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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>
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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
Total Program Element	-	67.616	71.229	44.526	0.000	44.526	68.668	66.461	67.984	69.501	Continuing	Continuing
642812: <i>Acquisition/System Security Engineering</i>	-	0.000	26.775	21.381	0.000	21.381	26.194	25.143	35.389	36.177	Continuing	Continuing
642834: <i>Mitigations</i>	-	47.706	36.993	17.119	0.000	17.119	35.331	34.371	25.501	26.072	Continuing	Continuing
642836: <i>Mission Risk Analysis</i>	-	19.910	7.461	6.026	0.000	6.026	7.143	6.947	7.094	7.252	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program funds activities at the Cyber Resiliency Office for Weapon Systems (CROWS), which provides cyber capabilities and acquisition support to weapon system programs across the Department of the Air Force (DAF). CROWS increases the cyber resiliency of DAF weapon systems to maintain mission effective capability under adverse conditions. Its goals are to bake cyber resiliency into new weapon systems and mitigate critical vulnerabilities in fielded weapon systems. CROWS aligns the DAF with strategic guidance, such as the National Defense Strategy (NDS). The NDS highlights the re-emergence of great power competition as the central challenge to U.S. prosperity and security. This strategic guidance identified the space and cyberspace domains that require the Department of Defense to prioritize investments in cyber defense, resilience, and the continued integration of cyber capabilities into the full spectrum of military operations.

This program addresses cyber resiliency and security gaps in three primary activities to meet these goals. The first activity is to develop systems security engineering tools, techniques and procedures, and associated training and education to build cyber expertise within the acquisition workforce. This includes supporting a common secure environment to enable effective sharing of cyber intelligence and vulnerability information across multiple acquisition programs. It also includes identifying emerging technologies for further development and prototyping to posture DAF weapon systems to counter emerging threats. The second activity is to conduct threat informed weapon systems' solution analysis, identify and prioritize vulnerabilities and identify, develop and present courses of action to develop materiel and non-materiel mitigation trade space. The third activity is to design mitigation strategies and prototype mitigation solutions to critical vulnerabilities, with emphasis on those vulnerabilities that affect multiple weapon systems.

BPAC 642812 FY 2021 actuals incorrectly zeroed out; numbers do not reflect actual execution.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver CROWS weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2021 \$0.032 million was expended for civilian pay expenses in this program element, and in FY 2022 \$0.725 million is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	69.656	71.229	0.000	0.000	0.000
Current President's Budget	67.616	71.229	44.526	0.000	44.526
Total Adjustments	-2.040	0.000	44.526	0.000	44.526
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-2.040	0.000			
• Other Adjustments	0.000	0.000	44.526	0.000	44.526

Change Summary Explanation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force										Date: April 2022		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>				Project (Number/Name) 642812 / <i>Acquisition/System Security Engineering</i>			
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
642812: <i>Acquisition/System Security Engineering</i>	-	0.000	26.775	21.381	0.000	21.381	26.194	25.143	35.389	36.177	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Acquisition/System Security Engineering (SSE) activity develops Department of the Air Force (DAF) and Department of Defense system security engineering and acquisition security processes, policies, and contracting language, and refines intelligence collection and processes to provide actionable information on cyber threats to the weapons system community. This activity bolsters DAF cyber resiliency/security by supporting common secure environments for Program Offices to share information on classified weapon system cyber intelligence, threats, and vulnerabilities. It also encompasses developing cyber resiliency training, manning strategies, and Cyber Focus Teams, which provide cyber acquisition expertise to Program Executive Offices (PEO) to address acquisition workforce gaps in cyber resiliency/security manpower, experience, and knowledge. This project hones workforce expertise and skills required to counter weapon system-unique cyber threats, which exceeds the knowledge needed to secure Internet Protocol (IP) based systems against traditional network-based cyber threats. Such expertise is critical for acquisition professionals to ensure cyber resiliency/security design tenets are integrated into the weapon system's life cycle. The project also enables rapid response to emerging peer threats by focusing on early technology readiness level (TRL) efforts via non-traditional industry partners to develop and field cyber resiliency technologies to operational users. Finally, this project includes identification, evaluation, and prioritization of emerging cyber techniques, products, and technologies for further development and prototyping to posture DAF weapon systems to counter emerging threats. This activity supports DAF Program Offices, the Protecting Critical Technologies Task Force, Defense Industrial Base data protection efforts, DAF Supply Chain Risk Management, and other weapon system cyber security/resiliency activities as required.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver CROWS weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2021 \$0.032 million was expended for civilian pay expenses in this program element, and in FY 2022 \$0.725 million is forecasted for civilian pay expenses in this program element.

