Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Army										DATE: February 2012	
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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	70.926	119.573	78.538	-	78.538	119.844	72.357	3.373	6.011	Continuing	Continuing
C97: *ACFT AVIONICS*	70.926	119.573	17.294	-	17.294	39.576	23.049	1.947	1.385	Continuing	Continuing
VU3: *NETWORKING AND MISSION PLANNING*	-	-	61.244	-	61.244	80.268	49.308	1.426	4.626	Continuing	Continuing

Note

FY 2011 Changes: -$15.000 million for SOSCOE Apache Block III integration change in requirements; -$2.161 million SBIR/STTR; -$0.454 million Congressional General Reductions; -$0.669 million reprogrammed to PE/Project 0603801A/B32, Adv Maint Concepts/Eq.

FY 2012 Changes: -$15.000 million for JTRS AMF integration delays; -$10.000 JPALS excessive growth; -$0.114 million Congressional General Reductions.

FY 2013 Changes: -$98.680 million realigned to higher priority Army requirements.

A. Mission Description and Budget Item Justification

The FY 2013 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this PE support research, development, and test efforts in the Engineering and Manufacturing Development (EMD) phases of these systems. Beginning in FY 2013, funding on this Program Element was split into Projects C97 Aircraft Avionics and VU3 Networking and Mission Planning.

The JTRS is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations. The JTRS integration effort provides for the non-recurring engineering required to integrate and qualify the JTRS compliant radios with Link 16 and/or other advanced networking waveforms into the AH-64D, Armed Aerial Scout (AAS), and Unmanned Aircraft Systems (UAS). Funding in FY 2013 will continue the Apache Block 3 Link 16 integration to support ground and flight testing. Additional activities for FY 2013 include continuing development of common radio control software for use on multiple platform integrations, finalizing the qualification of JTRS antennas, and conducting platform antenna co-site and link quality analysis.

The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to the Tactical Internet and Fire Support internet for Army aircraft. With interfaces supporting a six channel transmit/receive terminal, the IDM provides radio connectivity to the ARC-201D/231, ARC-186, ARC-164, and the Blue Force Tracker's MT-2011 and AVX-06/203 Transceivers. IDM provides a flexible, software driven digital messaging system that is interoperable with existing Army and Joint forces battlefield operating systems. The IDM provides Situational Awareness and Variable Message Format messages capability to the cockpit.

The Joint Precision Approach and Landing System (JPALS) is a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operations missions including those operating from fixed base, ship, tactical, and special mission environments under a wide range of meteorological and jamming conditions. The Army plans to integrate JPALS capabilities as defined by the Navy (Shipboard operations) and the Air Force (Land-

based operations) through the JPALS Army Risk Reduction (JARR) and the JPALS Common Avionics Technology Development (JCATD) efforts. JARR defined implementation alternatives for aircraft integration. JCATD continues the alternative analysis.

The ASN-128D upgrade program conducts system engineering trade studies to reduce space, weight, and power with the introduction of new navigation support capabilities such as inertial sensor, MIL-STD-1553 interface card, and Instrument Flight Rules (IFR) map display, and prepares Engineering Change Proposals to the existing ASN-128D Line Replaceable Units as a result of those trade studies. The effort also derives ASN-128D GATM compliance matrices for current and planned GATM capabilities for the upcoming decade.

ARC-220 radio improvements are required to increase operational capability and resolve emerging obsolescence issues. Software improvements will provide a quick Automatic Linking Process which will reduce the time for the radio to establish a communication link by more than 50%, improve secure voice reliability, and add automatic position reporting capability. FY 2011 funds will complete ARC-220 software and test system changes.

The Aviation Mission Planning System (AMPS) interfaces with Army Mission Command Systems and initializes communication, navigation, situational awareness, and weapons systems on fleet aircraft. This effort will develop XPlan core mission planning software, integrate it into AMPS, and modify the Aircraft Weapons and Electronics modules that will interact with XPlan.

A requirement exists for Apache Block III to be interoperable through the future force network. Funds are included for the integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via the Future Airborne Capability Environment (FACE). This includes the non-recurring engineering for integration, test, and air worthiness qualification.

