-	4.485
Description: Develop advanced vehicle management, flight control, and autonomy technologies that enable FVL aircraft to achieve superior maneuverability and agility at all speeds, effectively exploit extreme/degraded environmental conditions as a force multiplier, fight and win in presence of failure or damage, and operate on a cognitive-loading-spectrum from piloted to fully autonomous.			
FY 2023 Plans: Will collaborate with Original Equipment Manufacturers (OEMs) to use available flight data to compare, validate, and improve Future Attack Reconnaissance Aircraft (FARA) and Future Long-Range Assault Aircraft (FLRAA) models. Will mature and evaluate, in piloted simulation, algorithms for automatic reallocation of redundant controls to compensate for failure or battle damage. Will start enhancing Army-developed autonomy algorithms through the application of Machine Learning and Artificial Intelligence concepts.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CU7 / Control & Autonomy for Tactical Superiority Tech

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
In FY23 this effort is a new start.			
Accomplishments/Planned Programs Subtotals	-	-	4.485

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CU8 / Structures Tech for Enduring Efficient Resilience			
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
CU8: Structures Tech for Enduring Efficient Resilience	-	-	-	1.648	-	1.648	1.675	1.040	1.041	1.040	0.000	6.444

Note

This is a new start in FY 2023.

A. Mission Description and Budget Item Justification

This Project will ensure critical structures technologies providing improved weight efficiency, fatigue tolerance, parasitic weight avoidance, and integration / synergy opportunities will transition to Advanced Technology Development tasks to later provide Future Vertical Lift (FVL) Project Management Offices and Original Equipment Manufacturers mission performance benefit in terms of range/payload, survivability, sustainment, and operational availability. Research in this Project may also address and be applied to the needs of other Army and specific DoD aviation systems.

Research in this Project is fully coordinated with Program Element (PE) 0603043A (Air Platform Advanced 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: Multifunctional Advanced Structural Concepts (MASC)	-	-	1.648
Description: Develop innovative, critical, highly weight-optimized, durable, fatigue-resistant, damage-tolerant structural concepts exploiting multifunctionality for weight savings and broad multi-scale FVL benefit impact.			
FY 2023 Plans: Will develop innovative concepts enhancing structural weight efficiency applicable to FVL across size classes. Will develop structural concepts using multifunctionality for parasitic weight avoidance. Will apply integration methodology in guiding development of technologies to optimize benefits of reduced weight, increased resilience, and reduced maintenance.			
FY 2022 to FY 2023 Increase/Decrease Statement: In FY23, this effort is a new start.			
Accomplishments/Planned Programs Subtotals	-	-	1.648

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Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) CU8 / <i>Structures Tech for Enduring Efficient Resilience</i>

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

N/A

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army	Date: April 2022
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Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CU9 / Systems Design Technology
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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
CU9: <i>Systems Design Technology</i>	-	-	-	3.109	-	3.109	3.121	3.009	5.193	5.296	0.000	19.728

Note

This is a new start in FY 2023.

A. Mission Description and Budget Item Justification

This Project will leverage large datasets and advances in multi-disciplinary optimization techniques, incorporate higher fidelity analysis, and machine learning techniques to improve predictions of emerging aviation requirements and system complexity.

Research in this Project is fully coordinated with Program Element (PE) 0603043A (Air Platform Advanced 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: Concept Design and Optimization Methods	-	-	3.109
Description: Expand scope of design and assessment support across Future Vertical Lift (FVL) lines of effort (LOEs) and the science and technology portfolio. Incorporate method enhancements to improve timeliness, accuracy, and detail of conceptual design (performance, weight, and cost).			
FY 2023 Plans: Will develop tools and methods to improve rotorcraft design and optimization with advanced component models. Will apply tools to design and analyze Future Vertical Lift and other manned/unmanned air vehicle concepts.			
FY 2022 to FY 2023 Increase/Decrease Statement: In FY23 this effort is a new start.			
Accomplishments/Planned Programs Subtotals	-	-	3.109

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) CU9 / <i>Systems Design Technology</i>

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

Remarks

D. Acquisition Strategy
N/A

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

Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CW3 / Advanced Rotors Applied 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
CW3: Advanced Rotors Applied Technology	-	-	-	2.589	-	2.589	2.602	-	-	2.625	0.000	7.816

Note
In Fiscal Year 2023 (FY23) this Project is realigned from Program Element (PE) 0602148A (Future Vertical Lift Technology) / Project AJ6 (Advanced Rotors Technology).