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

	FY 2021	FY 2022	FY 2023
Title: Prototype, Evaluate, and Transition System Security Engineering	0.000	26.775	21.381
Description: Prototypes, evaluates, and transitions cyber security and resiliency activities into policy, processes, products, and people.			
FY 2022 Plans: Continue to evolve the Acquisition/SSE requirements, processes, policies, and contracting language to influence cyber resiliency in all phases of the acquisition process. Refine intelligence collection and processes to provide actionable information on cyber			

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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642812 / <i>Acquisition/System Security Engineering</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>threats to the weapons system community. Continue supporting common security environments to enable program offices to collaborate/share information on classified weapon system cyber intelligence threats and vulnerabilities as well as the necessary verification and validation infrastructure (technology, hardware/software modelling and lab resources) to understand, reconcile, and program against emerging cyber resiliency attack vectors. Increase delivery of cyber expertise to PEOs through Cyber Focus Team (CFT) manpower, continue to identify acquisition cyber resiliency training gaps and analyze required knowledge and skill sets and develop increasingly more technical and hands on training to support the acquisition workforce. Continue identification, evaluation, and prioritization of emerging cyber techniques, products, and technologies for further development and prototyping to posture Air Force weapon systems to counter emerging threats.</p> <p>FY 2023 Plans: Continue to evolve the Acquisition/SSE requirements, processes, policies, and contracting language to influence cyber resiliency in all phases of the acquisition process. Refine intelligence collection and processes to provide actionable information on cyber threats to the weapons system community. Continue supporting common security environments to enable program offices to collaborate/share information on classified weapon system cyber intelligence threats and vulnerabilities as well as the necessary verification and validation infrastructure (technology, hardware/software modelling and lab resources) to understand, reconcile, and program against emerging cyber resiliency attack vectors. Increase delivery of cyber expertise to PEOs through Cyber Focus Team (CFT) manpower, continue to identify acquisition cyber resiliency training gaps and analyze required knowledge and skill sets and develop increasingly more technical and hands on training to support the acquisition workforce. Continue identification, evaluation, and prioritization of emerging cyber techniques, products, and technologies for further development and prototyping to posture Air Force weapon systems to counter emerging threats.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: This program has a decrease of \$5.394 million from FY 2022 to FY 2023. As a result, the program will conclude common security environments modifications/builds while still enabling program offices to self sustain support to common areas to collaborate/ share information on classified weapon system cyber intelligence threats and vulnerabilities as well as the necessary verification and validation infrastructure (technology, hardware/software modelling and lab resources) to understand, reconcile, and program against emerging cyber resiliency attack vectors.</p>				
Accomplishments/Planned Programs Subtotals		0.000	26.775	21.381
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642812 / <i>Acquisition/System Security Engineering</i>

