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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	15.888	13.138	18.680	0.000	18.680	23.869	24.492	24.988	25.831	Continuing	Continuing
675197: <i>Core Technology</i>	-	12.740	9.781	15.214	0.000	15.214	20.337	20.876	21.302	22.016	Continuing	Continuing
675306: <i>Analysis Enterprise</i>	-	3.148	3.357	3.466	0.000	3.466	3.532	3.616	3.686	3.815	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

AF ISR Modernization, Automation and Development (IMAD) program develops and demonstrates technology required to implement Machine Learning (ML), Artificial Intelligence (AI), Cloud Computing Environment, Automation and machine intelligence on ISR systems. SECAF directed the Air Force to invest in a more automated environment to relieve strain on manpower in the out years. IMAD was started in calendar year (CY) 2020 to create ISR enterprise-wide effects using machine intelligence (AI, ML, Cloud) as described in the Next Generation ISR Dominance Flight Plan. IMAD consist of:

(1) Core Technologies in support of Algorithmic Warfare: technologies using algorithms to support USAF ISR, Joint, and the Intelligence Community (IC) operations at the scale and speed required in modern warfare against our adversaries and supports the National Defense Strategy (NDS) priority of operating at the "speed of relevance." Algorithmic technologies such as Machine Learning (ML) and Artificial Intelligence (AI) continues to reshape current sense, identify, attribute, and share Processing, Exploitation and Dissemination (PED) models to meet sustainable and effective ISR digital solutions while identifying efficiencies and thrive in a complex operating environment.

(2) Analysis Enterprise in support of Kill Chain Automation: USAF ISR must adapt large data sets and condition it into mission ready data sets, allowing personnel to discover, manage, and analyze data and transform it into real-time intelligence products. ISR Modernization, Automation and Development (IMAD) is an Air Force program managed by Air Combat Command (ACC) that funds investment in digital innovation projects submitted by the field and ISR enterprise partners. Investment funds are programmed to deliver machine learning capabilities (AI/ML). Replace manpower-intensive approaches which cannot keep pace with the future speed and volume of data. In addition, IMAD answers field ISR technologies that shift to a common cloud environment and operate at the tactical edge which applies new methodologies; advanced artificial intelligence and machine learning; ensures data is accessible, discoverable, and interoperable; and delivers decision advantage from detection to mission execution.

IMAD Supports National Defense Strategy priority of operating at the "speed of relevance."

IMAD supports Next Generation ISR Dominance Flight Plan.

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 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.00M was expended for civilian pay expenses in this program element, and in FY23 0.00M is forecasted for civilian pay expenses in this program element.

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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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	15.888	13.138	19.780	0.000	19.780
Current President's Budget	15.888	13.138	18.680	0.000	18.680
Total Adjustments	0.000	0.000	-1.100	0.000	-1.100
• 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	-1.100	0.000	-1.100

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675197 / <i>Core Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
675197: <i>Core Technology</i>	-	12.740	9.781	15.214	0.000	15.214	20.337	20.876	21.302	22.016	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

Supports National Defense Strategy priority of operating at the "speed of relevance."

Supports Next Generation ISR Dominance Flight Plan.

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 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.00M was expended for civilian pay expenses in this program element, and in FY23 0.00M is forecasted for civilian pay expenses in this program element.

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

	FY 2022	FY 2023	FY 2024
<b>Title:</b> Algorithmic Warfare	12.740	9.781	15.214
<b>Description:</b> SECAF directed the AF to invest in a more automated environment to relieve strain on manpower in the out years. Algorithmic Warfare can provide world-class ISR support to Joint Operations at the scale and speed required in modern warfare against our adversaries. This effort supports National Defense Strategy of operating at the "speed of relevance."			
<b>FY 2023 Plans:</b> Continue to develop ISR algorithmic Warfare - automation of tools and machine learning algorithms. Continue to investigate AI methods.			
<b>FY 2024 Plans:</b> Continue to develop ISR algorithmic Warfare - automation of tools and machine learning algorithms. Continue to investigate AI methods.			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding increased to match requirement.			
<b>Accomplishments/Planned Programs Subtotals</b>	12.740	9.781	15.214

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

N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675197 / <i>Core Technology</i>

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

**Remarks**

**D. Acquisition Strategy**

N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b>		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675197 / <i>Core Technology</i>

FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
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

<b><i>Algorithmic Warfare</i></b>	
Begin Algorithm Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force		<b>Date:</b> March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Algorithmic Warfare</i></b>				
Begin Algorithm Development	1	2022	4	2028

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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
675306: <i>Analysis Enterprise</i>	-	3.148	3.357	3.466	0.000	3.466	3.532	3.616	3.686	3.815	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

AF ISR must adapt large data sets and condition it into mission sets, allowing personnel to discover, manage, and analyze data and transform it into living intelligence. Kill Chain Automation applies new methodologies; advances automation and machine learning algorithms; ensures data is accessible, agreeable, and interoperable; and delivers decision advantage.

Supports National Defense Strategy priority of operating at the "speed of relevance."

Supports Next Generation ISR Dominance Flight Plan.

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 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.00M was expended for civilian pay expenses in this program element, and in FY23 0.00M is forecasted for civilian pay expenses in this program element.

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

	FY 2022	FY 2023	FY 2024
<b>Title:</b> Kill Chain Automation	3.148	3.357	3.466
<b>Description:</b> AF's first ISR investment to work large data sets, automation, COTS IT tolls, and data aggregation.			
<b>FY 2023 Plans:</b> Continue to fund software development to automate ISR analyst workflows; analysts currently spend 80 percent of their time searching for data and 20 percent of their time making sense of information. Human-machine teaming allows humans and machines to focus on activities they each do best			
<b>FY 2024 Plans:</b> Continue to fund software development to automate ISR analyst workflows; analysts currently spend 80 percent of their time searching for data and 20 percent of their time making sense of information. Human-machine teaming allows humans and machines to focus on activities they each do best			
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
Funded increased due to inflation			
<b>Accomplishments/Planned Programs Subtotals</b>	3.148	3.357	3.466

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force		<b>Date:</b> March 2023
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FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
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

<b><i>Kill Chain Automation</i></b>	
Begin automation development	

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Kill Chain Automation</i></b>				
Begin automation development	1	2022	4	2028