A. Mission Description and Budget Item Justification
This Project investigates Future Vertical Lift (FVL) and other Army and Department of Defense (DoD) aviation systems technologies that mature high speed and highly efficient rotor and hub system designs.

Research in this Project is fully coordinated with PE 0603043A (Air Platform Advanced 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: Advanced Hubs Tech	-	-	2.589
Description: Investigate advanced rotor system and hub technologies to support goals of increased speed and lift by developing configurations and technologies that reduce drag and enable more efficient rotor system performance.			
FY 2023 Plans: Will complete advanced rotor hub conceptual design studies. Will commence hub component testing.			
FY 2022 to FY 2023 Increase/Decrease Statement: In FY23 this effort is realigned from PE 0602148A (Future Vertical Lift Technology) / Project AJ6 (Advanced Rotors Technology)			
Accomplishments/Planned Programs Subtotals	-	-	2.589

C. Other Program Funding Summary (\$ in Millions)
N/A
Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) CW3 / <i>Advanced Rotors Applied Technology</i>

D. Acquisition Strategy
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army										Date: April 2022		
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CW4 / Air Vehicle Structures and Dynamics 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
CW4: Air Vehicle Structures and Dynamics Tech	-	-	-	2.985	-	2.985	3.029	3.055	3.057	3.056	0.000	15.182

Note

In FY23, funding realigned from PE 0602148A - Future Vertical Lift Technology, Project AL5 - Air Vehicle Structures and Dynamics Technology.

A. Mission Description and Budget Item Justification

This Project develops modeling tools and methodologies needed to research low noise and aeroelastically stable rotor technologies. Research in this Project enable high speed flight, longer flight envelopes, and lower noise signatures in Future Vertical Lift (FVL) platforms and are also applicable to the family of FVL manned and unmanned platforms.

Research in this Project is fully coordinated with Program Element (PE) 0603465A (Future Vertical Lift Advanced Technology Development).

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

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

Title: Air Vehicle Structures and Dynamics Technologies	FY 2021	FY 2022	FY 2023
Description: Establish improved experimentally validated modeling tools and methodologies that can be used to understand the physics of aeroelastic stability and design in next generation rotorcraft platform configurations for FVL platforms. This involves the development of an experimental capability, (TRAST), which will be used to generate novel experimental data. This data will be used to increase fundamental understanding of the whirl flutter instability, which currently limits the high speed performance of tiltrotor rotorcraft. This effort will inform FVL requirement definition and technology maturation. This effort also establishes low noise rotor concepts and investigates the intersection of artificial intelligence and classical mechanics to enable novel mechanics and new approaches in structural dynamics for FVL applications to enable higher Operating Tempo (OPTEMPO) operations.	-	-	2.985
FY 2023 Plans: Will experimentally and analytically explore active control technologies for tiltrotor aeroelastic stability augmentation and performance improvement to enable lighter, higher speed, and higher range tiltrotor aircraft. Investigate aerodynamic interactions between closely spaced airfoil elements and their potential to reduce boundary layer height and separation, thus reducing broadband noise. Validate a rotor using this effect to achieve a reduced noise signature through high fidelity simulations and			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CW4 / Air Vehicle Structures and Dynamics Tech		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>experiments. Develop analysis tools to design internal structures capable of exhibiting adaptive reconfiguration. Identify an algorithmic code to prescribe a topological optimization of the structure of an adaptive Unmanned Aerial System (UAS) platform.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: In FY23, funding realigned from PE 0602148A (Future Vertical Lift Technology) / Project AL5 (Air Vehicle Structures and Dynamics Technology).</p>				
Accomplishments/Planned Programs Subtotals		-	-	2.985
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				

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

Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CW5 / Experimental and Computational Aeromechanics Tech
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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
CW5: <i>Experimental and Computational Aeromechanics Tech</i>	-	-	-	6.600	-	6.600	6.805	6.865	6.868	6.866	0.000	34.004

Note

In Fiscal Year 2023 (FY23) this Project is realigned from Program Element (PE) 0602148A (Future Vertical Lift Technology) / Project AJ8 (Experimental and Computational Aeromechanics Techn).

A. Mission Description and Budget Item Justification

This Project investigates new high fidelity computational methods to simulate aerodynamic effects and test methods of emerging rotorcraft lift technologies that could be incorporated into Future Vertical Lift (FVL) designs and other Army and Department of Defense (DoD) aviation systems.

