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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2013 Air Force	<b>DATE:</b> February 2012
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APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>				PE 0207449F: <i>C2 Constellation</i>							
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	25.039	17.254	18.086	-	18.086	16.808	-	-	-	Continuing	Continuing
675078: <i>Horizontal Integration</i>	12.541	8.365	8.477	-	8.477	8.455	-	-	-	Continuing	Continuing
675140: <i>Joint Expeditionary Force Experiments</i>	12.498	8.889	9.609	-	9.609	8.353	-	-	-	Continuing	Continuing

**Note**

The Cost to Complete and Total Cost for MDAP projects in this program element are documented in the R3. The Cost to Complete and Total Cost on the R2 are entered as "Continuing" and not reflective of the total cost for MDAP projects since the R2 does not account for prior years funding.

**A. Mission Description and Budget Item Justification**

The Command and Control Constellation (C2C) is the sole Air Force program for defining, developing, and assessing integrated effects of global, theater and tactical level Air Force air, space, and cyber Command and Control (C2) capabilities in support of the joint warfighter. The Air Force faces a complex future where conflict will range across a broad spectrum of operations and lethality. The Air Force requires capabilities with the maximum possible flexibility to deal with the widest possible range of conflict.

The C2C is the enabling program element for C2 Integration/Modernization. The Air Force is working to establish a C2 framework and architecture to be used as a unifying vision of command and control for each of the services core functions. C2C will support: C2, C2 of Intelligence, Surveillance, and Reconnaissance (ISR), integration by providing architectural analysis, prototyping, experimentation, innovation to develop cross-cutting solutions, and enable an improved "sense-to-kill" cycle time. C2C innovations and experimentation provides strategic, operational, and tactical direction for Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) solutions to facilitate an integrated mission environment that support C2 planning and execution for air, space, and cyberspace. In-depth development and analyses of C2 operational, systems, and technical architectures are geared towards identifying capability gaps, identifying required "To Be" information services, and evaluating C2 program planned improvements. Through prototyping and experimentation, C2C will integrate rapidly developing technologies to promote common standards, data sharing, and information services across Air Force and joint warfighting applications to support joint enterprise solutions.

Project 5078, Horizontal Integration (HI) conducts DOTMLPF analysis and assessments to guide cross-cutting, C2 sub-enterprise and cyberspace investment decisions that integrate USAF capabilities into joint and coalition operations. HI identifies, prioritizes, and develops horizontally integrated solution recommendations to ensure the latest technologies and information services are integrated into a cross cutting C2 system that enables integrated effects in all warfighter domains. The HI strategy will be validated by Headquarters, Air Force (HAF) to ensure that initiatives are harmonized with the most urgent warfighter needs described by the C2 Capability Assessment Team (CAT) and C2 Core Function Master Plan (CFMP). Once validated, HI funds are applied toward identifying the most critical warfighter capabilities and ensuring they are horizontally integrated into both Air Force and joint C2 programs of record.

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APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	PE 0207449F: <i>C2 Constellation</i>

Project 5140, Joint Expeditionary Force Experiments (JEFX) are agile and frequent innovation-focused experiments which lead to pre-fielded operational and technical assessments. Constructive, live and virtual, operationally representative warfighter environments are created to support integration challenges which focus on critical C2 areas of interest that support the joint warfighter; including, C2 of ISR innovation that supports the air, space, and cyberspace domains. JEFX provides the infrastructure and integration initiatives for experimentation with emerging operational concepts and attendant new technologies that fill operational gaps in Air Force capabilities to meet emerging and rapidly changing real world threats. The JEFX strategy is validated and supported by Commander, Air Combat Command (COMACC) and coordinated with Headquarters, Air Force (HAF) ensuring initiatives are harmonized with the most urgent warfighter needs and validated requirements described in the AF Core Function Master Plans (CFMP) and supported through MAJCOM Core function Lead Integrator (CFLI). JEFX initiatives are based on emerging CONOPS and warfighter challenges, important enablers of innovation and transformation, which are designed to support the themes and demonstrate emerging Air Force capabilities to deploy and employ decisive air, space and cyberspace power in support of the Joint Force.

