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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army **Date:** May 2021

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
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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	-	17.386	19.460	4.594	-	4.594	-	-	-	-	-	-
EX1: Unmanned Aircraft Systems Universal Products	-	17.386	19.460	4.594	-	4.594	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Scalable Control Interface (SCI) will be the primary means of Command and Control (C2) for Program of Record Army Unmanned Aircraft Systems (UAS). SCI software will be hosted on Mission Command devices in both ground and airborne platforms serving as nodes on the Integrated Tactical Network to retrieve and provide data. SCI distributes UAS capabilities by greatly increasing the number of UAS control devices available to Soldiers and Commanders through the depth of the battlefield. SCI provides simultaneous control of multiple aircraft from a single node. SCI leverages a Modular Operating System Approach (MOSA) to software in order to reduce time and cost to integrate new hardware and software in response to the dynamic future operating environment.

Deployment of SCI will include, but is not limited to, devices in the Mobile/Handheld Computing Environment (such as Nett Warrior), Mounted Computing Environment (such as MFoCS), and Command Post Computing Environment (such as TSI). SCI will integrate decision-aiding, autonomy, and artificial intelligence as they mature technically, in order to support Joint All-Domain Operations (JADO) tenets and enable One-to-Many Control/use of UAS assets and reduce cognitive workload.

Justification: Fiscal Year (FY) 2022 SCI (Formerly Universal Product) Base funding of \$4.610 million will be used to continue the development, testing, and demonstration of software applications needed to address the SCI MOSA/Future Airborne Capabilities Environment (FACE) Compliant Software requirements that support Nett Warrior, Mounted Family of Computer Systems (MFoCS), and Mission Command Tactical Server Infrastructure (TSI).

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	18.132	7.743	4.897	-	4.897
Current President's Budget	17.386	19.460	4.594	-	4.594
Total Adjustments	-0.746	11.717	-0.303	-	-0.303
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	12.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.746	-0.283			
• Adjustments to Budget Years	-	-	-0.303	-	-0.303

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607143A / <i>Unmanned Aircraft System Universal Products</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: EX1: <i>Unmanned Aircraft Systems Universal Products</i>		
Congressional Add: <i>Micro Identification Friend or Foe Transmitters</i>	-	5.000
Congressional Add: <i>Program increase - scalable control interface</i>	-	7.000
Congressional Add Subtotals for Project: EX1		
	-	12.000
Congressional Add Totals for all Projects		
	-	12.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army										Date: May 2021		
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>			
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
EX1: <i>Unmanned Aircraft Systems Universal Products</i>	-	17.386	19.460	4.594	-	4.594	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Scalable Control Interface (SCI) will be the primary means of Command and Control (C2) for Program of Record Army Unmanned Aircraft Systems (UAS). SCI software will be hosted on Mission Command devices in both ground and airborne platforms serving as nodes on the Integrated Tactical Network to retrieve and provide data. SCI distributes UAS capabilities by greatly increasing the number of UAS control devices available to Soldiers and Commanders through the depth of the battlefield. SCI provides simultaneous control of multiple aircraft from a single node. SCI leverages a Modular Operating System Approach (MOSA) to software integration in order to reduce time and cost to integrate new hardware and software in response to the dynamic future operating environment.

Deployment of SCI will include, but is not limited to, devices in the Mobile/Handheld Computing Environment (such as Nett Warrior), Mounted Computing Environment (such as MFoCS), and Command Post Computing Environment (such as TSI). SCI will integrate decision-aiding, autonomy, and artificial intelligence as they mature technically, in order to support Joint All-Domain Operations (JADO) tenets and enable One-to-Many Control/use of UAS assets and reduce cognitive workload.

Justification: Fiscal Year (FY) 2022 SCI (Formerly Universal Product) Base funding of \$4.594million will be used to continue the development, integration, testing, and demonstration of software applications needed to address the SCI MOSA/Future Airborne Capabilities Environment (FACE) Compliant Software requirements that support Nett Warrior, Mounted Family of Computer Systems (MFoCS), and Mission Command Tactical Server Infrastructure (TSI).

