Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 8: *Software and Digital Technology Pilot Programs*	**R-1 Program Element (Number/Name)** PE 0308588D8Z / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	229.943	247.452	-	247.452	-	-	-	-	-	-
925: *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	0.000	0.000	229.943	247.452	-	247.452	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Algorithmic Warfare Cross Functional Team (Project Maven) is the pathfinder artificial intelligence (AI) initiative for the DoD that accelerates the integration of AI into DoD systems to improve warfighting speed and lethality for a rapidly innovating Joint Force. Maven deploys capabilities that complement human cognition by automating key tasks of object identification and tracking, and by deriving insights from large-scale data sets to create immediately actionable intelligence. Maven's AI architecture initially automated and augmented Processing, Exploitation and Dissemination (PED) of Full Motion Video (FMV) from Tactical Unmanned Aerial Vehicles (TUAVs). Maven additionally developed algorithms to Medium Altitude, High Altitude, and Wide Area Motion Imagery (WAMI) Intelligence and multiple other Surveillance, and Reconnaissance (ISR) platforms to support the National Defense Strategy (NDS). Maven includes AI tools used on Captured Enemy Material (CEM), Maritime, Overhead Persistent Infrared Programs (OPIR), and Public Available Information (PAI) exploitation. Most military intelligence exploitation systems were designed pre-AI and require specialized integration and multiple individuals to control and then enable the insertion of algorithms into their software baseline. Maven developed a path forward to eliminate substantial costs and coordination among myriad legacy projects to instead use a single screen with multiple AI-enabled layers and tools. Altogether, Maven increases the value of ISR, reduces human processing so analysts can multi-task and produce more intel, and it now detects, classifies, and tracks objects exponentially faster than a human. With FMV intel, for example, Maven detects/tracks persons, vehicles, and weapon systems. By combining AI detections, tracks, and insights onto a single screen, Maven created tools for deployment to help mission commanders, operations personnel, and intel analysts to unite their increased productivity in conducting military operations in every domain of warfare – air, land, sea, space, and cyberspace.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	250.107	252.176	-	252.176
Current President's Budget	0.000	229.943	247.452	-	247.452
Total Adjustments	0.000	-20.164	-4.724	-	-4.724
• Congressional General Reductions	-	-20.164			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustment	-	-	-4.724	-	-4.724