D. Acquisition Strategy

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate. The government agency responsible for managing the program is the Air Force Life Cycle Management Center, Cyber Resiliency Office for Weapons Systems, Wright-Patterson Air Force Base, Ohio and Hanscom Air Force Base, Massachusetts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642812 / <i>Acquisition/System Security Engineering</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Common Secure Environment	Various	Various : Various	-	-		6.250	Nov 2021	2.025	Nov 2022	-		2.025	Continuing	Continuing	-
Intel collection skills to identify cyber threats to weapon systems	Various	Various : Various	-	-		2.000	Dec 2021	2.000	Dec 2022	-		2.000	Continuing	Continuing	-
Education and Training	Various	Various : Various	-	-		1.050	Jan 2022	1.050	Jan 2023	-		1.050	Continuing	Continuing	-
Cyber Resiliency Technologies Development	Various	Various : Various	-	-		9.669	Nov 2021	8.906	Nov 2022	-		8.906	Continuing	Continuing	-
Subtotal			-	-		18.969		13.981		-		13.981	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Security Engineering requirements, policy and guidance documents (DTIC)	Various	Various : Various	-	-		0.456	Jan 2022	0.456	Jan 2023	-		0.456	Continuing	Continuing	-
MITRE	Various	Various : Bedford, MA	-	-		4.800	Nov 2021	4.944	Nov 2022	-		4.944	Continuing	Continuing	-
CMU/SEI	Various	Carnegie Mellon Univ. : Pittsburgh, PA	-	-		0.800	Dec 2021	0.800	Dec 2022	-		0.800	Continuing	Continuing	-
Subtotal			-	-		6.056		6.200		-		6.200	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS, Travel, Government Purchase Card	Various	Various : Various	-	-		1.750	Dec 2021	1.200	Dec 2022	-		1.200	Continuing	Continuing	-
Subtotal			-	-		1.750		1.200		-		1.200	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force							Date: April 2022				
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	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	-	26.775	21.381	-	21.381	Continuing	Continuing	N/A		

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642812 / <i>Acquisition/System Security Engineering</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Acquisition/System Security Engineering				
Support common cyber security environments	1	2022	4	2027
Prototype and deliver enhanced system security engineering processes and products	1	2022	4	2027
Prototype and deliver cyber security design and contractual requirements	1	2022	4	2027
Prototype and deliver acquisition cyber intel analysis products and techniques	1	2022	4	2027
Develop weapon system cyber training	1	2022	4	2027
Deploy cyber focus teams	1	2022	4	2027
Prototype advanced cyber resiliency technology	1	2022	4	2027

Note

Beginning in FY 2022, the open architecture/open standards mission will transfer to program element 0605056F to better align scope and resources associated with these activities.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force										Date: April 2022		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>				Project (Number/Name) 642834 / <i>Mitigations</i>			
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
642834: <i>Mitigations</i>	-	47.706	36.993	17.119	0.000	17.119	35.331	34.371	25.501	26.072	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Mitigations activity prototypes mitigations to high risk cyber vulnerabilities and recommends a transition path for fielded weapon systems, subsystems, and support systems. CROWS program will perform the engineering analysis and partner with program offices for the affected weapon systems to develop a mitigation strategy. CROWS will lead the non-recurring engineering effort to prototype a mitigation that can be fielded on multiple weapon systems and transition the mitigation to programs for implementation and sustainment. CROWS will develop a mitigation handbook that catalogs proven materiel mitigations for use across Department of the Air Force weapon systems program offices to maximize return on investment in the prototyping activity.

This activity bolsters DAF cyber resiliency/security by supporting common secure environments for Program Offices to share information on classified weapon system cyber intelligence, threats, and vulnerabilities. This project also enables rapid response to emerging peer threats by focusing on early technology readiness level (TRL) efforts via non-traditional industry partners to develop and field cyber resiliency technologies to operational users.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver CROWS weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2021 \$0.032 million was expended for civilian pay expenses in this program element, and in FY 2022 \$0.725 million is forecasted for civilian pay expenses in this program element.

