Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019	

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I* BA 7: *Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0305240F *I Support to DCGS Enterprise*

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	26.349	26.579	37.774	0.000	37.774	50.844	28.117	28.630	29.146	Continuing	Continuing
674826: *Common Imagery Ground / Surface Systems*	-	14.969	15.100	15.382	0.000	15.382	15.649	15.974	16.266	16.559	Continuing	Continuing
675265: *Common Imagery Processor (CIP)*	-	11.380	11.479	22.392	0.000	22.392	35.195	12.143	12.364	12.587	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program Element funds 1) the Intelligence Integration Office (I2O), formerly the Distributed Common Ground System (DCGS) Multi-service Execution Team (MET) Office (DMO), which oversees the DCGS Integration Backbone (DIB) development, modernization, integration, test, and community support in support of Defense Intelligence Information Enterprise (DI2E), Combatant Commands and Coalition/Partner Intel Operations and 2) the DCGS Enterprise Interoperability effort and 3) the Imagery Processing effort which consists of the Virtual Imagery Processing Capability (VIP-C) program.

1)The I2O oversees Enterprise Interoperability for Defense Intelligence Information Enterprise (DI2E), Combatant Commands and Coalition/Partner Intel Operations. All Services must pursue a common path based on a set of common enterprise services consistent with the DoD's net-centric vision. The DoD charged the Air Force to lead the development, modernization, integration, test, and community support of the Enterprise services to include implementation of international standards(including NATO standardization agreements) to ensure joint, allied, and coalition interoperability. The DIB is a set of enterprise standards and services that enable interoperability and component reuse and provide a flexible and singularly sustainable path to information sharing across the global ISR enterprise. The follow-on effort, Next Generation Interoperability (NGI), will deliver and maintain modernized federation profiles, interfaces, methodologies, and data interchange standards without relying upon legacy DIB federation standards and dependencies through common language, common mechanisms, and quality exposure. The deployment of these services into the DI2E Common Data Fabric (CDF) will provide common applications and a managed service framework for the development, test and integration of machine-aided decision making capabilities. The I2O manages the DCGS Test Laboratory (DTL) at Hanscom AFB. This facility supports software development and test for DI2E evaluation during exercises such as Enterprise Challenge and Storm Force.

2) The DCGS Enterprise Interoperability effort provides support to OUSD(I), AF DCGS and NATO interoperability efforts. This includes the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

3) The Imagery Processing effort develops the Virtual Imagery Processing Capability (VIP-C) within the DCGS architecture. The VIP-C provides end-to-end image processing to include raw data ingest, data format standardization to facilitate exploitation, secondary image processing, metadata conditioning, and image quality enhancements. Current efforts are focused on 1) ensuring new sensors being fielded and associated data types can be processed and 2) increasing investment in the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) capability.

Exhibit R-2, **RDT&E Budget Item Justification:** PB 2020 Air Force	**Date:** February 2019
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305240F *I Support to DCGS Enterprise*

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AF DCGS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605833, and 0605898F.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is $14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

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 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**
Previous President's Budget	26.349	26.579	27.074	0.000	27.074
Current President's Budget	26.349	26.579	37.774	0.000	37.774
Total Adjustments	0.000	0.000	10.700	0.000	10.700
• 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	10.700	0.000	10.700

Change Summary Explanation

In FY 2020, the Air Force programmed an additional $10.7M in RDT&E funding to increase investment in the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) capability.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / *Support to DCGS Enterprise*	Project (Number/Name) 674826 / *Common Imagery Ground / Surface Systems*

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
674826: *Common Imagery Ground / Surface Systems*	-	14.969	15.100	15.382	0.000	15.382	15.649	15.974	16.266	16.559	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element funds the Intelligence Integration Office (I2O), formerly the Distributed Common Ground System (DCGS) Multi-service Execution Team (MET) Office (DMO), which oversees the DCGS Integration Backbone (DIB) development, modernization, integration, test, and community support in support of Defense Intelligence Information Enterprise (DI2E), Combatant Commands and Coalition/Partner Intel Operations.

The I2O oversees Enterprise Interoperability for Defense Intelligence Information Enterprise (DI2E), Combatant Commands and Coalition/Partner Intel Operations. All Services must pursue a common path based on a set of common enterprise services consistent with the DoD's net-centric vision. The DoD charged the Air Force to lead the development, modernization, integration, test, and community support of the Enterprise services to include implementation of international standards (including NATO standardization agreements) to ensure joint, allied, and coalition interoperability. The DIB is a set of enterprise standards and services that enable interoperability and component reuse and provide a flexible and singularly sustainable path to information sharing across the global ISR enterprise. The follow-on effort, Next Generation Interoperability (NGI), will deliver and maintain modernized federation profiles, interfaces, methodologies, and data interchange standards without relying upon legacy DIB federation standards and dependencies through common language, common mechanisms, and quality exposure. The deployment of these services into the DI2E Common Data Fabric (CDF) will provide common applications and a managed service framework for the development, test and integration of machine-aided decision making capabilities. The I2O manages the DCGS Test Laboratory (DTL) at Hanscom AFB. This facility supports software development and test for DI2E evaluation during exercises such as Enterprise Challenge and Storm Force.