This program is in Budget Activity 7, Operational System Development, because these budget activities include development efforts to upgrade systems currently fielded or have approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>
Previous President's Budget	24.229	18.102	18.113	-	18.113
Current President's Budget	25.039	17.254	18.086	-	18.086
Total Adjustments	0.810	-0.848	-0.027	-	-0.027
• Congressional General Reductions	-	-0.848			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.308	-			
• SBIR/STTR Transfer	-0.660	-			
• Other Adjustments	-0.838	-	-0.027	-	-0.027

## Change Summary Explanation

FY11 Congressional General Reduction of 0.838M in Other Adjustment row.

FY12 Congressional General Reduction (FFRDC, Sec. 8023) of 0.848M.

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force									DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation				PROJECT 675078: Horizontal Integration			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
675078: Horizontal Integration	12.541	8.365	8.477	-	8.477	8.455	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

## A. Mission Description and Budget Item Justification

Horizontal Integration (HI) develops an integrated mission environment that supports cross-cutting solutions across the air, space, and cyberspace Command and Control (C2) warfighter domain. HI activities include: requirements, architecture, systems engineering, technology development, risk reduction, prototyping, and transition. These activities are required to: identify, design, develop, experiment, and implement C2 solutions supporting warfighting integration and interoperability needs which are not the sole responsibility of a specific program of record.

The nature of integrated and interoperable C2 warfighting capabilities span multiple platforms and domains. These capabilities are routinely being adjusted to meet the changing requirements from the warfighting communities. The HI project is uniquely designed to look across platforms and domains enabling the Air Force to respond to the needs across the seams of individual systems. These horizontal integration initiatives will be prototyped, assessed, appropriately captured in requirements documents and then transitioned to programs of record for production, fielding and sustainment.

Systems Engineering and analysis is the 'glue' that holds Command and Control Constellation (C2C) elements together and closes the seams in the C2 architectures. Capability analysis identifies areas where interoperability can be improved within the Air Force, among joint services, and coalition partners. Once capability issues are identified, they are prioritized and pilot initiatives are developed to provide solutions to the warfighter challenges to resolve the capability gaps. The HI project also helps to competitively prototype integrated solutions against validated program requirements.

The benefits of these activities are two-fold: the operational community is able to weigh the cost, risk, and performance trade-offs between enterprise solutions versus program centric solutions, and it supports competitive prototyping of all acquisition programs. The synchronization of HI prototyping and program milestone requirements offers an effective environment for increasing interoperability while reducing the impact of this policy on multiple programs. An infrastructure environment manages a continuous distributed operational environment that supports air, space, and cyberspace C2 and rapid acquisition, prototyping, development, integration, and fielding. C2 initiatives may use this infrastructure to mature their development status prior to entry into JEFX for operational and technical suitability assessment.

The HI prototype performances are assessed for operational utility, and the most promising initiatives/technologies will be matured and transitioned into weapon system configuration control baselines. Requirement documents will be published and revised, and a requirements database and implementation plan identifying the most significant C2C net-centric integration issues will be updated to catalog the activities necessary to accomplish this integration.

In addition, this project supports concept exploration, program definition/risk reduction efforts, and studies that support continuous improvements in C2; including but not limited to: C2 of Intelligence, Surveillance and Reconnaissance (ISR), Remotely Piloted Aircraft (RPA) standards, cyber vulnerabilities, improvements to Air Force Processing Exploitation and Dissemination (PED), imagery and radar development, and interoperability with Joint Service, Allied and Coalition systems. Activities also include studies and analysis to support both current program planning and execution, as well as future program planning.

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force		DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation	PROJECT 675078: Horizontal Integration		
This program is in Budget Activity 7, Operational System Development, because these budget activities include development efforts to upgrade systems currently fielded or has approval for full rate production and anticipate production funding in the current or subsequent fiscal year.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012	FY 2013
Title: Reqmts/ CBP/ Integrated Ops/ C2 Framework Description: Requirements/Capabilites Based Planning (CBP) FY 2011 Accomplishments: Developed and documented integrated Command and Control (C2) requirements for Integrated Air and Missile Defense (IAMD). Analyzed and documented emerging Air Force (AF) C2 requirements. Focused on the future C2 integration/modernization strategy; integration of material sources with theater support in the Langley Air Force Base Operations Support Center (OSF). Concentrated efforts on Integrated Operating Environment (IOE) Space, IOE Electronic Warfare Battle Management, IOE Targeting, IOE Agile Combat Support and Joint Air Ground Integration Cell (JAGIC). FY 2012 Plans: Refine Integrated Air and Missile Defense (IAMD) C2 requirements. Continue future C2 integration/modernization strategy. FY 2013 Plans: Will analyze, develop, and document emerging Air Force (AF) integrated Command and Control (C2) requirements. Will continue future C2 integration/modernization strategy in a series of concept and/or capability development and technology exploration activities designed to integrate C2 operations across air, space, and cyberspace domains.		5.503	2.650	2.852
Title: Arch and SE Description: Architecture Development and Systems Engineering FY 2011 Accomplishments: Continued functional and engineering analysis within Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) community. Emphasized Air-Ground Modernization, C2 of Intelligence, Surveillance, and Reconnaissance (ISR) Integration, Dynamic ISR management, and C2 of cyber requirements. FY 2012 Plans: Continue technical expertise support of functional and engineering analysis within the C2 community. Specific emphasis on Air-Ground Modernization and C2 of ISR Integration. FY 2013 Plans:		0.499	0.364	2.738

