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* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603260F / *Intelligence Advanced Development*							
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	-	5.672	4.312	5.795	0.000	5.795	-	-	-	-	-	-
64536A: *INTELLIGENCE EXPLOITATION TOOLS (IET)*	-	4.503	3.124	4.600	0.000	4.600	-	-	-	-	-	-
64537A: *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*	-	1.169	1.188	1.195	0.000	1.195	-	-	-	-	-	-

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. The Air Force Research Lab, Rome Research Site, Information Intelligence Systems and Analysis Division (AFRL/RIE), works directly with users, employing evolutionary approaches and integrating finished modules directly into the field.

The programs are oriented toward specific shortfalls and deficiencies as documented by the Major Commands (MAJCOMs), Unified Commands, and intelligence organizations in their mission and functional area plans. This PE expedites technology transition from the laboratory to operational users via rapid prototyping. It is focused on technology insertion to correct AF intelligence deficiencies at the tactical and operational levels. The PE bridges the transition of new technologies from Advance Technology Demonstrations (ATDs) and Integrated Technology Thrust Programs (ITTPs) into current/new systems, and supports the associated Defense Technology Objectives (DTOs). IAD may also reallocate existing resources to support out-of-cycle new/updated warfighter requirements.

Requirements for this PE are identified and prioritized by Air Combat Command (ACC). Development of new/improved capabilities to meet the requirements are managed by AFRL/RIE. Prototype products, usually in the form of software, are provided to users in incremental capability spirals for operational environment evaluation. Additionally, IAD projects increasingly participate in on-going experimentation and prototype software development in support of the Advanced Battle Management Systems On-Ramp activities.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver IAD system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.430M was expended for civilian pay expenses in this program element, and in FY21 0.352M 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.

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* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*		R-1 Program Element (Number/Name) PE 0603260F / *Intelligence Advanced Development*			
B. Program Change Summary ($ in Millions)	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**
Previous President's Budget	5.672	4.320	5.882	0.000	5.882
Current President's Budget	5.672	4.312	5.795	0.000	5.795
Total Adjustments	0.000	-0.008	-0.087	0.000	-0.087
• Congressional General Reductions	0.000	-0.008			
• 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	-0.087	0.000	-0.087

Change Summary Explanation

FY21: $0.008 Congressional reduction from equal distribution cut across all AF RDT&E programs.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force			Date: May 2021
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / *Intelligence Advanced Development*	Project (Number/Name) 64536A / *INTELLIGENCE EXPLOITATION TOOLS (IET)*	

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
64536A: *INTELLIGENCE EXPLOITATION TOOLS (IET)*	-	4.503	3.124	4.600	0.000	4.600	-	-	-	-	-	-
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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver IAD system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Intelligence Exploitation Tools (IET)	4.503	3.124	4.600
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 2021 Plans: - Completed development and integration of space based modeling capabilities into the Integrated Many on Many (IMOM) mission planning tool - Continued implementation of operational metadata capability for DCGS SIGINT collection systems			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64536A / *INTELLIGENCE EXPLOITATION TOOLS (IET)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Continued development for Mobile Command, Control, Communication, and Computer (Mobile C4) database and visualization capability for intelligence operators; integrated into National Air and Space Intelligence Center (NASIC) toolset - Continued development activities for automated artificial intelligent systems and modeling and simulation tools for understanding and visualizing patterns of life, for detecting vulnerabilities in weapon systems, and for the analysis of targets from multi-INT data in various threat environments - Developing multi-INT entity resolution capabilities, utilizing cataloged repositories, which will enable analysts to apply automated machine intelligence and prediction tools to identify trends and mission statistics for SIGINT and DCGS users - Added automation to a live PED tasking order workflow by ingesting mission data, flying schedules, & authorized service interruptions, enabling user-defined rolls that allow mission change requests & verification of mission changes to occur between C2 node & PED sites prior to final publication & sharing with the larger community - Conducted user evaluations and prototype releases ***FY 2022 Plans:*** - Will develop multi-INT entity resolution capabilities, utilizing cataloged repositories, which will enable analysts to apply automated machine intelligence and prediction tools to identify trends and mission statistics for SIGINT and DCGS users - Will develop tools to enhance, automate, correlate, & fuse multi-source, multi-domain ISR data for NASIC situational awareness & threat assessment - Will develop prototypes to improve effects & operations across the ISR battlespace via cyber response capability in support of DCGS cyber defense response initiatives - Will develop a scalable FMV Cloud Pilot capability in support of DCGS, enabling cloud based integration of AI/ML algorithms - Will develop 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 ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increased due to support for final prototype user evaluations			
Accomplishments/Planned Programs Subtotals	4.503	3.124	4.600

Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64536A / *INTELLIGENCE EXPLOITATION TOOLS (IET)*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force			Date: May 2021
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / *Intelligence Advanced Development*	Project (Number/Name) 64536A / *INTELLIGENCE EXPLOITATION TOOLS (IET)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Intelligence Exploitation Tools (IET)	Various	Various : Various	-	4.090	Jan 2020	2.674	Dec 2020	4.130	Dec 2021	-		4.130	-	-	-
		Subtotal	-	4.090		2.674		4.130		-		4.130	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA	Various	AFRL - Information Directorate : Rome, NY	-	0.413	Oct 2019	0.450	Nov 2020	0.470	Nov 2021	-		0.470	-	-	-
		Subtotal	-	0.413		0.450		0.470		-		0.470	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	4.503		3.124		4.600		-		4.600	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64536A / *INTELLIGENCE EXPLOITATION TOOLS (IET)*

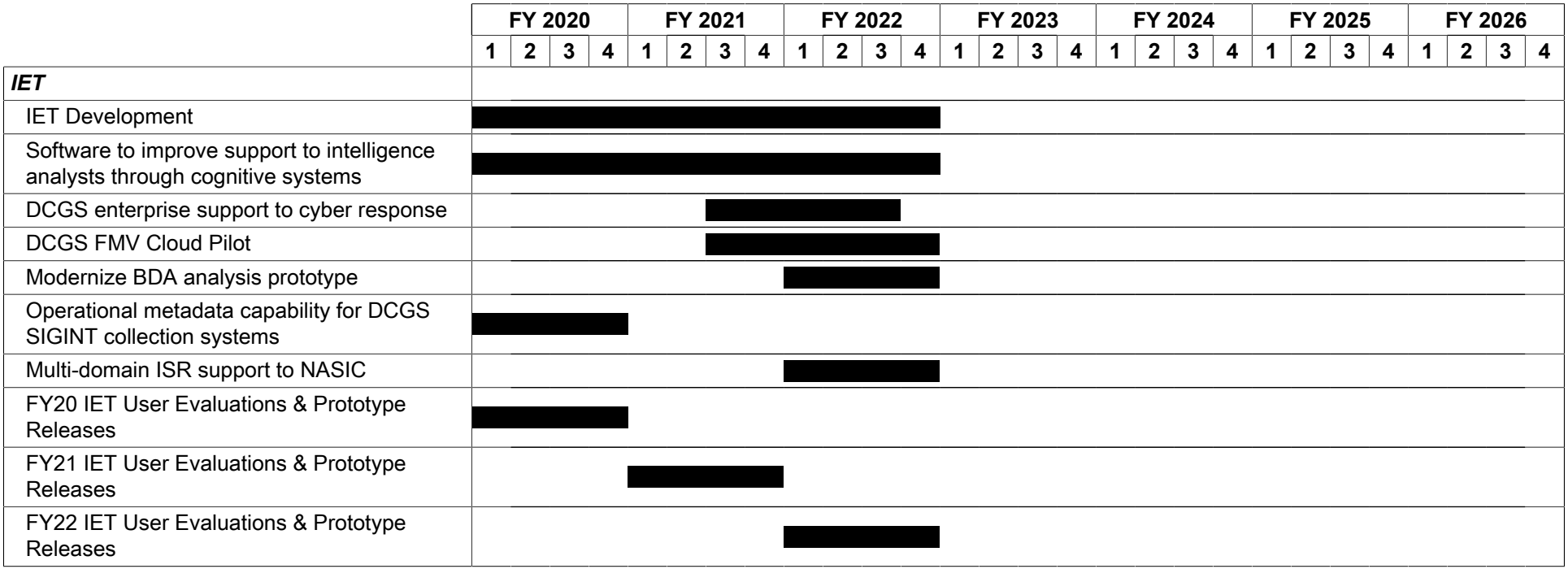

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64536A / *INTELLIGENCE EXPLOITATION TOOLS (IET)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
IET				
IET Development	1	2020	4	2022
Software to improve support to intelligence analysts through cognitive systems	1	2020	4	2022
DCGS enterprise support to cyber response	3	2021	3	2022
DCGS FMV Cloud Pilot	3	2021	4	2022
Modernize BDA analysis prototype	1	2022	4	2022
Operational metadata capability for DCGS SIGINT collection systems	1	2020	4	2020
Multi-domain ISR support to NASIC	1	2022	4	2022
FY20 IET User Evaluations & Prototype Releases	1	2020	4	2020
FY21 IET User Evaluations & Prototype Releases	1	2021	4	2021
FY22 IET User Evaluations & Prototype Releases	1	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force			Date: May 2021
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / *Intelligence Advanced Development*	Project (Number/Name) 64537A / *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*	

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
64537A: *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*	-	1.169	1.188	1.195	0.000	1.195	-	-	-	-	-	-
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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver IAD system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.430M was expended for civilian pay expenses in this program element, and in FY21 0.352M is forecasted for civilian pay expenses in this program element

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Intelligence Analysis Capabilities (IAC) Development	1.169	1.188	1.195
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 2021 Plans: - Continued development of a query class prototype system that will enable users to search large volumes of disparate multimodal and multilingual data sources; this service will be accessible for use by DoD and Intelligence Community (IC) cloud service architectures - Continued development of a prototype Modeling and Simulation tool to address the need for improved threat Integrated Air Defense (IADS) passive detection/tracking and combat identification - Continued development Mobile Command, Control, Communication, and Computer (Mobile C4) database