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

	FY 2020	FY 2021	FY 2022
Title: Scalable Control Interface (SCI)	17.386	7.460	4.594
Description: SCI will be the primary means of C2 for Program of Record Army UAS. SCI software will be hosted on Mission Command devices in both ground and airborne platforms serving as nodes on the Integrated Tactical Network to retrieve and provide data. SCI distributes UAS capabilities by greatly increasing the number of UAS control devices available to Soldiers and Commanders through the depth of the battlefield. SCI provides simultaneous control of multiple aircraft from a single node.			
FY 2021 Plans: Base Funding of \$7.743 million will be used to continue the development of software applications needed to address the SCI MOSA/FACE compliant Software requirement that support NETT Warrior, MFoCS, and Mission Command TSI. Additional funding of \$6.717 million will be used for additional development, refactoring, integration, and test of MOSA software components			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
required to progress SCI from Minimum Viable Product (MVP) toward Minimum Viable Capability Release (MVCR). \$5 million for integration of Micro Identification Friend or Foe Transmitters.			
FY 2022 Plans: Base Funding of \$4.594 million will be used to continue the development, integration, test, and demonstration of software applications meeting the SCI MOSA/FACE compliant Software requirement on host Mission Command devices.			
FY 2021 to FY 2022 Increase/Decrease Statement: Based on shifting Army priorities, the UAS Universal Products requirement/mission shifted to Scalable Control Interface (SCI) under the Army Modernization effort and aligned with the Future Vertical Lift program. This Universal Products funding line is reduced in anticipation of the SCI requirements being funded through the Future Unmanned Aircraft Systems line which is sponsored by the Army Futures Command Future Vertical Lift Cross Functional Team.			
Accomplishments/Planned Programs Subtotals	17.386	7.460	4.594

	FY 2020	FY 2021
Congressional Add: Micro Identification Friend or Foe Transmitters	-	5.000
FY 2021 Plans: This funding is planned to take a micro transponder capable of Mode 5 through certification and integration in support of UAS Universal Products. This includes IFF capabilities added to include: ADS-B in support of Gray Eagle UAS; Diversity with dual antennas and processing both antenna signals; Mode 5 Level 2-B (added message set and extended squitter); and TCAS / Collision Avoidance support.		
Congressional Add: Program increase - scalable control interface	-	7.000
FY 2021 Plans: This funding is planned to increase to scalable control interface.		
Congressional Adds Subtotals	-	12.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• A02706: <i>Universal Ground Control Equipment (UAS)</i>	2.090	7.509	-	-	-	-	-	-	-	-	-
Remarks											

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D. Acquisition Strategy

SCI Software development and integration efforts are conducted under the competitively awarded SCI Software Integrator contract. This effort is supplemented by contracts awarded to niche experts in Human Machine Interface, Mobile/Handheld and Mounted Computing Environment, and MOSA software. Government ownership and management of the MOSA software interface standards will streamline time and cost required to integrate future unmanned aircraft and payloads and reduce training resources by implementing a common user interface.

SCI promotes a competitive software application industry and provides warfighters with prompt updates by rapidly integrating best of breed software applications instead of relying on costly sole source sustainment of monolithic software well past its usable lifecycle.

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
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Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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
DMEA Phase 2	[Redacted]				[Redacted]																							
	Software Infrastructure Phase 2																											
Kutta Software Infrastructure Prototyping	[Redacted]				Infrastructure Prototyping and Infrastructure Investigation																							
Software Integrator	[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]				[Redacted]							
	Software Integrator																											
SCI Reference Architecture Demo	1																											
	SCI RA Demo																											
SCI Flight/Network Demo			2																									
			SCI C2 Demo																									
SCI Demo #3					3																							
					SCI C2 Demo																							
SCI Demo #4													4															
													SCI Demo															
SCI Air-Launched-Effects Demo													5															
													SCI ALE Demo															
SCI Demo #6																	6											
													SCI Demo															
SCI Integration and Test													[Redacted]															
													SCI Integration and Test															
SCI Demo #7																	7											
													SCI Demo															
SCI Demo #8																					8							
													SCI Demo															
SCI Demo #9																									9			
													SCI Demo															

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Event Name	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026							
	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				
SCI Demo #10																					10 SCI Demo											
SCI Demo #11																					11 SCI Demo											
SCI Demo #12																					12 SCI Demo											
SCI Demo #13																					13 SCI Demo											
SCI Demo #14																					14 SCI D											

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DMEA Phase 1	1	2017	4	2018
DMEA Phase 2	2	2019	2	2020
Kutta Software Infrastructure Prototyping	3	2019	2	2020
Software Integrator	2	2020	2	2024
SCI Reference Architecture Demo	2	2020	2	2020
SCI Flight/Network Demo	4	2020	4	2020
SCI Demo #3	2	2021	2	2021
SCI Demo #4	4	2021	4	2021
SCI Air-Launched-Effects Demo	2	2022	2	2022
SCI Demo #6	4	2022	4	2022
SCI Integration and Test	1	2023	4	2023
SCI Demo #7	2	2023	2	2023
SCI Demo #8	4	2023	4	2023
SCI Demo #9	2	2024	2	2024
SCI Demo #10	4	2024	4	2024
SCI Demo #11	2	2025	2	2025
SCI Demo #12	4	2025	4	2025
SCI Demo #13	2	2026	2	2026
SCI Demo #14	4	2026	4	2026