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force		DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation	PROJECT 675078: Horizontal Integration		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012	FY 2013
Will continue functional and systems engineering analysis within the C2 community to flesh out technical architectures and their relationships to operational architectures within the warfighting environment. Specific focus areas and efforts will depend on real world needs, C2 enterprise and C2 of cyber requirements.				
Title: Analysis Integ and SE Description: Analysis Integration and Systems Engineering  FY 2011 Accomplishments: Continued analysis and integration efforts. Specific focus areas and effort piloted real world needs and C2ISR enterprise requirements. Continued analysis and transition of the prototype capability developed in previous years.  FY 2012 Plans: Complete analysis and integration efforts. Specific focus areas are tailored to real world needs, the C2 enterprise, and C2 of Cyber requirements. Complete the analysis and transition of prototype capability developed in previous years.		0.805	0.519	-
Title: Ops-Tech Analysis-Concept Dev't Description: Ops/Tech Analysis and Concept Development  FY 2011 Accomplishments: Developed an Integrated Operational Environment (IOE) capability that improved mobility force integration theater planning efforts. Prototyped a capability for in-transit visibility of Global Strike assets for 8AF. Investigated a multi-level security solution that integrated ISR mobility and weather data that supported political/military operations. Continued the development of an IOE concept to guide AF integration of Command and Control (C2) and provided the necessary material and non-material capabilities that enabled the efficient cross-functional domain flow of monitoring, assessment, planning and execution data.  FY 2012 Plans: Complete the modernization of the Command and Control (C2) center programs. Enable a collaborative Integrated Operating Environment (IOE) to present, plan, and execute AF capabilities in support of Joint operations. Improve and complete real time information exchange through the planning and execution phases.		2.438	1.533	-
Title: HI Solutions Assessments Description: Horizontal Integration Solutions Assessment  FY 2011 Accomplishments: Selected HI initiatives for execution that fostered enterprise integration across C2ISR programs and supported the DoDI 5000.02 requirements for competitive prototyping. Initiatives selected for funding in FY11 included: Extension to support of near-term		3.296	3.299	2.887

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0207449F: <i>C2 Constellation</i>				<b>PROJECT</b> 675078: <i>Horizontal Integration</i>			

  

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>
<p>Cyber integration for situation Awareness (Map The Mission); Extended capabilities for Air-Ground Modernization to integrate AF systems like Theatre Battle Management Core Systems (TBMCS) with a number of Army systems that shared air space information; and gap filling capabilities that addressed shortcomings during operator experiments.</p> <p><b>FY 2012 Plans:</b> Continue the selection of HI initiatives for execution that will foster enterprise integration across C2 and C2 of cyber programs and support the DoDI 5000.02 requirement for competitive prototyping. After the data call is issued and the submissions evaluated, the selected initiatives will be funded for execution.</p> <p><b>FY 2013 Plans:</b> Will continue to conduct annual selection of HI initiatives for new execution or continuation that will: a. foster enterprise integration across C2 and extend an Integrated Operating Environment, b. support the DoDI 5000.02 requirements for competitive prototyping and c. aid in refining requirements. Key criteria are near-term warfighter impact and likelihood of transition. Potential initiatives will be evaluated late third/fourth quarter, and the selected initiatives will be funded for execution.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	12.541	8.365	8.477

  

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u> <u>Base</u>	<u>FY 2013</u> <u>OCO</u>	<u>FY 2013</u> <u>Total</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

  

<b>D. Acquisition Strategy</b>
This project uses full and open competition for operational requirements document creation, systems engineering & architecture development, modeling & simulation and experimentation, joint interoperability/integration, and horizontal integration approaches.