The Aviation Data Exploitation Capability (ADEC) is an Army Aviation program to develop, integrate, and test specific capabilities needed at the Aviation unit level to implement and support improvements within aviation maintenance, operations, safety and training. ADEC will standardize data and information formats, consolidate disconnected and disparate systems containing redundant data and requiring duplicate data entry, and provide a comprehensive and fully integrated automated information system. ADEC provides a common and interoperable capability required to implement Condition Based Maintenance,

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B. Program Change Summary ($ in Millions)	**FY 2011**	**FY 2012**	**FY 2013 Base**	**FY 2013 OCO**	**FY 2013 Total**
Previous President's Budget	89.210	144.687	177.218	-	177.218
Current President's Budget	70.926	119.573	78.538	-	78.538
Total Adjustments	-18.284	-25.114	-98.680	-	-98.680
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.669	-			
• SBIR/STTR Transfer	-2.161	-			
• Adjustments to Budget Years	-	-	-98.680	-	-98.680
• Other Adjustments 1	-15.454	-25.114	-	-	-

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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
C97: *ACFT AVIONICS*	70.926	119.573	17.294	-	17.294	39.576	23.049	1.947	1.385	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The FY 2013 budget request funds the development of Aircraft Avionics systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Project support research, development, and test efforts in the Engineering and Manufacturing Development (EMD) phases of these systems. Beginning in FY 2013, the Networking and Mission Planning funds on this project were moved to a new project, VU3 Networking and Mission Planning.

The JTRS is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations. The JTRS integration effort provides for the non-recurring engineering required to integrate and qualify the JTRS compliant radios with Link 16 and/or other advanced networking waveforms into the AH-64D, Armed Aerial Scout (AAS), and Unmanned Aircraft Systems (UAS). Funding in FY 2013 will continue the Apache Block 3 Link 16 integration to support ground and flight testing. Additional activities for FY 2013 include continuing development of common radio control software for use on multiple platform integrations, finalizing the qualification of JTRS antennas, and conducting platform antenna co-site and link quality analysis.

The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to the Tactical Internet and Fire Support internet for Army aircraft. With interfaces supporting a six channel transmit/receive terminal, the IDM provides radio connectivity to the ARC-201D/231, ARC-186, ARC-164, and the Blue Force Tracker's MT-2011 and AVX-06/203 Transceivers. IDM provides a flexible, software driven digital messaging system that is interoperable with existing Army and Joint forces battlefield operating systems. The IDM provides Situational Awareness and Variable Message Format messages capability to the cockpit.

The Joint Precision Approach and Landing System (JPALS) is a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operations missions including those operating from fixed base, ship, tactical, and special mission environments under a wide range of meteorological and jamming conditions. The Army plans to integrate JPALS capabilities as defined by the Navy (Shipboard operations) and the Air Force (Land-based operations) through the JPALS Army Risk Reduction (JARR) and the JPALS Common Avionics Technology Development (JCATD) efforts. JARR defined implementation alternatives for aircraft integration. JCATD continues the alternative analysis.

The ASN-128D upgrade program conducts system engineering trade studies to reduce space, weight, and power with the introduction of new navigation support capabilities such as inertial sensor, MIL-STD-1553 interface card, and Instrument Flight Rules (IFR) map display, and prepares Engineering Change Proposals (ECPs) to the existing ASN-128D Line Replaceable Units (LRUs) as a result of those trade studies. The effort also derives ASN-128D GATM compliance matrices for current and planned GATM capabilities for the upcoming decade.

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The Aviation Mission Planning System (AMPS) interfaces with Army Mission Command Systems (AMCS) and initializes communication, navigation, situational awareness, and weapons systems on fleet aircraft. This effort will develop XPlan core mission planning software, integrate it into AMPS, and modify the Aircraft Weapons and Electronics (AWE) modules that will interact with XPlan.

A requirement exists for Apache Block III to be interoperable through the future force network. Funds are included for the integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via Future Airborne Capability Environment (FACE). This includes the non-recurring engineering for integration, test, and air worthiness qualification.

