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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0607143A / Unmanned Aircraft System Universal Products							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	36.926	38.331	32.016	-	32.016	7.751	4.901	3.485	3.379	Continuing	Continuing
EX1: Unmanned Aircraft Systems Universal Products	-	36.926	38.331	32.016	-	32.016	7.751	4.901	3.485	3.379	Continuing	Continuing

A. Mission Description and Budget Item Justification

Universal Ground Control Station (UGCS) software and hardware modernization effort updates the operating system from a proprietary system to a hardware agnostic Modular Open Systems Architecture that supports the separation of flight and mission critical functionality. Builds software infrastructure in accordance with a modular open systems approach (MOSA); more specifically, this open software architecture will strictly adhere to the Future Airborne Computing Environment (FACE) and UAS Control Segment (UCS) standards. This software will also support emerging Unmanned Aircraft Systems (UAS) Universal Ground Control Station (UGCS) and Scalable Control Interface (SCI) requirements.

Current Universal Products consist of the UGCS, the Universal Ground Data Terminal (UGDT) and the Universal Mission Simulator (UMS). The Universal Products will be capable of flight and payload control of multiple unmanned aircraft systems. UGCS is protected in a climate-controlled, standard S-280 or S-788 U.S. Army shelter and mounted on either a standard Army FMTV or HMMWV, the UGCS commands multi-UAS missions by controlling flight as well as receiving and disseminating battlefield video and situational awareness data through state-of-the-art operator consoles (UAS Cockpit). Consoles can be used to provide aircraft command and control, payload control and weapons launch. Future GCS modifications will allow scaled down sizes of GCS to support expeditionary operations.

The UGDT provides a Line of Sight (LOS) capability for transmit and receipt of UAS command and control and UAS payload products. The UGDT is the common datalink system for U. S. Army UAS.

The Universal Mission Simulator (UMS) consists of the hardware and software required to fully train UAS operators to full Readiness Level (RL) 1, IAW Army aviation standards. The UMS will be capable of training and simulating flight and payload control of [Directorate of Simulation (DOS)] Shadow and Gray Eagle unmanned aircraft systems.

The OSRVT Increment II consists of a Remote Operations Video Enhanced Receiver (ROVER), Miltope tablet, Antennas, UHF Modem, Type I encryption, Ku-Directional Antennas (KuDA) with an On-The-Move (OTM) capable variant, and an extended range Mobile Directional Antennas System (MDAS). Software supports decoding Telemetry Data from multiple Manned/Unmanned Aircraft Systems, provides Electro-Optical (EO)/Infrared (IR) payload control, and supports off-target calculations. OSRVT supports current operations and emerging requirements.

Justification: FY2020 Universal Product Base funding of \$32.016M will be used for continuing the development of modifications needed to address UGCS modernization utilizing MOSA, maintain interoperability, increase commonality for the Family of UAS, Gray Eagle (MQ-1C), and Shadow (RQ-7) programs of record as well as SCI including Systems Engineering, Logistics, and Program Management.