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
<p>Title: Experimental Aeromechanics</p> <p>Description: Develop and explore new methods to simulate aerodynamic effects for aircraft and other future FVL configurations.</p> <p>FY 2023 Plans: Will conduct test of winged compound rotorcraft configurations through expanded high speed flight envelope with rotor revolutions per minute (RPM) variation and auxiliary propulsion to provide fundamental understanding and validation data for computational tools; Will investigate state of the art of measurement & diagnostics techniques for rotorcraft; Will test rotor blade structural deformation and boundary layer transition using embedded sensor networks; Will investigate methods for rotorcraft hub drag reduction.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: In FY23 this effort is realigned from PE 0602148A (Future Vertical Lift Technology) / Project AJ8 (Experimental and Computational Aeromechanics Techn).</p>	-	-	4.197
<p>Title: Computational Aeromechanics</p> <p>Description: Verify, validate and apply high-fidelity modeling and simulation software tools for rotorcraft aeromechanics.</p>	-	-	2.403

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) CW5 / <i>Experimental and Computational Aeromechanics Tech</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p><i>FY 2023 Plans:</i> Will test and validate computational models for interactional aerodynamics applications including fast-running reduced-order computational fluid dynamics (CFD) models. Will test and validate computational models for rotorcraft air launched effects (ALE) deployment simulations.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> In FY23 this effort is realigned from PE 0602148A (Future Vertical Lift Technology) / Project AJ8 (Experimental and Computational Aeromechanics Techn).</p>				
Accomplishments/Planned Programs Subtotals		-	-	6.600
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				

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

Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CW6 / Future UAS Propulsion 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
CW6: Future UAS Propulsion Technology	-	-	-	3.414	-	3.414	3.544	3.575	3.575	3.574	0.000	17.682

Note

In the Fiscal Year 2023 (FY23), this Project is realigned from Program Element (PE) 0602148A (Future Vertical Lift Project) / AI9 (Future UAS Engine Technology).

A. Mission Description and Budget Item Justification

This Project designs and assesses advanced engine and power system component technologies to support the goals of multi-fuel capability, reduced fuel consumption, and reduced engine size, weight, and cost in current and Future Unmanned Aircraft Systems (FUAS).

Research in this Project is fully coordinated with PE 0603465A (Future Vertical Lift Advanced Technology).

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

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

Title: Multi-Fuel Capable Hybrid Electric Propulsion	FY 2021	FY 2022	FY 2023
Description: Applied research to enable intelligent and robust propulsion performance and noise signature reduction via multi-fuel and optimized hybrid electric capability for small engines (20kW to 150kW) powering future aircraft systems. The research focuses on the establishment of concepts to enable reduced fuel consumption, engine size, weight, and cost as well as improved group three and four FUAS reliability, survivability, and maintainability.	-	-	3.414
FY 2023 Plans: Will assess robust ignition for low quality fuels utilizing advanced ignition assistants and ignition sensing and control; will complete models for oil-free bearings relevant to aviation turbochargers; will validate bearingless motor design and optimization tool with experimental data; will enhance hybrid-electric optimization tool to include design optimization and uncertainty analysis.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding realigned from PE 0602148A (Future Vertical Lift Project) / AI9 (Future UAS Engine Technology).			
Accomplishments/Planned Programs Subtotals	-	-	3.414

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) CW6 / <i>Future UAS Propulsion Technology</i>

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

N/A

Remarks

D. Acquisition Strategy

N/A

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

Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) CW7 / High Speed and Efficient VTOL Vehicle Tech
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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>CW7: High Speed and Efficient VTOL Vehicle Tech</i>	-	-	-	1.549	-	1.549	1.573	1.571	1.572	1.572	0.000	7.837

Note

In FY23, funding realigned from PE 0602148A Project AL4 High Speed and Efficient VTOL Vehicle Technology.

A. Mission Description and Budget Item Justification

This Project designs and develops material component technologies and dynamic models to enable future generation capabilities for Future Vertical Lift (FVL) platforms. This Project is focused on improving range, payload, and endurance performance as well as reliability and maintainability metrics. The outcomes from the efforts within this Project will be applicable to the Family of Future Vertical Lift manned and unmanned platforms.

Research in this Project is fully coordinated with PE 0603465A (Future Vertical Lift Advanced Technology).