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

	FY 2021	FY 2022	FY 2023
Title: Cyber Mitigation Prototyping	47.706	36.993	17.119
Description: Evaluate weapon systems cyber risk assessments to identify, validate, and prioritize mitigations required for cyber vulnerabilities/susceptibilities. Partner with system owners and acquisition Program Offices to develop prototype mitigations.			
FY 2022 Plans:			
Continue focus on prototyping mitigations for cyber vulnerabilities on fielded weapon systems, subsystems, and support systems in realistic, high fidelity environments and identifying threat-informed risks/vulnerabilities. Collaborate with system owners and acquisition program offices to prototype mitigation projects and implement technology transfer of prototyped solutions within the associated acquisition program office. Develop centralized data repository for mitigations addressing weapon system cyber risks and vulnerabilities. Support mitigation integration requirements by translating/mapping threats to enterprise mitigation techniques			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force	Date: April 2022
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642834 / <i>Mitigations</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>using mature methodologies for weapon system common reference architectures. Build and implement a strategy to manage OSD's & NSA's requests on DAF weapon systems' cyber vulnerability and mitigation activities.</p> <p><i>FY 2023 Plans:</i> Continue focus on prototyping mitigations for cyber vulnerabilities on fielded weapon systems, subsystems, and support systems in realistic, high fidelity environments and identifying threat-informed risks/vulnerabilities. Collaborate with system owners and acquisition program offices to prototype mitigation projects and implement technology transfer of prototyped solutions within the associated acquisition program office. Develop centralized data repository for mitigations addressing weapon system cyber risks and vulnerabilities. Support mitigation integration requirements by translating/mapping threats to enterprise mitigation techniques using mature methodologies for weapon system common reference architectures. Build and implement a strategy to manage OSD's & NSA's requests on DAF weapon systems' cyber vulnerability and mitigation activities.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> This program has a decrease of \$19.874 million from FY 2022 to FY 2023. As a result, the transition of material and non-material mitigations investments in HW/SW assurance for datalink equipment and this equipment's supporting subsystems to the fielded fleet will be impacted. This technology focus area is a critical finding from the 1647 weapon system assessments. The number of projects that will be delayed and/or canceled will depend on the current threat analysis.</p>			
Accomplishments/Planned Programs Subtotals	47.706	36.993	17.119

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

N/A

Remarks

D. Acquisition Strategy

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures. The government agency responsible for managing the program is the Air Force Life Cycle Management Center, Cyber Resiliency Office for Weapons Systems, Wright-Patterson Air Force Base, Ohio and Hanscom Air Force Base, Massachusetts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642834 / <i>Mitigations</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Material Solutions for Major Weapon Systems	Various	Various : Various	-	9.558	Dec 2020	13.653	Jan 2022	3.845	Jan 2023	-		3.845	Continuing	Continuing	-
Material Solutions for Subsystems	Various	Various : Various	-	6.279	Dec 2020	7.963	Dec 2021	2.530	Dec 2022	-		2.530	Continuing	Continuing	-
Non-Materiel Solutions	Various	Various : Various	-	3.768	Dec 2020	3.957	Dec 2021	1.160	Dec 2022	-		1.160	Continuing	Continuing	-
Mitigation Distribution Tool	Various	Various : Various	-	2.511	Dec 2020	2.730	Dec 2021	0.730	Dec 2022	-		0.730	Continuing	Continuing	-
Common Secure Environments	Various	Various : Various	-	6.000	Nov 2020	-		-		-		-	Continuing	Continuing	-
Cyber Resiliency Technologies Development	Various	Various : Various	-	10.400	Nov 2020	-		-		-		-	Continuing	Continuing	-
Subtotal			-	38.516		28.303		8.265		-		8.265	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MITRE	Various	Various : Bedford, MA	-	3.000	Jan 2021	3.000	Jan 2022	3.000	Jan 2023	-		3.000	Continuing	Continuing	-
Defense Technical Information Center (DTIC)	Various	Various : Various	-	0.240	Jan 2021	0.240	Jan 2022	0.240	Jan 2023	-		0.240	Continuing	Continuing	-
Subtotal			-	3.240		3.240		3.240		-		3.240	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS, Travel, Government Purchase Card	Various	Various : Various	-	5.950	Dec 2020	5.450	Dec 2021	5.614	Dec 2022	-		5.614	Continuing	Continuing	-
Subtotal			-	5.950		5.450		5.614		-		5.614	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force			Date: April 2022		
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>		Project (Number/Name) 642834 / <i>Mitigations</i>	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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

