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

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 0603260F / <i>Intelligence Advanced Development</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	-	5.795	7.401	6.237	0.000	6.237	3.813	3.907	3.989	4.133	Continuing	Continuing
64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>	-	4.600	4.842	4.950	0.000	4.950	2.496	2.558	2.612	2.706	Continuing	Continuing
64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>	-	1.195	2.559	1.287	0.000	1.287	1.317	1.349	1.377	1.427	Continuing	Continuing

A. Mission Description and Budget Item Justification

Intelligence Advanced Development (IAD) develops and demonstrates technology required to support warfighter needs for timely all source intelligence information. IAD supports global awareness, consistent battlespace knowledge, precision information, and the execution of time critical missions. IAD focuses on enhancing defense intelligence capabilities through exploration and development of innovative tools including data analytics for mining and exploitation, machine-learning, and software automation. IAD projects provide improved on-time information to the warfighter using new and existing data sources, streamlining data analysis, thus reducing the footprint required, and enhancing performance. These support the Anti-Access/Area Denial (A2/AD) Contested/Congested Degraded Operations (CDO) problem set.

IAD requirements reflect specific warfighter and intelligence organization deficiencies at the tactical and operational levels as identified and prioritized by Air Combat Command (ACC). The Air Force Research Lab, Rome Research Site, Information Intelligence Systems and Analysis Division (AFRL/RIE), then works directly with users to meet the requirements, employing evolutionary approaches and integrating finished modules directly into the field. This PE expedites technology transition from the laboratory to operational users via rapid prototyping. IAD may also reallocate existing resources to support out-of-cycle new/updated warfighter requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In PY22 \$00.145M was expended for civilian pay expenses in this program element, and in CY23 \$00.445M is forecasted for civilian pay expenses in this program element.

This program element received \$1.300M Ukraine Security Assistance Initiative (USAI) Funds in FY23.

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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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	5.795	6.101	6.223	0.000	6.223
Current President's Budget	5.795	7.401	6.237	0.000	6.237
Total Adjustments	0.000	1.300	0.014	0.000	0.014
• 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	1.300	0.014	0.000	0.014

Change Summary Explanation

This program element received \$1.300M Ukraine Security Assistance Initiative (USAI) Funds in FY23.

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Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>				Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>			
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
64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>	-	4.600	4.842	4.950	0.000	4.950	2.496	2.558	2.612	2.706	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission is to develop prototypes which encompass several areas of intelligence exploitation including the advancement of all source correlation and fusion for the intelligence analyst. Projects include development of innovative data analytics, machine-learning, and automated software tools. The intent is to enhance the overall situational awareness for Air Force, DoD, and Coalition groups which have requirements to correlate various sources of intelligence information, including Communications Intelligence (COMINT), Electronics Intelligence (ELINT), Imagery Intelligence (IMINT), Geospatial Intelligence (GEOINT), Measurement and Signature Intelligence (MASINT), Signals Intelligence (SIGINT), Publicly Available Information (PAI) and others, in a timely manner. IET may reallocate existing resources to support out-of-cycle new/updated warfighter requirements.