and visualization capability for intelligence operators; integrated into National Air and Space Intelligence Center (NASIC) toolset			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64537A / *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Continued development of a prototype for providing improved Electronic Warfare (EW) information to operational users by leveraging the capabilities of the modernized, national EW databases; this will include signal identification, waveform ambiguity detection and emitter descriptions across all three national EW databases - Continued development of a machine learning (ML) collaboration & deployment framework for AF DCGS; provide intelligence ops with an intuitive environment that simplifies deployment/sharing of ML algorithms/models & operational intelligence datasets - Supporting user evaluations and prototype releases ***FY 2022 Plans:*** - Will develop prototype for collaborative environment to connect intelligence requirements with exploitation teams to increase the level of information available to analysts to improve tactical level intelligence production and reporting - Will develop prototype for computational data handling tools to ingest disparate data types across multiple disciplines within Air and Space Operations Centers to disseminate and display to decision makers through existing Common Operational Pictures and Dashboards - Will complete development of a query class prototype system that will enable users to search large volumes of disparate multimodal and multilingual data sources; accessible for use by DoD and IC cloud service architectures - Will continue Mobile Command, Control, Communication, and Computer (Mobile C4) database and visualization capability for intelligence operators; integrated into National Air and Space Intelligence Center (NASIC) toolset - Will complete development of a machine learning (ML) collaboration & deployment framework for AF DCGS; provide intel ops with an intuitive environment that simplifies deployment/sharing of ML algorithms/ models & operational intel datasets ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Funding increased due to additional efforts working with Advanced Battle Management System (ABMS) product line development for AI and ML interfaces			
Accomplishments/Planned Programs Subtotals	1.169	1.188	1.195

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64537A / *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*

C. Other Program Funding Summary ($ in Millions)

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64537A / *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IAC	Various	Various : Various	-	1.029	Oct 2019	1.028	Nov 2020	1.035	Dec 2021	-		1.035	-	-	-
		Subtotal	-	1.029		1.028		1.035		-		1.035	-	-	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMA	Various	AFRL - Information Directorate : Rome, NY	-	0.140	Oct 2019	0.160	Nov 2020	0.160	Nov 2021	-		0.160	-	-	-
		Subtotal	-	0.140		0.160		0.160		-		0.160	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	1.169		1.188		1.195		-		1.195	-	-	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64537A / *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*