Acquisition/System Security Engineering																												
Develop and support common cyber security environments																												
Prototype and deliver cyber security design																												
Prototype advanced cyber resiliency technology																												
Prototype and update open standards																												
Mitigations																												
Prototype cyber mitigations on known cyber vulnerabilities																												
Identify transition plan for tested mitigations to known cyber vulnerabilities																												
Mitigation Data Repository																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Acquisition/System Security Engineering				
Develop and support common cyber security environments	1	2021	4	2021
Prototype and deliver cyber security design	1	2021	4	2021
Prototype advanced cyber resiliency technology	1	2021	4	2021
Prototype and update open standards	1	2021	4	2021
Mitigations				
Prototype cyber mitigations on known cyber vulnerabilities	1	2021	4	2027
Identify transition plan for tested mitigations to known cyber vulnerabilities	1	2021	4	2027
Mitigation Data Repository	1	2021	4	2027

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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
642836: <i>Mission Risk Analysis</i>	-	19.910	7.461	6.026	0.000	6.026	7.143	6.947	7.094	7.252	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Discover and analyze cyber susceptibilities/vulnerabilities to Department of the Air Force (DAF) weapon systems and characterize their impacts based on mission risk. Promote the enhancement of cyber discovery methodologies and capabilities within DAF. Focus is on assessing the gaps and seams that exist between defined weapon system boundaries and within areas that are not assigned to specific weapon system program offices. This activity builds upon existing efforts that identify and mitigate cyber vulnerabilities, and does not duplicate similar ongoing efforts or conduct redundant assessments on systems that have already been evaluated. As the Acquisition/System Security Engineering activity under Project 642812 develops Cyber Focus Teams, additional, more robust assessment data sets will be generated for CROWS to continue identifying and validating vulnerabilities. This activity disseminates cyber risk information to inform acquisition decisions, provides feedback to focus future assessments and also feeds into the Mitigations activity under Project 642834.

The Acquisition/System Security Engineering (SSE) activity develops DAF and Department of Defense system security engineering and acquisition security processes, policies, and contracting language, and refines intelligence collection and processes to provide actionable information on cyber threats to the weapons system community. This project encompasses developing cyber resiliency training, manning strategies, and Cyber Focus Teams, which provide cyber acquisition expertise to Program Executive Offices (PEO) to address acquisition workforce gaps in cyber resiliency/security manpower, experience, and knowledge. This project hones workforce expertise and skills required to counter weapon system-unique cyber threats, which exceeds the knowledge needed to secure Internet Protocol (IP) based systems against traditional network-based cyber threats. Such expertise is critical for acquisition professionals to ensure cyber resiliency/security design tenets are integrated into the weapon system's life cycle. Finally, this project includes identification, evaluation, and prioritization of emerging cyber techniques, products, and technologies for further development and prototyping to posture DAF weapon systems to counter emerging threats. This activity supports DAF Program Offices, the Protecting Critical Technologies Task Force, Defense Industrial Base data protection efforts, DAF Supply Chain Risk Management, and other weapon system cyber security/resiliency activities as required.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver CROWS weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2021 \$0.032 million was expended for civilian pay expenses in this program element, and in FY 2022 \$0.725 million is forecasted for civilian pay expenses in this program element.