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

	FY 2022	FY 2023	FY 2024
Title: Intelligence Exploitation Tools (IET)	4.600	4.842	4.950
Description: IET addresses the accurate and timely interpretation of various Intelligence data sources (such as digital imagery, video, documents, signals) by developing and evaluating methods to index, exploit, and manipulate disparate data products using analytics, machine-learning, and software automation. This provides the analyst with the ability to rapidly search and fuse multiple intelligence sources for improved situational awareness and to better detect anomalies. Cross domain tools enable data exploitation at multiple classification levels. In addition, methods to improve analysis of current and future foreign weapon systems are developed. IET provides enhanced warning and accuracy to allow national and military authorities a greater range of options to avert, diminish or control a crisis.			
FY 2023 Plans:			
- Completing multi-INT entity resolution capabilities utilizing catalogued repositories to enable analysts to apply automated machine intelligence and prediction tools to identify trends and mission statistics for SIGINT and Distributed Common Ground System (DCGS) users			
- Completing streamlined Battle Damage Assessment process via automation and implement cross-domain solutions to collate intel data for physical and functional damage assessments for analyst review toolkits			
- Completing an efficient adaptive artificial intelligence (AI) and machine learning (ML) capability with rapid retraining for imagery and video analysis			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> - Continuing tools to enhance, automate, correlate, & fuse multi-source, multi-domain intelligence, surveillance, and reconnaissance (ISR) data for National Air and Space Intelligence System (NASIC) situational awareness & threat assessment - Developing the exploration of target complexity and advanced adversary threats in support of over the horizon future weapons employment - Developing knowledge representation and reasoning tools for intelligent systems to gain ability to solve complex tasks associated with audio/video (A/V) data clustering/filtering using semantic embedding techniques - Developing the prediction of aircraft trajectory and behavior w/out real-time positioning information while assessing future behavior based on complex models derived from training data <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Completing development of tools to enhance, automate, correlate, & fuse multi-source, multi-domain ISR data for NASIC situational awareness & threat assessment - Continuing the exploration of target complexity and advanced adversary threats in support of over the horizon future weapons employment - Continuing knowledge representation and reasoning tools for intelligent systems to gain ability to solve complex tasks associated with A/V data clustering/filtering using semantic embedding techniques - Continuing the prediction of aircraft trajectory and behavior w/out real-time positioning information while assessing future behavior based on complex models derived from training data <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to inflation.</p>				
Accomplishments/Planned Programs Subtotals		4.600	4.842	4.950
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

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D. Acquisition Strategy

Requirements for new/improved techniques for operational employment of simulation models are identified and prioritized by ACC. Development of the new/improved capabilities to meet these requirements is managed by Air Force Research Laboratory (AFRL) Rome Research Site. Prototype products (usually software), once evaluated by the users, are transitioned from the laboratory to the operational community in spirals. All major contracts within this project are awarded after full and open competition.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: 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

IET	
FY20 IET Development, Evaluation & Prototype Release	
FY21 IET Development, Evaluation & Prototype Release	
FY22 IET Development, Evaluation & Prototype Release	
Multi-source, multi-domain info fusion tool	
Over the Horizon Targeting enhancement	
Audio/video exploitation enhancements	
Air traffic behavior prediction	
FY24 IET Development, Evaluation & Prototype Release	
FY25 IET Development, Evaluation & Prototype Release	
FY26 IET Development, Evaluation & Prototype Release	
FY27 IET Development, Evaluation & Prototype Release	
FY28 IET Development, Evaluation & Prototype Release	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>IET</i>				
FY20 IET Development, Evaluation & Prototype Release	1	2022	4	2023
FY21 IET Development, Evaluation & Prototype Release	1	2022	4	2023
FY22 IET Development, Evaluation & Prototype Release	1	2022	4	2023
Multi-source, multi-domain info fusion tool	1	2022	4	2024
Over the Horizon Targeting enhancement	2	2023	4	2025
Audio/video exploitation enhancements	2	2023	4	2025
Air traffic behavior prediction	2	2023	4	2025
FY24 IET Development, Evaluation & Prototype Release	1	2024	1	2026
FY25 IET Development, Evaluation & Prototype Release	1	2025	1	2027
FY26 IET Development, Evaluation & Prototype Release	1	2026	1	2028
FY27 IET Development, Evaluation & Prototype Release	1	2027	4	2028
FY28 IET Development, Evaluation & Prototype Release	1	2028	4	2028

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Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>				Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>			
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
64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>	-	1.195	2.559	1.287	0.000	1.287	1.317	1.349	1.377	1.427	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission is to provide continuing development and upgrades of threat analysis capabilities to produce integrated, predictive air and space intelligence to enable military operations, force modernization decisions, and policy making. Products from IAC allow the Intelligence Analyst to accelerate and increase the accuracy of threat estimates and system descriptions to deployed operational forces. Each of the development projects within the IAC program portfolio transition technologies to the operational communities through the incremental release of upgraded versions over a period of years as development projects progress towards the final configuration. IAC may reallocate existing resources to support out-of-cycle new/ updated warfighter requirements.

