Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force											Date: March 2014	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0305208F / *Distributed Common Ground/Surface Systems*							
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	-	43.580	6.321	27.265	-	27.265	24.702	23.177	23.630	24.081	Continuing	Continuing
674826: *Common Imagery Ground / Surface Systems*	-	26.806	6.294	19.754	-	19.754	19.867	21.700	22.124	22.546	Continuing	Continuing
676025: *Data Compression*	-	14.669	0.027	7.511	-	7.511	4.835	1.477	1.506	1.535	Continuing	Continuing
676028: *Dynamic Time Critical Warfighting Capability*	-	2.105	-	-	-	-	-	-	-	-	Continuing	Continuing

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

AF Distributed Common Ground Systems (DCGS) is a network-centric weapon system capable of tasking Intelligence, Surveillance and Reconnaissance (ISR) sensors and receiving, and providing the Processing, Exploitation, and Dissemination (PED) capability for data, information and intelligence from airborne, national, and commercial platforms and sensors. The weapon system consists of numerous active duty, Air National Guard, and mission partner sites interconnected by a robust communications infrastructure that allows collaborative reach-back operations. Operators correlate collected Geospatial Intelligence (GEOINT), Signals Intelligence (SIGINT), and Measurement and Signature Intelligence (MASINT) data to provide decision-quality information to the Joint Task Force (JTF) and below, including significant support to time-critical targeting. AF DCGS is the primary PED capability for the U-2, Global Hawk, Predator, Reaper and Project Liberty.

AF DCGS is modernizing through sustainment by integrating the necessary technologies and tools to provide increased capabilities and meet emerging and urgent operational needs. These efforts will also integrate commercial and government furnished equipment upgrades to provide current technologies and achieve necessary application services. The next series of upgrades will meet the operational need to integrate new and/or improved sensor capabilities. They will also enhance interoperability by migrating to a Service Oriented Architecture (SOA)and improving data sharing ability per DoD direction.

The DCGS Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne ISR sensor data and transmit near real-time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort will develop, test and implement new sensor data compression and decompression algortihms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and DCGS. Outputs will meet standard certification for use within the DoD GEOINT and MASINT architectures.

Activities include studies and analysis to support both current program planning and execution and future program planning.

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force					Date: March 2014
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*			R-1 Program Element (Number/Name) PE 0305208F / *Distributed Common Ground/Surface Systems*		
B. Program Change Summary ($ in Millions)	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO**	**FY 2015 Total**
Previous President's Budget	63.514	7.498	27.606	-	27.606
Current President's Budget	43.580	6.321	27.265	-	27.265
Total Adjustments	-19.934	-1.177	-0.341	-	-0.341
• Congressional General Reductions	-0.065	-0.177			
• Congressional Directed Reductions	-15.000	-1.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-4.869	-	-0.341	-	-0.341

Change Summary Explanation

FY13 $15M Congressional mark for Data Compression contract award delay.

FY13 reductions in Other Adjustments was due to Sequestration.

FY14 $1.000M Congressional reduction due to inadequate justification.

FY15 $.341M reduction for higher Air Force needs.

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force			Date: March 2014
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / *Distributed Common Ground/Surface Systems*	Project (Number/Name) 674826 / *Common Imagery Ground / Surface Systems*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
674826: *Common Imagery Ground / Surface Systems*	-	26.806	6.294	19.754	-	19.754	19.867	21.700	22.124	22.546	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

AF Distributed Common Ground Systems (DCGS) is a network-centric weapon system capable of tasking Intelligence, Surveillance and Reconnaissance (ISR) sensors and receiving and providing the Processing, Exploitation, and Dissemination (PED) capability for data, information and intelligence from airborne, national, and commercial platforms and sensors. The weapon system consists of numerous active duty, Air National Guard, and mission partner sites interconnected by a robust communications infrastructure that allows collaborative reach-back operations. Operators correlate collected Geospatial Intelligence (GEOINT), Signals Intelligence (SIGINT), and Measurement and Signature Intelligence (MASINT) data to provide decision-quality information to the Joint Task Force (JTF) and below, including significant support to time-critical targeting. AF DCGS is the primary PED capability for the U-2, Global Hawk, Predator, Reaper and Project Liberty.