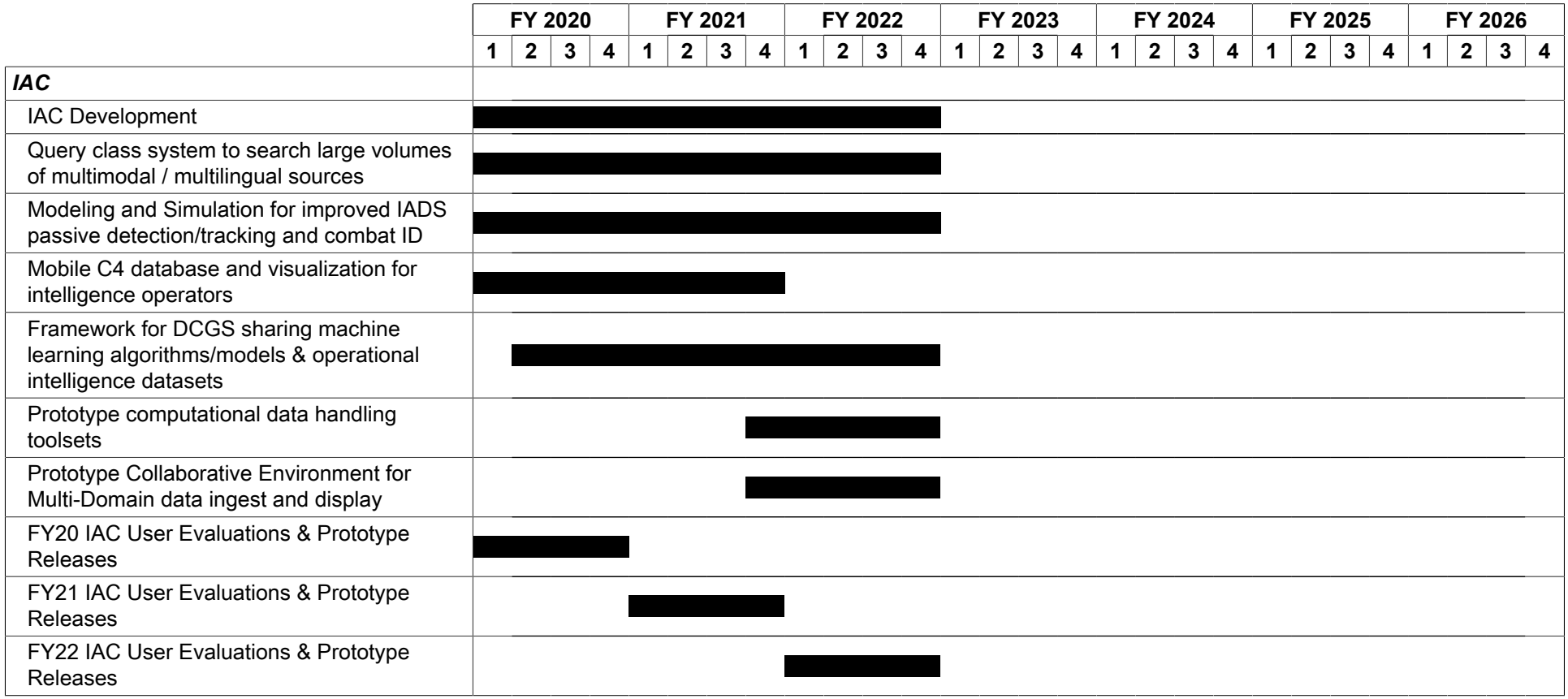

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 4	**R-1 Program Element (Number/Name)** PE 0603260F / *Intelligence Advanced Development*	**Project (Number/Name)** 64537A / *INTELLIGENCE ANALYSIS CAPABILITIES (IAC)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
IAC				
IAC Development	1	2020	4	2022
Query class system to search large volumes of multimodal / multilingual sources	1	2020	4	2022
Modeling and Simulation for improved IADS passive detection/tracking and combat ID	1	2020	4	2022
Mobile C4 database and visualization for intelligence operators	1	2020	4	2021
Framework for DCGS sharing machine learning algorithms/models & operational intelligence datasets	2	2020	4	2022
Prototype computational data handling toolsets	4	2021	4	2022
Prototype Collaborative Environment for Multi-Domain data ingest and display	4	2021	4	2022
FY20 IAC User Evaluations & Prototype Releases	1	2020	4	2020
FY21 IAC User Evaluations & Prototype Releases	1	2021	4	2021
FY22 IAC User Evaluations & Prototype Releases	1	2022	4	2022