The funding also provides support to OUSD(I), AF DCGS and NATO interoperability efforts. This includes the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Distributed Common Ground / Surface System (DCGS) Integration Backbone and Test/Community Support for the DCGS Enterprise	12.729	12.933	13.075
Description: Develop, modernize, integrate, test and manage the DIB and provide test/community support to the DCGS enterprise. *FY 2019 Plans:* - Implement non-destructive DIB upgrades to reduce integration burden and increase quantity of upgraded nodes among services - Establish, implement and deploy standards and capabilities for Next Generation Interoperability (NGI)			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force		Date: February 2019	
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems	

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
- Demonstrate Enterprise Hub Node concept with Enterprise Dashboard during Enterprise Challenge 19 Spirals and Main Exercise **FY 2020 Plans:** - Will complete migration to cloud-native deployment and implement Enterprise Hub Node for operational use - Will continue to implement and deploy NGI capabilities and prove out concepts during Enterprise Challenge 20 Spirals and Main Exercise - Will leverage an Object Based Production strategy and utilize machine learning to enhance explicit Content, Discovery and Retrieval (CD&R). **FY 2019 to FY 2020 Increase/Decrease Statement:** Funding increase due to adjustment for inflation			
Title: DCGS Enterprise Interoperability *Description:* Provide support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts. **FY 2019 Plans:** Continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts. **FY 2020 Plans:** Will continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts. **FY 2019 to FY 2020 Increase/Decrease Statement:** Funding increase due to adjustment for inflation	2.240	2.167	2.307
Accomplishments/Planned Programs Subtotals	14.969	15.100	15.382

C. Other Program Funding Summary ($ in Millions)
 N/A
Remarks

D. Acquisition Strategy
 The Air Force uses an evolutionary acquisition approach with version releases and periodic upgrades to develop, field, and upgrade the capabilities. The Air Force structures contracts to provide the improved capabilities through full and open competition to the maximum extent possible. For management, the Air Force leads the Intelligence Integration Office (I2O) which coordinates the Multi-Service requirements for the DIB and modern enterprise services in support of USD(I) direction.

Exhibit R-2A, **RDT&E Project Justification:** PB 2020 Air Force		**Date:** February 2019
Appropriation/Budget Activity 3600 *I* 7	**R-1 Program Element (Number/Name)** PE 0305240F *I Support to DCGS Enterprise*	**Project (Number/Name)** 674826 *I Common Imagery Ground / Surface Systems*

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force		Date: February 2019

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise	Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DIB Modernization, Integration, DT and Interoperability	C/T&M	Various : Various	-	5.586	Jan 2018	8.500	Jan 2019	8.600	Jan 2020	-		8.600	Continuing	Continuing	-
DCGS Test and Community Support	C/CPAF	Various : Various	-	5.638	Jun 2018	0.000		0.000		-		0.000	Continuing	Continuing	-
Subtotal			-	11.224		8.500		8.600		-		8.600	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DCGS Enterprise Interoperability	C/Various	Various : Various	-	2.247	Apr 2018	2.167	Apr 2019	2.307	Apr 2020	-		2.307	Continuing	Continuing	-
Subtotal			-	2.247		2.167		2.307		-		2.307	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	C/CPFF	Various : Bedford, MA	-	0.430	Apr 2018	0.351	Apr 2019	0.351	Apr 2020	-		0.351	Continuing	Continuing	-
A&AS	C/CPAF	Various : Various	-	1.068	Feb 2018	4.082	Feb 2019	4.124	Feb 2020	-		4.124	Continuing	Continuing	-
Subtotal			-	1.498		4.433		4.475		-		4.475	Continuing	Continuing	N/A

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	14.969	15.100	15.382	-	15.382	Continuing	Continuing	N/A

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2020 Air Force		**Date:** February 2019
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305240F / *Support to DCGS Enterprise*	**Project (Number/Name)** 674826 / *Common Imagery Ground /* *Surface Systems*

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
DCGS Integration Backbone (DIB)																												
DIB Version 4.5.5																												
DIB Version 4.6.X																												
DIB Version 4.7.X																												
DIB Next Generation Interoperability Version																												

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force				Date: February 2019
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0305240F / *Support to DCGS Enterprise*		Project (Number/Name) 674826 / *Common Imagery Ground /* *Surface Systems*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
DCGS Integration Backbone (DIB)				
DIB Version 4.5.5	1	2018	1	2018
DIB Version 4.6.X	1	2018	3	2019
DIB Version 4.7.X	4	2019	4	2023
DIB Next Generation Interoperability Version	1	2019	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										**Date:** February 2019	