AF DCGS is modernizing through sustainment by integrating the necessary technologies and tools to provide increased capabilities and meet emerging and urgent operational needs. These efforts will also integrate commercial and government furnished equipment upgrades to provide current technologies and achieve necessary application services. The next series of upgrades will meet the operational need to integrate new and/or improved sensor capabilities. They will also enhance interoperability by migrating to a Service Oriented Architecture (SOA) and improving data sharing ability per DoD direction.

Program actions are categorized by four distinct efforts. The GEOINT effort provides the capability for Planning, Collecting, Processing, Analysis and Dissemination (PCPAD) of imagery intelligence. The Systems Release effort provides this capability for SIGINT. The Data Links effort provides Line-of-Site (LOS) and Satellite Communications (SATCOM) capabilities that allow AF DCGS to send and receive information between airborne Intelligence, Surveillance, and Reconnaissance (ISR) assets and the AF DCGS weapon system. The Network Communications effort involves modernizing AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward a cloud architecture.

AF DCGS also participates in 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 2013	FY 2014	FY 2015
Title: Geospatial Intelligence (GEOINT)	2.362	1.264	9.137
Description: Integrate new and improved sensors for exploitation and analysis of imagery and geospatial information.			
FY 2013 Accomplishments:			

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 674826 / *Common Imagery Ground / Surface Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
Continued efforts to meet operational need to integrate new and improved sensors, increase capacity and imagery and geospatial data availability, and comply with DoD direction to improve interoperability through migration to a Service Oriented Architecture (SOA) construct. ***FY 2014 Plans:*** Continuing efforts to meet operational need to integrate new and improved sensors, increase capacity and imagery and geospatial data availability, and comply with DoD direction to improve interoperability through migration to a Service Oriented Architecture (SOA) construct. ***FY 2015 Plans:*** Will continue efforts to meet operational need to integrate new and improved sensors, increase capacity and imagery and geospatial data availability, virtualize sensor processing and comply with DoD direction to improve interoperability through migration to a Service Oriented Architecture (SOA) construct. This includes integrating upgraded versions of electro-optical and synthetic aperture radar sensors.			
Title: Systems Release (SR) ***Description:*** Continue efforts to meet operational need to integrate new and improved sensors, increase capacity and signals intelligence data availability, and comply with DoD direction to improve interoperability through migration to a Service Oriented Architecture (SOA) construct. ***FY 2013 Accomplishments:*** Continued efforts to meet operational need to integrate new and improved sensors, increase capacity and signals intelligence data availability, and comply with DoD direction to improve interoperability through migration to a Service Oriented Architecture (SOA) construct. ***FY 2014 Plans:*** Continuing efforts to meet operational need to integrate new and improved sensors, increase capacity and signals intelligence data availability, and comply with DoD direction to improve interoperability through migration to a Service Oriented Architecture (SOA) construct. ***FY 2015 Plans:*** Will continue efforts to meet operational need to integrate new and improved sensors, increase capacity and signals intelligence data availability, and comply with DoD direction to improve interoperability through migration to a Service Oriented Architecture (SOA) construct. A major effort will involve beginning to virtualize the SIGINT capability throughout the weapon system.	9.924	0.350	1.117
Title: Data Links	5.700	0.350	2.500