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Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 7: Operational Systems Development		R-1 Program Element (Number/Name) PE 0607143A I Unmanned Aircraft System Universal Products			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	38.463	52.019	6.716	-	6.716
Current President's Budget	36.926	38.331	32.016	-	32.016
Total Adjustments	-1.537	-13.688	25.300	-	25.300
• Congressional General Reductions	-0.031	-0.047			
• Congressional Directed Reductions	-	-13.641			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.506	-			
• Adjustments to Budget Years	-	-	25.300	-	25.300
Change Summary Explanation					
Decreased funding in FY 2019 result of Congressional Reduction. Increased funding in FY 2020 will allow continued development and integration of FACE and UCS aligned software in support of UASGCS-V4 MOSA requirement.					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0607143A / Unmanned Aircraft System Universal Products				Project (Number/Name) EX1 / Unmanned Aircraft Systems Universal Products			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
EX1: Unmanned Aircraft Systems Universal Products	-	36.926	38.331	32.016	-	32.016	7.751	4.901	3.485	3.379	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607143A / Unmanned Aircraft System Universal Products	Project (Number/Name) EX1 / Unmanned Aircraft Systems Universal Products		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
<p>Title: Universal Products (UGCS and UGDT) Improvements</p> <p>Description: Development of Universal Products Improvements - Funding continues to support development of Hardware, Software, and documentation to ensure a supportable UGCS and UGDT that increases interoperability and commonality. This software will also support emerging Unmanned Aircraft Systems (UAS) Universal Ground Control Station (UGCS) as well as Scalable Control Interface (SCI) requirements.</p> <p>FY 2019 Plans: Funding continues to support Development of Universal Products Improvements to include: Hardware, Software and documentation to ensure a supportable UGCS and UGDT that is interoperable and increases commonality. The UGCS and UGDT will be used across Army UAS.</p> <p>FY 2020 Plans: Funding continues to support development of Universal Products Improvements to include Hardware, Software and documentation to ensure a supportable UGCS and UGDT that increases interoperability and commonality. This software will also support Modular Open Systems Architecture (MOSA) for emerging UAS UGCS as well as SCI requirements.</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: The UAS Universal Products requirement/mission will continue in 2020. Increased funding in 2020 will allow continued development and integration of FACE and UCS aligned software in support of UASGCS-V4 MOSA requirement.</p>		33.009	36.488	32.016
<p>Title: Training Device Improvements</p> <p>Description: Training Device Improvements are with respect to the Universal Mission Simulator (UMS), which is used for training and simulating flight and payload control of multiple types of Unmanned Aircraft Systems (UAS).</p>		3.917	-	-
<p>Title: FY2019 SBIR STTR Transfer</p> <p>FY 2019 Plans: FY2019 SBIR STTR Transfer</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: FY2019 SBIR STTR Transfer</p>		-	1.843	-
Accomplishments/Planned Programs Subtotals		36.926	38.331	32.016

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

<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u> <u>Base</u>	<u>FY 2020</u> <u>OCO</u>	<u>FY 2020</u> <u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• A02706: <i>Universal Ground Control Equipment (UAS)</i>	15.000	27.114	2.090	-	2.090	7.872	7.987	-	-	0.000	60.063

Remarks

D. Acquisition Strategy

The Universal Products began full rate production as part of the MQ-1C and RQ-7 programs of record (both ACAT 1C) after Milestone III/C decisions were reached for both programs. Continued development of the Universal Products will be accomplished through a series of modifications and retrofits. Software obsolescence development integration efforts will be based on competitive awards.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0607143A / <i>Unmanned Aircraft System Universal Products</i>						Project (Number/Name) EX1 / <i>Unmanned Aircraft Systems Universal Products</i>			
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Universal Products (UGCS and UGDT) Improvements	C/CPFF	TBD : TBD	-	33.009		36.488		32.016		-		32.016	0.000	101.513	-
Training Device Improvements	C/CPFF	TBD : TBD	-	3.917		-		-		-		-	0.000	3.917	-
FY2019 SBIR STTR Transfer	TBD	HQDA : Washington DC	-	-		1.843		-		-		-	0.000	1.843	-
Subtotal			-	36.926		38.331		32.016		-		32.016	0.000	107.273	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	36.926		38.331		32.016		-		32.016	0.000	107.273	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army			Date: March 2019	
Appropriation/Budget Activity 2040 / 7		R-1 Program Element (Number/Name) PE 0607143A / Unmanned Aircraft System Universal Products		Project (Number/Name) EX1 / Unmanned Aircraft Systems Universal Products

Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Universal Products (UGCS and UGDT) Improvements																												
UGCS/UGDT Improve																												
Training Device Improvements																												
Trng Dev Improve																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0607143A / Unmanned Aircraft System Universal Products	Project (Number/Name) EX1 / Unmanned Aircraft Systems Universal Products

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Universal Products (UGCS and UGDT) Improvements	3	2018	4	2023
Training Device Improvements	3	2018	4	2022