Appropriation/Budget Activity 3600 I 7				R-1 Program Element (Number/Name) PE 0305240F I *Support to DCGS Enterprise*					Project (Number/Name) 675265 I *Common Imagery Processor (CIP)*		

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
675265: *Common Imagery Processor (CIP)*	-	11.380	11.479	22.392	0.000	22.392	35.195	12.143	12.364	12.587	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Imagery Processing effort develops the Virtual Imagery Processing Capability (VIP-C) within the DCGS architecture. VIP-C accepts airborne imagery data, processes it into an exploitable format, and provides it to other elements within the weapon system and/or the DCGS Enterprise. Current efforts include further developing the virtual software capability to improve processing across the enterprise and testing, development, and demonstrations integrating updated and new/ emerging sensors into DCGS. In addition, the project involves increasing investment in the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) capability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Imagery Processor *Description:* Continue developing VIP-C to keep pace with growing sensor baseline and enhance imagery data quality. *FY 2019 Plans:* - Continue to upgrade and improve VIP-C to enable better geo-coordinate accuracy, facilitate automated intelligence discovery and integrate new algorithms. *FY 2020 Plans:* - Will continue to upgrade and improve VIP-C to enable better geo-coordinate accuracy, facilitate automated intelligence discovery and integrate new algorithms. This includes increasing investment in the MAGE capability. *FY 2019 to FY 2020 Increase/Decrease Statement:* Funding increase for MAGE requirements	11.380	11.479	22.392
Accomplishments/Planned Programs Subtotals	11.380	11.479	22.392

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• OPAF 04 Line Item 846080: *DCGS-AF*	30.636	23.520	21.918	-	21.918	22.320	22.716	23.120	23.537	Continuing	Continuing

Remarks

PE 0305240F: *Support to DCGS Enterprise*
Air Force

Exhibit R-2A, **RDT&E Project Justification:** PB 2020 Air Force		**Date:** February 2019
Appropriation/Budget Activity 3600 *I* 7	**R-1 Program Element (Number/Name)** PE 0305240F *I Support to DCGS Enterprise*	**Project (Number/Name)** 675265 *I Common Imagery Processor (CIP)*

D. Acquisition Strategy

For imagery processing the Air Force uses an evolutionary acquisition approach with increments and spirals to develop, field, and upgrade the system and structure contracts for the improved capabilities through full and open competition to the maximum extent possible. In terms of management, Air Force leads the Cross Service Working Group that aligns imagery processing capabilities across the Joint Services in support of USD(I) direction.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-3, **RDT&E Project Cost Analysis:** PB 2020 Air Force | **Date:** February 2019

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305240F / *Support to DCGS Enterprise*	Project (Number/Name) 675265 / *Common Imagery Processor (CIP)*

Product Development ($ in Millions)					FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Imagery Processing Software Development	Various	Various : Various	-	11.380	Mar 2018	11.479	Dec 2018	22.392	Nov 2019	-		22.392	Continuing	Continuing	-
Subtotal			-	11.380		11.479		22.392		-		22.392	Continuing	Continuing	N/A

			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	11.380		11.479		22.392		-		22.392	Continuing	Continuing	N/A

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2020 Air Force		**Date:** February 2019
Appropriation/Budget Activity 3600 *I* 7	**R-1 Program Element (Number/Name)** PE 0305240F *I Support to DCGS Enterprise*	**Project (Number/Name)** 675265 *I Common Imagery Processor (CIP)*

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
Virtual Imagery Processing Capability																												
Software Release (3.48)		█	█																									
Software Release (3.50)				█	█																							
Software Release (3.52)						█	█																					
Software Release (3.54)								█	█																			
Machine Assisted GEOINT Exploitation Investment										█	█	█	█	█														
Software Release (3.56)										█	█																	
Software Release (3.58)												█																
Software Release (3.x)													█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

Exhibit R-4A, **RDT&E Schedule Details:** PB 2020 Air Force				**Date:** February 2019	
Appropriation/Budget Activity 3600 *I* 7		**R-1 Program Element (Number/Name)** PE 0305240F *I Support to DCGS Enterprise*		**Project (Number/Name)** 675265 *I Common Imagery Processor (CIP)*	

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Virtual Imagery Processing Capability				
Software Release (3.48)	2	2018	3	2018
Software Release (3.50)	4	2018	2	2019
Software Release (3.52)	2	2019	4	2019
Software Release (3.54)	4	2019	2	2020
Machine Assisted GEOINT Exploitation Investment	2	2020	4	2021
Software Release (3.56)	2	2020	4	2020
Software Release (3.58)	4	2020	1	2021
Software Release (3.x)	1	2021	4	2024