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

	FY 2021	FY 2022	FY 2023
Title: Cyber Mission Risk Analysis	19.910	7.461	6.026
Description: Discovers, analyzes and coordinates sharing of information in support of cyber risk discovery activities for DAF weapon systems.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Air Force	Date: April 2022
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642836 / <i>Mission Risk Analysis</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p><i>FY 2022 Plans:</i> Continue to coordinate cyber vulnerability assessments and develop a capability to provide focused assessments where required. Continue developing solutions to find, assess, and share cyber vulnerabilities through an enterprise-level data analysis capability. Provide expertise body to continue support of the Cyber resiliency Support Team (CRST) to augment DoD cyber vulnerability assessment by providing subject matter expertise for ongoing discovery tasks.</p> <p><i>FY 2023 Plans:</i> Continue to coordinate cyber vulnerability assessments and develop a capability to provide focused assessments where required. Continue developing solutions to find, assess, and share cyber vulnerabilities through an enterprise-level data analysis capability. Provide expertise body to continue support of the Cyber resiliency Support Team (CRST) to augment DoD cyber vulnerability assessment by providing subject matter expertise for ongoing discovery tasks.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> The program decreased \$1.435 million from FY 2022 to FY 2023. As a result, there will be limited capability to provide system security engineering support to DoD Strategic Cybersecurity Program assessments. This decrease will result in loss of operational IT perspective that is a critical component to rounding out SCP expertise shortfalls.</p>			
Accomplishments/Planned Programs Subtotals	19.910	7.461	6.026

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

N/A

Remarks

D. Acquisition Strategy

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate. The government agency responsible for managing the program is the Air Force Life Cycle Management Center, Cyber Resiliency Office for Weapons Systems, Wright-Patterson Air Force Base, Ohio and Hanscom Air Force Base, Massachusetts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642836 / <i>Mission Risk Analysis</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Data Analytics and Aggregation Tool (DAAT)	Various	JJR Solutions : Dayton, OH	-	1.220	Jan 2021	4.720	Jan 2022	1.800	Jan 2023	-		1.800	Continuing	Continuing	-
Data Strategy	Various	Various : Various	-	5.677	Jan 2021	2.741	Jan 2022	4.226	Jan 2023	-		4.226	Continuing	Continuing	-
Intel collection skills to identify cyber threats to weapon systems	Various	Various : Various	-	4.343	Dec 2020	-		-		-		-	Continuing	Continuing	-
Education and Training	Various	Various : Various	-	1.050	Jan 2021	-		-		-		-	Continuing	Continuing	-
Subtotal			-	12.290		7.461		6.026		-		6.026	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Security Engineering requirements, policy and guidance documents (DTIC)	Various	Various : Various	-	0.460	Jan 2021	-		-		-		-	Continuing	Continuing	-
MITRE	Various	Various : Bedford, MA	-	4.410	Nov 2020	-		-		-		-	Continuing	Continuing	-
CMU/SEI	Various	Carnegie Mellon Univ : Pittsburgh, PA	-	1.000	Dec 2020	-		-		-		-	Continuing	Continuing	-
Subtotal			-	5.870		-		-		-		-	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS, Travel, Government Purchase Card	Various	Various : Various	-	1.750	Dec 2020	-		-		-		-	Continuing	Continuing	-
Subtotal			-	1.750		-		-		-		-	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642836 / <i>Mission Risk Analysis</i>

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

Acquisition/System Security Engineering	
Prototype and deliver enhanced system security engineering processes and products	
Prototype and deliver acquisition cyber intel analysis products and techniques	
Develop weapon system cyber training	
Deploy cyber focus teams	
Mission Risk Analysis	
Develop, institutionalize and utilize a Data Aggregation & Analytics Tool (DAAT).	
Execute risk analysis and discovery on weapons systems and across mission areas. Leverage and augment existing and emerging assessment environments and tools.	
Engineer solution candidates for reducing cyber risk with DAF weapon systems.	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i>	Project (Number/Name) 642836 / <i>Mission Risk Analysis</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Acquisition/System Security Engineering				
Prototype and deliver enhanced system security engineering processes and products	1	2021	4	2021
Prototype and deliver acquisition cyber intel analysis products and techniques	1	2021	4	2021
Develop weapon system cyber training	1	2021	4	2021
Deploy cyber focus teams	1	2021	4	2021
Mission Risk Analysis				
Develop, institutionalize and utilize a Data Aggregation & Analytics Tool (DAAT).	1	2021	4	2027
Execute risk analysis and discovery on weapons systems and across mission areas. Leverage and augment existing and emerging assessment environments and tools.	1	2021	4	2027
Engineer solution candidates for reducing cyber risk with DAF weapon systems.	1	2021	4	2027