  

<b>E. Performance Metrics</b>
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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Air Force										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation				PROJECT 675078: Horizontal Integration					
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Requirements/Capability Based Planning (CBP)/ GAPS/ AWS Horizontal Integration	C/FFP	MITRE:Hanscom AFB, MA	0.335	-		-		-		-	Continuing	Continuing	TBD
Requirements/Capability Based Planning (CBP)	C/CPFF	Northrop Grumman:Langley AFB, VA	5.814	2.700	Nov 2011	1.800	Dec 2012	-		1.800	Continuing	Continuing	TBD
Requirements/Capability Based Planning (CBP)(2)	Various	Various:Langley AFB, VA	1.178	-		-		-		-	Continuing	Continuing	TBD
Requirements/CBP/ Assessment/Analysis	MIPR	MIT/LL:Bedford, MA	2.063	-		-		-		-	Continuing	Continuing	TBD
Architecture Development and Systems Engineering/ GAPS/ AWS Horizontal Integration	C/FFP	MITRE:Hanscom AFB, MA	0.489	0.150	Nov 2011	0.466	Nov 2012	-		0.466	Continuing	Continuing	TBD
Architecture Development and Systems Engineering/ GAPS/ AWS Horizontal Integration (2)	C/FFP	Northrop Grumman:Langley AFB, VA	-	-		0.740	Dec 2012	-		0.740	Continuing	Continuing	TBD
Analysis, Integration, and SE/ Capability Roadmaps (2)	C/FFP	MITRE:Hanscom AFB, MA	0.895	0.200	Jan 2012	-		-		-	Continuing	Continuing	TBD
Tech Analysis and Concept Development	C/CPFF	Northrup Grumman:Rome, NY	3.437	1.107	Nov 2011	1.490	Oct 2012	-		1.490	Continuing	Continuing	TBD
Tech Analysis and Concept Development (1)	C/CPFF	BAE:Rome, NY	0.915	0.044	Oct 2011	0.200	Oct 2012	-		0.200	Continuing	Continuing	TBD
Horizontal Integration Solution Assessment (1)	C/FFP	MITRE:Hanscom AFB, MA	4.917	1.972	Oct 2011	1.120	Oct 2012	-		1.120	Continuing	Continuing	TBD
Horizontal Integration Solution Assessment (2)	C/FFP	Jacobs ETASS:Hanscom AFB, MA	-	0.098	Jan 2012	0.061	Jan 2013	-		0.061	Continuing	Continuing	TBD
Horizontal Integration Solution Assessment	C/Various	Not specified.:Hanscom AFB, MA	1.589	1.300	Oct 2011	2.253	Dec 2012	-		2.253	Continuing	Continuing	TBD
Subtotal			21.632	7.571		8.130		-		8.130			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Air Force										DATE: February 2012				
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation				PROJECT 675078: Horizontal Integration					
Support (\$ in Millions)					FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Support Assessment - 3	C/FFP	Jacobs, ETASS:Hanscom AFB, MA	0.025	-		-		-		-	Continuing	Continuing	TBD	
Support Assessment - 4	C/CPFF	Spectrum:Rome, NY	1.545	0.447	Nov 2011	-		-		-	Continuing	Continuing	TBD	
Subtotal			1.570	0.447		-		-		-				
Test and Evaluation (\$ in Millions)					FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal			-	-		-		-		-	0.000	0.000	0.000	
Management Services (\$ in Millions)					FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Support-1	C/FFP	Quantech PASS:Hanscom AFB, MA	0.468	0.247	Jan 2012	0.247	Jan 2013	-		0.247	Continuing	Continuing	TBD	
Program Management Support-2	C/FFP	Jacobs ETASS:Hanscom AFB, MA	0.367	0.100	Jan 2012	0.100	Jan 2013	-		0.100	Continuing	Continuing	TBD	
Subtotal			0.835	0.347		0.347		-		0.347				
			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			24.037	8.365		8.477		-		8.477				
Remarks														



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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Air Force		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0207449F: <i>C2 Constellation</i>	PROJECT 675078: <i>Horizontal Integration</i>

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Air Force			<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207449F: <i>C2 Constellation</i>	<b>PROJECT</b> 675078: <i>Horizontal Integration</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Requirements/Capability Based Planning	1	2011	4	2014
Integrated Ops Environment and C2 Framework	1	2011	4	2014
Architecture Development and Systems Engineering	1	2011	1	2013
Analysis (Integration/Ops/Tech) and Systems Engineering	1	2011	1	2013
Horizontal Integration Solutions	1	2011	4	2014

