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

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 0305240F / <i>Support to DCGS Enterprise</i>
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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	-	37.774	33.486	40.421	0.000	40.421	-	-	-	-	-	-
674826: <i>Common Imagery Ground / Surface Systems</i>	-	15.382	1.088	2.330	0.000	2.330	-	-	-	-	-	-
675265: <i>Common Imagery Processor (CIP)</i>	-	22.392	32.398	38.091	0.000	38.091	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Program Element funds the Imagery Processing effort which consists of the Virtual Imagery Processing Capability (VIP-C) program and associated Imagery Processing Research and Development.

1) 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.

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.

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 \$0.00M and in FY21 \$0.00M was expended 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.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	37.774	33.547	14.496	0.000	14.496
Current President's Budget	37.774	33.486	40.421	0.000	40.421
Total Adjustments	0.000	-0.061	25.925	0.000	25.925
• 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	-0.061	25.925	0.000	25.925

Change Summary Explanation

In FY 2022, \$18.065 million was added to the program to further improve imagery processing and the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) capabilities. In addition, BY funding totals include \$7.86 million requested for Direct War and/or Enduring Requirements costs.

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force										Date: May 2021		
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 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
674826: Common Imagery Ground / Surface Systems	-	15.382	1.088	2.330	0.000	2.330	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project element funds the Common Imagery Ground / Surface Systems enterprise support capabilities. This includes support to OUSD(I) and AF DCGS priority efforts.

The funding 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.

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 \$0.00M and in FY21 \$0.00M was expended for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Distributed Common Ground / Surface System (DCGS) Integration Backbone and Test/Community Support for the DCGS Enterprise	13.075	0.000	0.000	-	0.000
Description: Develop, modernize, integrate, test and manage the DIB and provide test/community support to the DCGS enterprise.					
FY 2021 Plans: None due to transfer of funds to DIA's Common Data Fabric (CDF) effort.					
FY 2022 Base Plans: N/A					
FY 2021 to FY 2022 Increase/Decrease Statement: N/A					
Title: DCGS Enterprise Interoperability	2.307	1.088	2.330	-	2.330
Description: Provide support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts.					

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<i>FY 2021 Plans:</i> Continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts.					
<i>FY 2022 Base Plans:</i> Will continue to support OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts.					
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Funding increase due to increase in Support to DCGS Enterprise IPT activity.					
Accomplishments/Planned Programs Subtotals	15.382	1.088	2.330	-	2.330

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

N/A

Remarks

D. Acquisition Strategy

The Air Force uses an evolutionary, incremental acquisition approach with development cycles and sprints to develop, field, and upgrade the system and structure contracts for the improved capabilities through full and open competition to the maximum extent possible. Additionally, strategic partnerships and agreements with National Laboratories and other agencies will be utilized.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0305240F / Support to DCGS Enterprise				674826 / Common Imagery Ground / Surface Systems								
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
DIB Modernization, Integration, DT and Interoperability	C/T&M	Various : Various	-	8.729	Feb 2020	-		-		-		-	-	-	-	
Subtotal			-	8.729		-		-		-		-	-	-	N/A	
Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
HCIC & IA	C/Various	Various : Various	-	0.173	Jan 2020	-		-		-		-	-	-	-	
DCGS Enterprise Interoperability	C/Various	Various : Various	-	2.307	Apr 2020	1.088	Apr 2021	2.330	Apr 2022	-		2.330	-	-	-	
Subtotal			-	2.480		1.088		2.330		-		2.330	-	-	N/A	
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
A&AS	C/CPAF	Various : Various	-	3.326	Feb 2020	-		-		-		-	-	-	-	
Program Management Administration	C/CPAF	Various : Various	-	0.847	Oct 2020	-		-		-		-	-	-	-	
Subtotal			-	4.173		-		-		-		-	-	-	N/A	
Project Cost Totals			-	15.382		1.088		2.330		-		2.330	-	-	N/A	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: May 2021
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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

DIB	
DIB Next Generation Interoperability Version	

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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 0305240F / Support to DCGS Enterprise	Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>DIB</i>				
DIB Next Generation Interoperability Version	1	2020	4	2020

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

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)
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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
675265: Common Imagery Processor (CIP)	-	22.392	32.398	38.091	0.000	38.091	-	-	-	-	-	-
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 capability through the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) effort.

BY funding totals include \$7.86 million requested for Direct War and/or Enduring Requirements costs.

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 \$0.00M and in FY21 \$0.00M was expended for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: Imagery Processor	22.392	32.398	38.091	0.000	38.091
Description: Continue developing VIP-C to keep pace with growing sensor baseline and enhance imagery data quality.					
FY 2021 Plans: - Continue to upgrade and improve VIP-C to enable better geo-coordinate accuracy, facilitate automated intelligence discovery and integrate new algorithms.					
- Continue MAGE research and development by leveraging Department of Energy and Air Force Research Laboratory expertise. This includes identification of targets through machine learning algorithms, use and refinement of test harness, validation of new algorithms, and generation test data and methods.					
FY 2022 Base Plans:					

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Will continue to upgrade and improve VIP-C to enable better geo-coordinate accuracy, facilitate automated intelligence discovery and integrate new algorithms. This includes development integrating into a Cloud infrastructure and cyber defense.					
- Will continue MAGE research and development by leveraging Department of Energy and Air Force Research Laboratory expertise. This includes identification of targets through machine learning algorithms, use and refinement of test harness, validation of new algorithms, and generation of test data and methods.					
<i>FY 2022 OCO Plans:</i> FY22 OCO Funds will further MAGE research and development by leveraging Department of Energy and Air Force Research Laboratory expertise. This includes identification of targets through machine learning algorithms, use and refinement of test harness, validation of new algorithms, and generation of test data and methods.					
<i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Funding was increased to further develop and improve imagery processing and MAGE capabilities.					
Accomplishments/Planned Programs Subtotals	22.392	32.398	38.091	0.000	38.091

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 04 Line Item 846080: DCGS-AF	21.918	22.288	124.774	-	124.774	-	-	-	-	-	-

Remarks

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.

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force **Date:** May 2021

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	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

Virtual Imagery Processing Capability	
Software Release (3.54)	
Machine Assisted GEOINT Exploitation Investment	
Software Release (3.56)	
Software Release (3.58)	
Software Release (3.60)	
Software Release (3.x)	

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Virtual Imagery Processing Capability</i>				
Software Release (3.54)	1	2020	2	2020
Machine Assisted GEOINT Exploitation Investment	2	2020	4	2022
Software Release (3.56)	2	2020	4	2020
Software Release (3.58)	4	2020	1	2021
Software Release (3.60)	1	2021	4	2021
Software Release (3.x)	3	2021	4	2022