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 674826 / *Common Imagery Ground / Surface Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
Description: Upgrade the AF DCGS capability to transmit and receive information via data link architecture. ***FY 2013 Accomplishments:*** Continued upgrading AF DCGS capability to transmit and receive information via data link architecture. ***FY 2014 Plans:*** Will continue upgrading AF DCGS capability to transmit and receive information via data link architecture. This will include integrating improved SATCOM terminals. ***FY 2015 Plans:*** Will continue upgrading AF DCGS capability to transmit and receive information via data link architecture. This will include integrating improved SATCOM terminals.			
Title: Network Communications (NETCOMMS) ***Description:*** Upgrade and evolve the AF DCGS communications network across the various architectures. ***FY 2013 Accomplishments:*** Continued to upgrade and evolve the AF DCGS communications network across the various architectures. ***FY 2014 Plans:*** Continuing to upgrade and evolve the AF DCGS communications network across the various architectures. ***FY 2015 Plans:*** Will continue to upgrade and evolve the AF DCGS communications network across the various architectures establishing capabilities for remote hardware and software management. This will include initial effort to modernize the wide area network and extend the high speed data transport capability.	5.850	4.330	7.000
Title: Geospatial Product Library (GPL) ***Description:*** Develop and integrate a greater variety of Imagery Intelligence sources and geospatial visualization capabilities in the GPL. ***FY 2013 Accomplishments:*** Completed the development and integration of a greater variety of Imagery Intelligence sources and geospatial visualization capabilities in the GPL. ***FY 2014 Plans:***	2.970	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 674826 / *Common Imagery Ground / Surface Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
N/A ***FY 2015 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	26.806	6.294	19.754

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• RDT&E: BA07: PE 0305240F: *Support to DCGS Enterprise*	22.454	19.309	20.218	-	20.218	28.623	28.166	26.748	27.256	Continuing	Continuing
• OPAF: BA07: Line Item #: 846080: *DCGS-AF*	90.434	97.149	181.556	-	181.556	125.106	143.353	129.351	128.076	Continuing	Continuing

Remarks

D. Acquisition Strategy

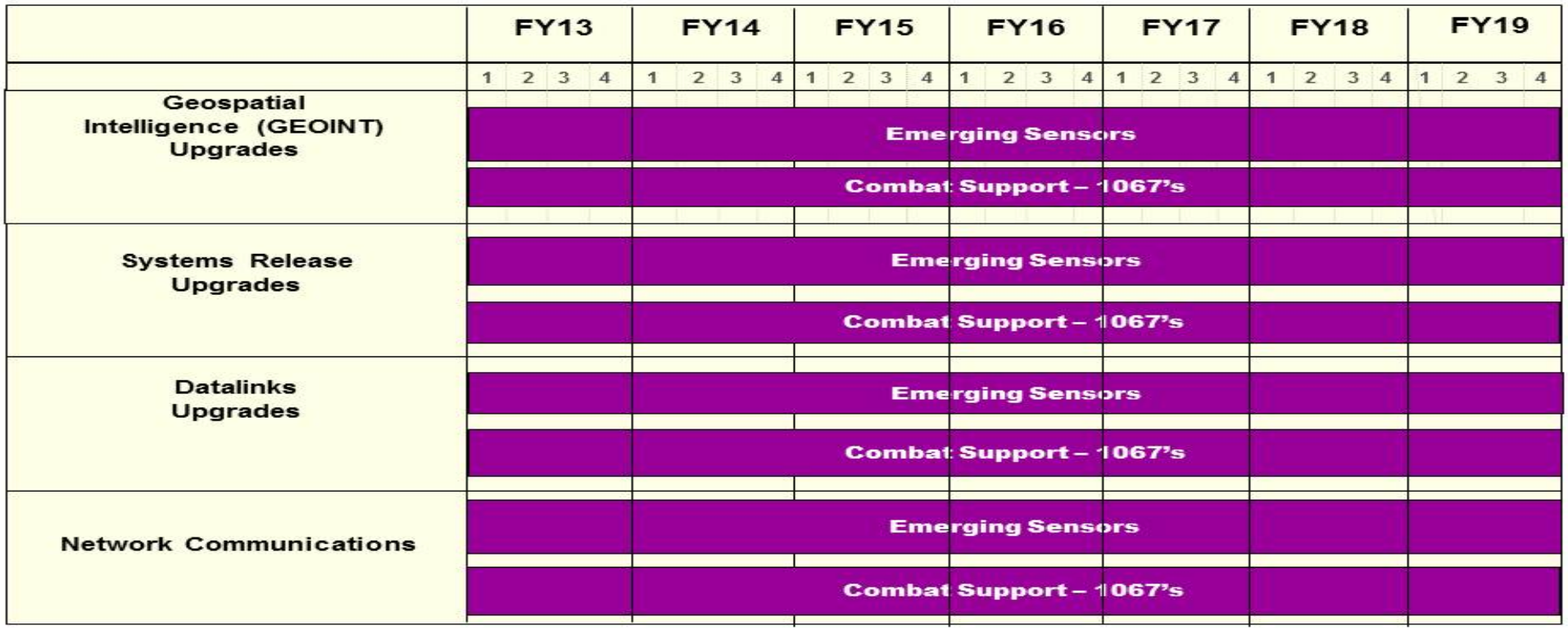
The Air Force has changed the AF DCGS acquisition strategy from a single block upgrade to programs that will deliver the following families of capabilities to the fielded baseline while meeting emerging operational requirements and continuing to develop and integrate new/upgraded sensors: GEOINT, Systems Release Upgrades, Data Links, and NetComms.