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force									DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation				PROJECT 675140: Joint Expeditionary Force Experiments			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
675140: Joint Expeditionary Force Experiments	12.498	8.889	9.609	-	9.609	8.353	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**A. Mission Description and Budget Item Justification**

The Joint Expeditionary Force Experiments (JEFX) and supporting Limited Objective Experiments (LOEs) are warfighter integration and validation experiments that address operational challenges and are part of the Air Force (AF) Command and Control (C2) integration and experimentation enterprise. Activities include: support to C2 aspects of the AF Integrated Air and Missile Defense (IAMD) mission, Remotely Piloted Aircraft (RPA)/Non-Traditional ISR (NTISR), Homeland Defense (HLD), as well as C2 Integration and Modernization. JEFX provides continued integration and experimentation efforts across the AF C2 seams and programs in air, space and cyber domains as defined by CORONA, HQ AF, and the AF Command and Control Integration Center (AFC2IC).

JEFX/LOE activities explore significant capability gaps across the range of Air Force Command and Control (C2) by means of assessing Concept of Operations (CONOPS), Tactics, Techniques and Procedures (TTPs) and materiel solutions. The activities address critical lessons learned from recent operations and the validated requirements described in the AF Core Function Master Plans (CFMP) and supported through MAJCOM Core Function Lead Integrator (CFLI). JEFX creates and uses representative-experiment enterprise warfighter environments to address joint and coalition warfighter gaps and shortfalls that demonstrate existing and emerging Air Force capabilities to deploy and employ decisive air, space and cyberspace power for the Joint Force Commander and enable innovation and transformation. These unique missions are the major reason JEFX is an experiment and not simply a demonstration or exercise. Activities also include studies and analyses to support current program planning and execution, as well as future program planning.

This program is in Budget Activity 7, Operational System Development, these budget activities include development efforts to upgrade systems currently fielded or has approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>
<b>Title:</b> Requirements Identification and SE	5.673	1.921	2.225
<b>Description:</b> Spiral develop systems architecture, systems engineering, and integration of initiatives into a cohesive system of systems process			
<b>FY 2011 Accomplishments:</b> Continued JEFX 2011 (JEFX 11) experimentation efforts with focus on tactical and strategic architectures, communications, systems, and Tactics, Techniques, and Procedures (TTPs) affected by loss or disruption of space signals due to atmospheric or intentional factors; evaluated effects and refined technologies; TTPs improved AF contributions to the joint warfighters			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2011	FY 2012	FY 2013
assuring mission assurance in a contested environment. Increased rapid spiral fielding in support of tactical operations; airborne communication integration. <b>FY 2012 Plans:</b> Continue support for Architecture, Systems Engineering (SE), and JEFX activities. JEFX 2012 (JEFX 12) LOEs focus on the four issues outlined per CORONA Fall 2009 direction: 1) Lack AF-wide IAMD knowledge & emphasis—strategic to tactical; 2) Significant Commanders Numbered Air Force (C-NAF) organization & personnel deficiencies; 3) Lack exercise, experimentation & wargame oversight & fidelity; and 4) Obsolete C2 radars/sensors and C2 systems lack integration with joint partners. To address these issues, JEFX will initiate integration of the Ballistic Missile Defense (BMD) systems and process initiatives into the Air Operations Center (AOC) Weapons System with the goal of full integration into the Joint Counter Air Mission capabilities as relevant operational scenarios for JEFX 2012. <b>FY 2013 Plans:</b> Will continue integration and experimentation across Air Force (AF) C2 seams and programs in air, space and cyber domains as defined by CORONA, HAF, and AFC2IC. JEFX 2013 (JEFX 13) will complete Integrated Air and Missile Defense (IAMD) efforts and then begin to provide some support for C2 of Remotely Piloted Aircraft (RPA)/Non-Traditional ISR (NTISR)and other C2 Integration/Modernization activities to include requirements identification, systems engineering of initiatives and limited objective experiments (LOEs) focusing on the integration of C2 services. Requirements validation will be established in MAJCOM-directed CFMP processes to connect warfighter needs to initiative identification. In addition to validating materiel solutions, experimentation will add value by recommending changes to standing or new concepts of employment, concepts of operations, tactics, techniques and procedures (TTPs), in conjunction with the Programs of Record and Centers of Excellence for Tactics, Doctrine, Operations, and Education. The experimentation team may perform either an operational utility and/or a technical assessment which feeds final experimentation products.				
<b>Title:</b> Plan and Design <b>Description:</b> Plan, design, coordinate, assess and report the JEFX experiments, provide expertise to support initiative selection, acquisition, program management, communications and systems planning. <b>FY 2011 Accomplishments:</b> Continued experimentation efforts with focus on tactical and strategic architectures, communications, systems, and TTPs affected by loss or disruption of space signals due to atmospheric or intentional factors; evaluated effects and refined technologies, aimed at improving AF contributions to the Joint Warfighters to assure mission assurance in a contested environment. Increased focus on rapid spiral fielding in support of tactical operations; airborne communication integration. <b>FY 2012 Plans:</b>		0.964	2.263	2.743