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

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

Title: High Speed Efficient Vertical Take-Off and Landing (VTOL)Vehicle Technologies	FY 2021	FY 2022	FY 2023
<p>Description: This effort establishes propulsion concepts for vertical take-off and landing to enable improved, efficient hover and high-speed cruise at longer range without added weight.</p> <p>FY 2023 Plans: Will validate dynamic models for hybrid composite gears with integrated shafts in the VIPER facility; will determine hybrid gear's capability to deliver continuous power at 525 HorsePower (HP);will develop experimental techniques to access hybrid gear failure modes and will develop a dynamic model of a non-conventional transmission topology; will perform oil-out experiments of hybrid composite gear components; will quantify effectiveness of data-driven condition indicators for gears, bearings, and lubrication; will investigate using simulated dynamic responses to train data-drive condition indicators.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>	-	-	1.549

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) CW7 / <i>High Speed and Efficient VTOL Vehicle Tech</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
In Fiscal Year 2023 (FY23) funding is realigned from PE 0602148A (Future Vertical Lift Technology) / Project AL4 (High Speed and Efficient VTOL Vehicle Technology).				
Accomplishments/Planned Programs Subtotals		-	-	1.549
C. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
D. Acquisition Strategy N/A				

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

Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research				Project (Number/Name) CW8 / Next Generation Aviation Transmission Apl 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
CW8: Next Generation Aviation Transmission Apl Tech	-	-	-	1.482	-	1.482	1.504	-	-	-	0.000	2.986

Note

In Fiscal Year 2023 (FY23) this Project is realigned from Program Element (PE) 0602148A (Future Vertical Lift Technology) / Project AJ2 (Next Generation Rotorcraft Transmission 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 0603043A (Air Platform Advanced 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) Components	-	-	1.482
Description: Effort investigates advanced materials and component designs that allow a 60:1 reduction ratio two-stage gearbox design that provides significant weight and volume reduction for extended range and component life for manned and unmanned applications.			
FY 2023 Plans: Will test new corrosion resistant steel components for physical material properties such as tensile strength, surface hardness, bending strength, and surface fatigue. Will develop improved manufacturing techniques based on the physical material properties data as well as develop and test new seal materials and seal configurations.			
FY 2022 to FY 2023 Increase/Decrease Statement: In Fiscal Year 2023 (FY23) this Project is realigned from Program Element (PE) 0602148A (Future Vertical Lift Technology) / Project AJ2 (Next Generation Rotorcraft Transmission Technology).			
Accomplishments/Planned Programs Subtotals	-	-	1.482

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) CW8 / <i>Next Generation Aviation Transmission Apl Tech</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		

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

Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / Air Platform Applied Research	Project (Number/Name) DC2 / High Performance Computing for Rotorcraft Appl Tech
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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
DC2: High Performance Computing for Rotorcraft Appl Tech	-	-	-	1.267	-	1.267	1.287	1.299	1.300	1.299	0.000	6.452

Note

In Fiscal Year 2023 (FY23) this Project is realigned from Program Element (PE) 0602148A (Future Vertical Lift Technology) / Project AL2 (High Performance Computing for Rotorcraft App Tech).

A. Mission Description and Budget Item Justification

This Project investigates and validates aeromechanics modeling and simulation tools for Future Vertical Lift (FVL) and other Army and DoD aviation systems and platforms. Research efforts in this Project are also applicable to the family of FVL manned and unmanned platforms.

Research in this Project is fully coordinated with PE 0603043A (Air Platform Advanced 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 Performance Computing for Aviation Applications	-	-	1.267
Description: Develop automated, high-fidelity computational tools for rotorcraft analysis and design.			
FY 2023 Plans: Will develop new high-order accurate computational fluid dynamics models for rotorcraft aerodynamic analysis. Will develop accurate and fast-running surrogate models suitable for use in rotorcraft design.			
FY 2022 to FY 2023 Increase/Decrease Statement: In Fiscal Year 2023 (FY23) this Project is realigned from Program Element (PE) 0602148A (Future Vertical Lift Technology) / Project AL2 (High Performance Computing for Rotorcraft App Tech).			
Accomplishments/Planned Programs Subtotals	-	-	1.267

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602183A / <i>Air Platform Applied Research</i>	Project (Number/Name) DC2 / <i>High Performance Computing for Rotorcraft Apl Tech</i>

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

Remarks

D. Acquisition Strategy

N/A