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-4, RDT&E Schedule Profile: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 674826 / *Common Imagery Ground / Surface Systems*

Common Imagery Ground/Surface Systems (CIGSS) Schedule



AF DCGS — Nowhere to Hide

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force			Date: March 2014
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / *Distributed Common Ground/Surface Systems*	Project (Number/Name) 676025 / *Data Compression*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
676025: *Data Compression*	-	14.669	0.027	7.511	-	7.511	4.835	1.477	1.506	1.535	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

This initiative will provide the warfighter a capability to efficiently compress and decompress airborne ISR sensor data and transmit near real- time to tactical users through current and future band-width limited commercial SATCOM or military SATCOM. The effort will develop, test and implement new sensor data compression and decompression algortihms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and DCGS. Outputs will meet standard certification for use within the DoD GEOINT and MASINT architectures.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
Title: Data Compression	14.669	0.027	7.511
Description: The program began developing and testing compression and decompression algorithms for airborne ISR sensor data. The program will eventually build, integrate and test sensor specific hardware (with the algorithms embedded) for onboard data compression. The effort initially focused on compression and decompression of complex and detected Synthetic Aperture Radar (SAR) data followed by applications of compression technologies to other DoD IMINT/MASINT sensor data (Spectral, Electro-Optical/Infrared (EO/IR), Light Detection and Ranging (LIDAR), Laser Radar (LADAR), Video) and ground architecture. Outputs will meet DoD standard certification. ***FY 2013 Accomplishments:*** Continued development of complex/detected SAR, spectral, LIDAR,& Wide Area Motion Imagery (WAMI) sensor data compression capabilities. Continued to prepare technology demonstration efforts. ***FY 2014 Plans:*** Continuing second phase development and evaluation of complex/detected SAR, spectral, LIDAR, & WAMI sensor data compression capabilities at a reduced level of effort. ***FY 2015 Plans:*** Increase development and testing of complex/detected SAR, spectral (HSI/MSI), LIDAR, & WAMI data compression capabilities. Will begin developing and testing compression and decompression algorithms for Video Phase History (VPH) SAR. Will also begin technology demonstration effort and cooperative platform integration.			
Accomplishments/Planned Programs Subtotals	14.669	0.027	7.511

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 676025 / *Data Compression*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