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Air Force		<b>DATE:</b> February 2012	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207449F: <i>C2 Constellation</i>	<b>PROJECT</b> 675140: <i>Joint Expeditionary Force Experiments</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2011</b>	<b>FY 2012</b>
Continue support for plan & design activities. JEFX 12 LOEs will focus on the four issues outlined per CORONA Fall 2009 direction: 1) Lack AF-wide IAMD knowledge & emphasis—strategic to tactical; 2) Significant C-NAF organization & personnel deficiencies; 3) Lack exercise, experimentation & wargame oversight & fidelity; and 4) Obsolete C2 radars / sensors and C2 systems lack integration with joint partners. To address these issues, JEFX will initiate integration of the BMD systems, other technology, and process initiatives into the AOC Weapons System with the goal of full integration into the Joint Counter Air Mission capabilities. Also initiate the Air Sea Battle concept as the relevant operational scenario for JEFX 12. Initiate the Air Sea Battle concept as the relevant operational scenario for JEFX 12.			
<b>FY 2013 Plans:</b> JEFX will leverage AF and joint sponsored experimentation events (i.e. AGILE Fire, Coalition Warfighter Interoperability Demonstration (CWID), Trident Warrior, etc.) when and where feasible. JEFX will develop internally-generated, stand-alone events employing simulation facilities, as necessary. Limited engineering capability will be available to support attendance at external venues as well as hosting/building internal events.			
<b>Title:</b> Develop Initiatives		1.545	2.338
<b>Description:</b> Develop initiatives to introduce new technologies and operational capabilities into the Aerospace Expeditionary Force (AEF) Concept of Operations (CONOPS)			2.337
<b>FY 2011 Accomplishments:</b> Continued experimentation efforts with focus on tactical and strategic architectures, communications, systems, and TTPs affected by loss or disruption of space signals due to atmospheric or intentional factors; evaluating effects and refining technologies, TTPs aimed at improving AF contributions to the Joint Warfighters assuring mission assurance in a contested environment. Increased the focus on rapid spiral fielding in support of tactical operations; airborne communication integration.			
<b>FY 2012 Plans:</b> Continue support for initiative development. JEFX 12 LOEs will focus on the four issues outlined per CORONA Fall 2009 direction: 1) Lack AF-wide IAMD knowledge & emphasis—strategic to tactical; 2) Significant Commander -Numbered Air Force (C-NAF) organization & personnel deficiencies; 3) Lack exercise, experimentation & wargame oversight & fidelity; and 4) Obsolete C2 radars/sensors and C2 systems lack integration with joint partners. To address these issues, JEFX will initiate integration of the Ballistic Missile Defense systems/other technology and process initiatives into the Air Operations Center Weapons System with the goal of full integration into the Joint Counter Air Mission capabilities. Also initiate the Air Sea Battle concept as the relevant operational scenario for JEFX 12.			
<b>FY 2013 Plans:</b> JEFX will sponsor initiatives that are primarily industry based with focus on leveraging existing government and commercial technologies to address a specific integration shortfall. Some initiatives will be developed by the HI portion of this program with			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Air Force		<b>DATE:</b> February 2012		
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207449F: <i>C2 Constellation</i>	<b>PROJECT</b> 675140: <i>Joint Expeditionary Force Experiments</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>
specific interest in operational and/or technical utility. These requirements driven experiments support the programs of record by examining; a. integration of incremental program improvements, b. potential candidates for upcoming program selection, and c. potential rapid fielding integration and other transition efforts.				
<b>Title:</b> Define and Build Events  <b>Description:</b> Implement architectural configuration, conduct M&S, install and test the communications infrastructure and execute the experiment  <b>FY 2011 Accomplishments:</b> Continued experimentation efforts with focus on tactical and strategic architectures, communications, systems, and TTPs affected by loss or disruption of space signals due to atmospheric or intentional factors; evaluated effects and refined technologies, TTPs aimed at improved AF contributions to the Joint Warfighters assuring mission assurance in a contested environment. Increased focus on rapid spiral fielding in support of tactical operations; airborne communication integration.  <b>FY 2012 Plans:</b> Continue support for Architecture Implementation activities. JEFX 12 LOEs will focus on the 4 issues outlined per CORONA Fall 2009 direction: 1) Lack AF-wide Integrate Air and Missile Defense (IAMD) knowledge & emphasis—strategic to tactical; 2) Significant Commander - Numbered Air Force (C-NAF) organization & personnel deficiencies; 3) Lack exercise, experimentation & wargame oversight & fidelity; and 4) Obsolete C2 radars/sensors, C2 systems lack integration with joint partners. To address these issues, JEFX will initiate integration of the Ballistic Missile Defense (BMD) systems & other technology, and process initiatives into the Air Operations Center Weapons System with the goal of full integration into the Joint Counter Air Mission capabilities. Also initiate the Air Sea Battle concept as the relevant operational scenario for JEFX 12.  <b>FY 2013 Plans:</b> Will continue to support the migration of the JEFX program from a major venue to a series of LOE venues with focus on initiative integration and systems engineering to combine initiatives with either AF/Joint sponsored or stand-alone events.		4.142	2.265	2.181
<b>Title:</b> Assessment and Transition  <b>Description:</b> Transition successful JEFX-assessed, and Air Force approved, warfighting capabilities for fielding into an integrated C2 baseline  <b>FY 2011 Accomplishments:</b> Continued experimentation efforts with focus on tactical and strategic architectures, communications, systems, and TTPs affected by loss or disruption of space signals due to atmospheric or intentional factors; evaluated effects and refining technologies, TTPs		0.174	0.102	0.123

