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

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0207439F I Electronic Warfare Integrated Reprogramming (EWIR)
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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	-	0.000	0.000	15.000	0.000	15.000	-	-	-	-	-	-
673310: <i>Electronic Warfare Integrated Reprogram RDT&E</i>	-	0.000	0.000	15.000	0.000	15.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note
 This program, BA 7, PE 0207439F, project 673310, Develop Deployment Strategy for STITCHES, is a new start.
 This program, BA 7, PE 0207439F, project 673310, Accomplish Requirements Outlined in NDAA Section 804 (Verify, Validate and Test), is a new start.
 This program, BA 7, PE 0207439F, project 673310, Accomplish Requirements Outlined in NDAA Section 804 (Deploy Secure Cloud Structures), is a new start.
 This program, BA 7, PE 0207439F, project 673310, Accomplish Requirements Outlined in NDAA Section 804 (Develop Kill Chains), is a new start.

A. Mission Description and Budget Item Justification

In FY 2022, DARPA efforts, previously funded in PE 0603766E, Network-Centric Warfare Technology, Project Net-01, Joint Warfare Systems; are transferred to the Air Force for funding in PE 0207439F, Electronic Warfare Integrated Reprogramming (EWIR), Project 673310, Electronic Warfare Integrated Reprogram RDT&E; to continue development of System of System Technology Integration Tool Chain for Heterogeneous Electronic Systems (STITCHES).

The Electronic Warfare Integrated Reprogramming (EWIR) program element hosts the first DoD transition of STITCHES Warfighter Application Team (SWAT) which is an integration team transferred from DARPA employing, maintaining, and instructing other teams in the DoD how to use the STITCHES integration toolchain. STITCHES is a fully government developed, owned, and open source software toolchain that integrates any DoD fielded systems together in different configurations of system of systems within mission planning time in order to create new capabilities without the need to modify system source code. STITCHES' separable and community-based database allows disparate teams across the DoD to utilize STITCHES and SWAT in separate security levels without comingling data. The Spectrum Warfare Wing will employ STITCHES using the SWAT by employing the STITCHES generated interoperability software on systems within the SWW and deploying the capabilities created through integration. SWAT interfaces and integrates with other DoD systems and their authorities in order to support SWW missions and HHQ directed activities. SWAT is responsible for testing and deploying STITCHES generated interoperability into DoD systems supported by the SWW, with working with existing DoD test and certification organizations, and teaming with organizations outside of the SWW when adapting and creating novel system of systems using capabilities from these organizations. SWAT will deliver adaptive and cutting-edge electromagnetic spectrum capabilities that provide the warfighter a tactical and strategic competitive advantage and freedom to attack, maneuver, and defend.

SWAT is an agile software development team composed of a government tiger team, the STITCHES toolchain developer, and a secure cloud infrastructure and repository developer. SWAT includes a revolving team of subsystem subject matter experts (SMEs) when adapting DoD systems using STITCHES.

SWAT is responsible for the execution of tasks employing STITCHES outlined in NDAA 2021 Section 804 and supports Joint All Domain Command and Control (JADC2) tasking and integration efforts in support of JADC2.

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This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0 was expended for civilian pay expenses in this program element, and in FY21 0 is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	15.000	0.000	15.000
Total Adjustments	0.000	0.000	15.000	0.000	15.000
• 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	0.000	0.000			
• Other Adjustments	0.000	0.000	15.000	0.000	15.000

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
Title: Develop Deployment Strategy for STITCHES	-	0.000	4.750
Description: Develop Deployment Strategy for System Technology Integration Tool Chain for Heterogeneous Electronic Systems (STITCHES). This effort involves development of training and implementation process for STITCHES.			
FY 2021 Plans: N/A			
FY 2022 Plans: Develop deployment strategy for STITCHES			
FY 2021 to FY 2022 Increase/Decrease Statement: Effort transferred from PE 0603766E			
Title: Accomplish Requirements Outlined in NDAA Section 804 (Verify, Validate and Test)	-	0.000	2.500

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0207439F / <i>Electronic Warfare Integrated Reprogramming (EWIR)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>Description: Improve existing STITCHES verification, validation, and testing capabilities and apply to STITCHES integrated systems in coordination with DoD test, accreditation, and certification authorities</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Plans: Improve STITCHES verification, validation, and testing capabilities and apply to STITCHES integrated systems in coordination with DoD test, accreditation, and certification authorities</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Effort transferred from PE 0603766E</p>				
<p>Title: Accomplish Requirements Outlined in NDAA Section 804 (Deploy Secure Cloud Structures)</p> <p>Description: Deploy secure cloud infrastructures and Section 804 repositories into FENCES environment.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Plans: Deploy secure cloud infrastructures and Section 804 repositories into FENCES environment.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Effort transferred from PE 0603766E</p>		-	0.000	2.500
<p>Title: Accomplish Requirements Outlined in NDAA Section 804 (Develop Kill Chains)</p> <p>Description: Develop a System of System Technology Integration Tool Chain for Heterogeneous Electronic Systems (STITCHES) Warfighter Application Team (SWAT) which is an integration team transferred from DARPA. STITCHES will integrate DoD fielded systems together in different configurations of system of systems within mission planning time in order to create new capabilities without the need to modify system source code.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Plans:</p>		0.000	0.000	5.250

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
Create novel kill chains involving previously incompatible weapon systems, sensor, and command, control, and communication systems from multiple military services in cooperation with United States Indo-Pacific Command or United States European Command.				
FY 2021 to FY 2022 Increase/Decrease Statement: Effort transferred from PE 0603766E				
Accomplishments/Planned Programs Subtotals		0.000	0.000	15.000
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy Project utilizes existing DoD contracts to develop, maintain, and deploy interoperability within the DoD. SWAT will generate interoperability derived from system interface details as the requirements from NDAA 2021 Section 804 are delivered to DoD repositories. These details are delivered via existing DoD programs. SWAT will serve existing programs to train and deliver their interface details into existing repositories including those Section 804 compliant repositories maintained by the STITCHES team. SWAT's System Adaptation effort generates those interface artifacts for programs not able to perform those functions on their own. SWAT and SWAT supporting contracts can accept external funding when requests for support exceed SWAT programmed funding.				

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207439F / <i>Electronic Warfare Integrated Reprogramming (EWIR)</i>	Project (Number/Name) 673310 / <i>Electronic Warfare Integrated Reprogram RDT&E</i>

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

<i>STITCHES Development</i>	
Develop Offensive and Defensive Electromagnetic Spectrum Capabilities	██████████
<i>STITCHES Test and Evaluation</i>	
Test & Evaluate Offensive and Defensive Electromagnetic Spectrum Capabilities	██████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207439F / <i>Electronic Warfare Integrated Reprogramming (EWIR)</i>	Project (Number/Name) 673310 / <i>Electronic Warfare Integrated Reprogram RDT&E</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>STITCHES Development</i>				
Develop Offensive and Defensive Electromagnetic Spectrum Capabilities	1	2022	4	2022
<i>STITCHES Test and Evaluation</i>				
Test & Evaluate Offensive and Defensive Electromagnetic Spectrum Capabilities	1	2022	4	2022