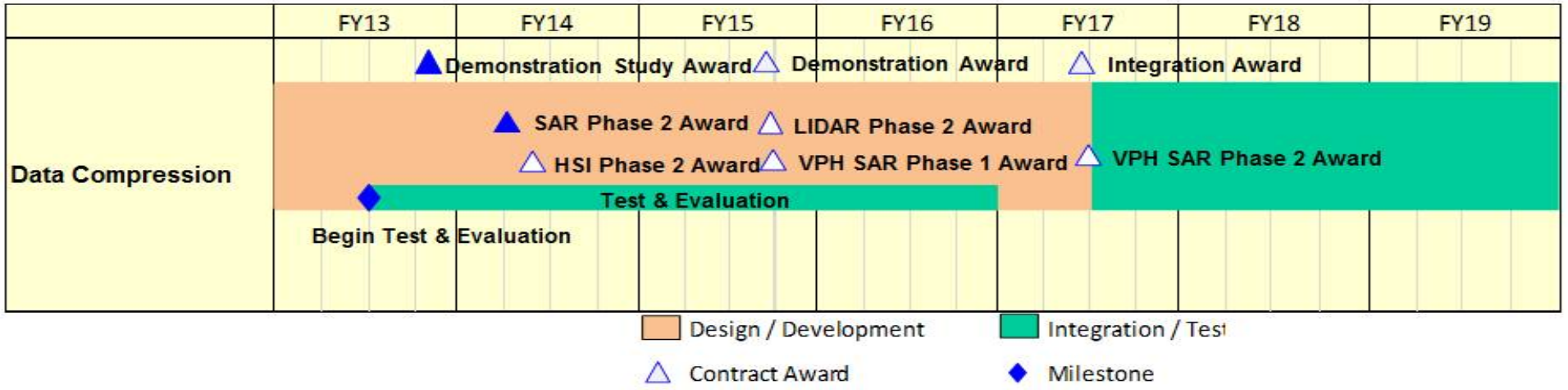
The Data Compression acquisition approach is to design and develop compression and decompression technology hardware and software components, interfaces and standards for various airborne ISR platforms, ground stations, data storage facilities, and exploitation tools utilizing existing contracts with full and open competition where appropriate. Integration will be accomplished by the requisite program offices with data compression specific integration support provided.

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-4, RDT&E Schedule Profile: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 676025 / *Data Compression*

Data Compression Schedule



- On-going test & evaluation supports the final Phase 1 and interim & final Phase 2 software and hardware deliveries

1

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force			Date: March 2014
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305208F / *Distributed Common Ground/Surface Systems*	Project (Number/Name) 676028 / *Dynamic Time Critical Warfighting Capability*	

COST ($ in Millions)	Prior Years	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO #	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
676028: *Dynamic Time Critical Warfighting Capability*	-	2.105	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

Dynamic Time Critical Warfighting Capability (DTCWC) fuses Electronics Intelligence (ELINT) and Imagery in an upstream data fusion methodology that greatly improves target of interest identification and geolocation timeliness and accuracy. While not part of the AF DCGS weapon system, this Military Intelligence Program funded capability will initially fuse ISR feeds outside of AF DCGS while leveraging AF DCGS for access to multiple raw ISR data feeds. The primary aim of this capability is to support the targeting process, with likely outputs to the Air Operations Center (AOC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
Title: Dynamic Time Critical Warfighting Capability (DTCWC)	2.105	-	-
Description: Fuse ELINT and Imagery in an up-stream data fusion methodology that greatly improves target of interest identification and geolocation timeliness and accuracy. ***FY 2013 Accomplishments:*** Continued efforts to add additional sensors and sensor modalities to DTCWC fusion engine. Refined current algorithms to allow for target detection in added environments and terrain types. Added new target sets to the existing DTCWC targets list. ***FY 2014 Plans:*** In FY 2014 Dynamic Time Critical Warfighting Capability was terminated. ***FY 2015 Plans:*** NA			
Accomplishments/Planned Programs Subtotals	2.105	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 676028 / *Dynamic Time Critical Warfighting Capability*

D. Acquisition Strategy

DTCWC used the acquisition strategy of providing spiral releases of software and capabilities. A sole-source contract was awarded to Johns Hopkins University Applied Physics Lab due to their evolutionary approach to upstream data fusion.

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-4, RDT&E Schedule Profile: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305208F / *Distributed Common Ground/Surface Systems*	**Project (Number/Name)** 676028 / *Dynamic Time Critical Warfighting Capability*

DTCWC Program Schedule