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Air Force							DATE: February 2012				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development			<b>R-1 ITEM NOMENCLATURE</b> PE 0207449F: C2 Constellation			<b>PROJECT</b> 675140: Joint Expeditionary Force Experiments					
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b> aimed at improved AF contributions to the Joint Warfighters assuring mission assurance in a contested environment. Increased focus on rapid spiral fielding in support of tactical operations; airborne communication integration.  <b>FY 2012 Plans:</b> Continue support for Transition activities. JEFX 12 LOEs will focus on the four issues outlined per CORONA Fall 2009 direction: 1) Lack AF-wide IAMD knowledge & emphasis—strategic to tactical; 2) Significant C-NAF organization & personnel deficiencies; 3) Lack exercise, experimentation & wargame oversight & fidelity; and 4) Obsolete C2 radars/sensors, C2 systems lack integration with joint partners. To address these issues, JEFX will initiate integration of the BMD systems & other technology and process initiatives into the AOC Weapons System with the goal of full integration into the Joint Counter Air Mission capabilities.  <b>FY 2013 Plans:</b> The program transition under the JEFX Limited Objective Experiments (LOEs) paradigm will change significantly from a long-lead plan to a near-term transition with the Programs of Record or initiative sponsor. This paradigm will continue to focus upon the initiative's transition with validation through operational and technical assessments. It places a much higher priority under the new JEFX scheme to ensure technical and operation transition is possible upon completion of JEFX.							FY 2011	FY 2012	FY 2013		
<b>Accomplishments/Planned Programs Subtotals</b>							12.498	8.889	9.609		
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u> <u>Base</u>	<u>FY 2013</u> <u>OCO</u>	<u>FY 2013</u> <u>Total</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
<b>D. Acquisition Strategy</b> JEFX supports evolutionary acquisition of multiple programs by providing venues and initiatives to experiment new and emerging technologies to be integrated into other systems-of-record.											
<b>E. Performance Metrics</b> 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.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Air Force										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation				PROJECT 675140: Joint Expeditionary Force Experiments					
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Requirements Identification and SE	C/CPAF	MITRE:Hanscom AFB, MA	1.900	0.458	Oct 2011	0.854	Oct 2012	-		0.854	Continuing	Continuing	TBD
Requirements Identification and SE (1)	C/Various	Various:Hanscom AFB, MA	0.426	0.051	Nov 2011	0.061	Oct 2012	-		0.061	Continuing	Continuing	TBD
Requirements Identification and SE (2)	C/CPFF	Spectrum:Rome, NY	9.869	1.358	Nov 2011	1.244	Oct 2012	-		1.244	Continuing	Continuing	TBD
Plan and Design	C/CPAF	MITRE:Hanscom AFB, MA	0.992	0.300	Nov 2011	0.358	Oct 2012	-		0.358	Continuing	Continuing	TBD
Plan and Design (1)	C/Various	Various:Hanscom AFB, MA	0.052	0.050	Nov 2011	0.060	Oct 2012	-		0.060	Continuing	Continuing	TBD
Plan and Design (2)	C/CPAF	L-3 Services:Hurlburt Field, FL	1.780	1.843	Nov 2011	2.244	Oct 2012	-		2.244	Continuing	Continuing	TBD
Plan and Design (3)	C/CPAF	Jacob Sverdrup:Hurlburt Field, FL	0.300	-		-		-		-	Continuing	Continuing	TBD
Develop Initiatives	C/Various	Various:Hanscom AFB, MA	1.000	0.639	Nov 2011	0.763	Oct 2012	-		0.763	Continuing	Continuing	TBD
Develop Initiatives (1)	C/CPFF	Northrup Grumman:Rome, NY	1.711	1.367	Oct 2011	1.252	Nov 2012	-		1.252	Continuing	Continuing	TBD
Develop Initiatives (2)	C/CPFF	SAIC:San Diego, CA	0.456	0.275	Oct 2011	0.252	Nov 2012	-		0.252	Continuing	Continuing	TBD
Define and Build Events	C/CPAF	MITRE:Hanscom AFB, MA	0.496	0.150	Nov 2011	0.179	Oct 2012	-		0.179	Continuing	Continuing	TBD
Define and Build Events (1)	C/Various	Various:Hanscom AFB, MA	0.189	0.180	Oct 2011	0.215	Oct 2012	-		0.215	Continuing	Continuing	TBD
Define and Build Events (2)	MIPR	98 RANWG:Nellis AFB, NV	0.225	0.125	Oct 2011	0.115	Oct 2012	-		0.115	Continuing	Continuing	TBD
Define and Build Events (3)	C/CPFF	Northrup Grumman:Rome, NY	1.882	1.504	Oct 2011	1.378	Oct 2012	-		1.378	Continuing	Continuing	TBD
Define and Build Events (4)	MIPR	46TS:Eglin AFB, FL	0.593	0.250	Nov 2011	0.229	Oct 2012	-		0.229	Continuing	Continuing	TBD
Define and Build Events (5)	MIPR	AFC2IC:Hampton, VA	3.982	-		-		-		-	Continuing	Continuing	TBD
Assessment and Transition	C/CPAF	MITRE:Hanscom AFB, MA	0.165	0.050	Nov 2011	0.060	Nov 2012	-		0.060	Continuing	Continuing	TBD