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Change Summary Explanation

FY 2022 decrease due to minor program adjustments.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense			Date: May 2021
Appropriation/Budget Activity 0400 / 8	R-1 Program Element (Number/Name) PE 0308588D8Z / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	Project (Number/Name) 925 / *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
925: *Algorithmic Warfare Cross Functional Teams - Software Pilot Program*	0.000	0.000	229.943	247.452	-	247.452	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Maven funds and fields increasing amounts of automation to FMV ground exploitation stations for TUAVs, to Medium Altitude, High Altitude ISR platforms, and for the exploitation of commercial and military satellite imagery. Project Maven accelerates the development and deployment of AI capabilities across the Defense Intelligence Enterprise, including exploitation of CEM, Maritime, OPIR and PAI. In these areas, Maven uses AI, deep learning, and algorithms to detect, classify, and track objects not only within FMV images (e.g., persons, vehicles, and weapons) but also to provide insights in combinations of these and other areas of imagery, data, and text- and sensor-based projects. Maven algorithms increase the intelligence value of ISR, reduce the human burden of screening and analyzing, and seed the generation of insight from GEOINT and other intelligence areas. To produce these results, Project Maven funds commercial technologies that insert commercial AI into existing platforms and programs of record, providing capability that augments and will eventually automate key parts of intelligence workflows. Most military intelligence exploitation systems were designed pre-AI and require specialized integration to enable the insertion of algorithms into their software baseline. Project Maven is the pathfinder AI initiative for the DoD and is investing in critical AI architecture to support the rapid expansion of AI to intelligence mission areas in support of the NDS. As Maven algorithms increase in capability, the algorithms have moved to the edge (on sensor platforms). Further information is available at a higher classification level.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Algorithmic Warfare Cross Functional Teams - Software Pilot Program	0.000	229.943	247.452
Description: Project Maven rapidly fields AI to programs and systems that augment and automate PED for FMV of TUAVs, Medium Altitude, High Altitude, WAMI ISR, commercial and military satellite imagery in support of the NDS peer/near peer competitor strategy. Aside from imagery, Maven also uses AI to exploit CEM, Maritime, OPIR and PAI. Maven's AI, deep learning, and computer vision algorithms and insights are developed for use in theater to detect, classify, and track objects within images (e.g., persons, vehicles, and weapons) as well as provide other insights, such as with CEM, text-based, and other projects. Maven algorithms are still in development in all its lines of effort. While Maven's algorithms advance to increase the intelligence value of ISR and reduce the human burden on analysts, Maven develops complementary software that both analysts and operations personnel use to rapidly react, effectively plan, and clearly communicate. Project Maven's development process requires continuous feedback and substantial changes to mature user interfaces, build AI harnesses to run algorithms, and build labeled data sets. As the underlying Maven systems continue to develop new tools for mission operations, Project Maven must constantly manage a shifting R&D budget in critical AI architecture that supports the rapid expansion of AI. In the future, these developments are expected to resolve into licensing or other COTS-based solutions. For now, agility is required			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
to turn R&D mission successes into production for procurement and sustainment by Services, SOCOM and CCMDs. While Maven's applications are developing, near-term and future requirements become more identifiable. However, certain nascent lines of effort will continue to require modification and advancement. Maven plans for the process to create a more robust and refined set of requirements, albeit with substantial room to continue to invest in better AI training data and better algorithms for years to come. Separately, budgeting flexibility is important to Maven because Maven applies R&D to integrate news tools with legacy systems. Most military intelligence exploitation systems were designed pre-AI and therefore require specialized integration to enable the insertion of algorithms into the software baseline. Maven funds multiple approaches for bridging these technology hurdles which provides for multiple pathways. Critical is testing and evaluation and user feedback. Maven's successes, however, have already been deemed mission critical and have transitioned to procurement efforts. At this time, lines of effort continue to mature. Appropriation flexibility is critical to transitioning the current RDT&E funding of complex systems into licenses and requirements, purchasable by Services and COCOMs. To continue to deliver outstanding capability, Project Maven will enforce rigorous competition among commercial technology vendors who compete for the opportunity to be inserted into existing R&D projects that transition into O&M / Procurement efforts. Maven expects to continue to transition lines of effort to Title 10 Procurement paths through FY23-FY25. For now, as Maven algorithms increase in performance and complexity, the systems receiving funding will both continue to require R&D funds, for example as they move to the edge on sensor platforms, but will also become funded with a budget used for operating and maintaining the complex but better-defined software systems. Additional details on accomplishments, capabilities, and R&D strategies are available at a higher classification level. ***FY 2021 Plans:*** Project Maven uses rapid prototype sprints to field increasing amounts of augmentation and automation to FMV ground exploitation stations for TUAVs, Medium Altitude, High Altitude, WAMI ISR platforms, and commercial and military satellites. These sprints incentivize competition between vendors but also require collaboration between sprints to accelerate development and deployment of AI capabilities across the Defense Intelligence Enterprise and rapid deployment of innovations to the Joint Force. Other lines of effort for exploitation include CEM, OPIR and PAI. Project Maven continues to use artificial intelligence, deep learning, and computer vision algorithms to detect, classify, and track objects within FMV images (e.g., person, vehicle, and weapon) and other AI algorithms to bring AI deeper into the process of object detection, identification, and tracking at computer process speeds versus human speeds. Incorporating computer vision, algorithms, and other tools will reduce the human burden and provide efficient and effective exploration of data to create multi-modal and correlated insights. Among other plans, Project Maven continues to develop algorithms focused on tactical UAV Automatic Target Recognition (ATR) and an operational PED environment for platforms and ground stations. Project Maven will continue to build capabilities that integrate AI and ML to create			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
actionable intelligence, advanced decision-making, and user alerts. Additional details on lines of effort are available at a higher classification level. ***FY 2022 Plans:*** Project Maven will begin the pre-transfer of activities supporting the transition of GEOINT functions associated with Maven's AI Training Foundry (AITF) to the National Geospatial Intelligence Agency in FY22. NGA shall provide the AITF core AI Enterprise Responsibilities to the Services and SOCOM for GEOINT. Project Maven will continue to transition lines of effort to a program of record, Service, or Agency. Project Maven will cede funding authorities to the transition partner and will concomitantly transfer production procurement obligations to the services and combatant commands. Project Maven will continue to rapidly conduct prototype sprints that field augmentation tools, such as for Medium Altitude, High Altitude, WAMI ISR and commercial and military satellite SAR and EO. While these sprints incentivize competition among vendors, Maven also requires collaboration among vendors between separate sprints to accelerate successful vendors' development and deployment of AI capabilities across the Defense Intelligence Enterprise for the Joint Force. Non-GEOINT lines of effort include CEM, Maritime, OPIR and PAI. Project Maven will continue to use artificial intelligence, deep learning, and computer vision algorithms to detect, classify, and track objects, and will use other AI algorithms to bring AI deeper into the process of object detection, identification, and tracking at computer processing speeds versus human speeds. Incorporating these and other tools will reduce the human burden and provide efficient and effective exploration of data to create multi-modal and correlated insights. Among other plans, Project Maven will continue to develop algorithms focused on combining tactical UAV Automatic Target Recognition and an operational PED environment for platforms and ground stations. Project Maven will continue to build capabilities that integrate AI and ML to create actionable intelligence, advanced decision-making, and user alerts. Additional details on lines of effort are available at a higher classification level. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** No significant increase.			
Accomplishments/Planned Programs Subtotals	0.000	229.943	247.452

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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D. Acquisition Strategy

AWCFT's contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulation (FAR), Defense Federal Acquisition Regulation (DFAR), and rapid prototyping policies and procedures available to cross-functional teams. Management uses project management tools, executive steering group and working group meetings to ensure that stated capabilities and performance criteria are delivered.