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

	FY 2022	FY 2023	FY 2024
Title: Intelligence Analysis Capabilities (IAC) Development	1.195	2.559	1.287
Description: IAC develops tools and algorithms for Intelligence Analysts with the ability to produce accurate, predictive, relevant, and timely intelligence that supports client processes, operational planning, and mission execution. Methods include data analytics techniques, machine-learning, and software automation. IAC develops new and upgraded analysis, modeling and simulation tools focused on intelligence production supporting AF operational and developmental all source analysis functions.			
FY 2023 Plans:			
- Completing computational data handling tools to ingest disparate data types across multiple disciplines within Air and Space Operations Centers to disseminate and display information to decision makers through existing common operational pictures and dashboards			
- Completing activities in support of a collaborative collection management environment for all ISR stakeholders for management of Priority Intelligence Reports and Critical Collection Intelligence Report			
- Developing analysis of geospatial features for DCGS making AI/ML models, datasets, predictions geospatially discoverable			
- Developing object detection algorithms within AI collaboration environment (Red Force) and enabling models on ground and aerial-based software platforms			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>- Developing NASIC C4ISR intel database w/ graphical visualization, discovery, and editing capabilities, to facilitate volume, quality, and timeliness of C4ISR support.</p> <p>- Completing development and integration of Ground Moving Target Indicator (GMTI)-related applications with NRO's Thresher to provide near real time, fused ground track capability</p> <p>FY 2024 Plans:</p> <p>- Continuing analysis of geospatial features for DCGS making AI/ML models, datasets, predictions geospatially discoverable</p> <p>- Continuing object detection algorithms within AI collaboration environment (Red Force) and enabling models on ground and aerial-based software platforms</p> <p>- Continuing NASIC C4ISR intel database w/ graphical visualization, discovery, and editing capabilities, to facilitate volume, quality, and timeliness of C4ISR support.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding decreased due to adjusting to historical norms after USAI increase in FY23 funds.</p>				
Accomplishments/Planned Programs Subtotals		1.195	2.559	1.287
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
Requirements of new/upgraded intelligence analysis tools are identified and prioritized by the ACC. Development of capabilities to meet these requirements is managed by AFRL Rome Research Site. Prototype products (usually software), once evaluated by the users, are fielded in incremental capability spirals. All major contracts within this project are awarded after full and open competition.				

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force **Date:** 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

IAC	
FY21 IAC Development, Evaluation & Prototype Release	
Tools to make AI/ML models, datasets, and predictions geospatially discoverable	
RedForce-compatible obj detection	
C4ISR intel database w/advanced capabilities	
Development and Integration of GMTI-related applications with NRO's Thresher	
FY24 IAC Development, Evaluation & Prototype Release	
FY25 IAC Development, Evaluation & Prototype Release	
FY26 IAC Development, Evaluation & Prototype Release	
FY27 IAC Development, Evaluation & Prototype Release	
FY28 IAC Development, Evaluation & Prototype Release	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
IAC				
FY21 IAC Development, Evaluation & Prototype Release	1	2022	4	2023
Tools to make AI/ML models, datasets, and predictions geospatially discoverable	2	2023	4	2024
RedForce-compatible obj detection	2	2023	4	2025
C4ISR intel database w/advanced capabilities	2	2023	4	2025
Development and Integration of GMTI-related applications with NRO's Thresher	2	2023	1	2024
FY24 IAC Development, Evaluation & Prototype Release	1	2024	1	2026
FY25 IAC Development, Evaluation & Prototype Release	1	2025	1	2027
FY26 IAC Development, Evaluation & Prototype Release	1	2026	1	2028
FY27 IAC Development, Evaluation & Prototype Release	1	2027	4	2028
FY28 IAC Development, Evaluation & Prototype Release	1	2028	4	2028