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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Air Force										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation				PROJECT 675140: Joint Expeditionary Force Experiments					
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Assessment and Transition (1)	C/Various	Various:Hanscom AFB, MA	0.052	0.050	Oct 2011	0.060	Oct 2012	-		0.060	Continuing	Continuing	TBD
Subtotal			26.070	8.650		9.324		-		9.324			
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-	0.000	0.000	0.000
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			-	-		-		-		-	0.000	0.000	0.000
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Experiment Support	C/FFP	Quantech PASS:Hanscom AFB, MA	0.450	0.239	Jan 2012	0.285	Jan 2013	-		0.285	Continuing	Continuing	TBD
Subtotal			0.450	0.239		0.285		-		0.285			
			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			26.520	8.889		9.609		-		9.609			
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Air Force		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 3600: Research, Development, Test & Evaluation, Air Force BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0207449F: C2 Constellation	PROJECT 675140: Joint Expeditionary Force Experiments

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Air Force			<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0207449F: <i>C2 Constellation</i>	<b>PROJECT</b> 675140: <i>Joint Expeditionary Force Experiments</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Requirements Identification and System Engineering	1	2011	4	2014
Plan and Design	1	2011	4	2014
Develop Initiatives	1	2011	4	2014
Define and Build Events	1	2011	4	2014
Assessment and Transition	1	2011	4	2014
Experiments/Product Development	1	2011	4	2014