The Aviation Data Exploitation Capability (ADEC) is an Army Aviation program to develop, integrate, and test specific capabilities needed at the Aviation unit level to implement and support improvements within aviation maintenance, operations, safety and training. ADEC will standardize data and information formats, consolidate disconnected and disparate systems containing redundant data and requiring duplicate data entry, and provide a comprehensive and fully integrated automated information system. ADEC provides a common and interoperable capability required to implement Condition Based Maintenance, Military Flight Operations Quality Assurance, and Platform Maintenance Environment processes.

The Aircraft Notebook (ACN) will provide users with an aviation centric suite of software utilized for streamlined documentation and completion of aviation maintenance activities. ACN will include the hardware solution as well as the digital logbook functionality and legacy software applications. ACN will reduce the Information Technology footprint within an aviation unit by integrating multiple pieces of software onto one piece of hardware.

The Helicopter Terrain Avoidance and Warning System (HTAWS) will develop, integrate, and test technologies to reduce the aircrew risks during flights in Degraded Visual Environment (DVE) due to loss of situational awareness. The systems will be integrated on CH-47F, AH-64D, OH-58D, and UH-60A/L/M aircraft.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Title: Joint Tactical Radio System (JTRS) integration and qualification for AH-64D, AAS, UAS and multiple SOA platforms.	20.933	14.646	17.294
Articles:	0	0	
Description: The JTRS integration effort provides for the non-recurring engineering required to integrate and qualify the JTRS compliant radios and/or other advanced networking waveforms into the AH-64D, Armed Aerial Scout (AAS), Unmanned Aerial Systems (UAS) and multiple Aviation SOA platforms for both production cut-in and retrofit activities.			
FY 2011 Accomplishments: Continued Link 16 hardware and software integration activities for AH-64D resulting in a technical design review. Link 16 Apache software integration tests conducted on Airborne Maritime Fixed (AMF) engineering development models. Initiated a program to develop common radio control software for use on multiple platform integrations and conducted demonstration of the reusable control software. Continued development of common JTRS antenna to be used on all aviation platforms. Conducted platform			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
JTRS antenna co-site and link quality assessments on multiple platforms. Initiated JTRS radio integration activities for UAS Shadow. ***FY 2012 Plans:*** Continue Link 16 integration activities for AH-64D to support ground E3 and integration test. Initiate Apache early software integration for implementation of a Wideband Networking Waveform. Continue reusable radio control software development with completion of system requirements identification and initiation of detailed design. Select and begin qualification of JTRS antennas for use on all platforms. Continue to use antenna co-site effort to determine platform JTRS antenna locations and associated co-site analysis. Develop hardware and software modifications for integration of a JTRS compliant radio onto the UAS Shadow. Conduct Shadow JTRS flight test. ***FY 2013 Plans:*** Continue Link 16 integration activities for AH-64D to support ground and flight tests. Replace AMF engineering development models with low rate initial production units and conduct regression testing and continue development of common radio control software.			
Title: Joint Precision Approach and Landing System (JPALS)	11.511	9.343	-
Articles:	0	0	
Description: The Joint Precision Approach and Landing System (JPALS) introduces a precision approach and landing system providing joint operational capability for U.S. forces assigned to conventional and special operation missions including those operating from fixed base, ship, tactical, and special mission environments under a wide range of meteorological and jamming conditions. ***FY 2011 Accomplishments:*** Continued Increment II waveform definitization and the development of a Ground Based Local Area Augmentation System (LAAS). Developed a common JPALS solution for the fixed wing Local Area Differential GPS (LDGPS). Completed the development of the Air Integration Guides (AIG) for CH-47F and HH/UH-60M for Shipboard Relative GPS (SRGPS). Initiated the ARC-231 JPALS datalink assessment. Continued the JPALS Army Risk Reduction (JARR) activities and initiated the JPALS Common Avionics Technology Development (JCATD) efforts. ***FY 2012 Plans:*** Complete the AIG effort related to the AH-64D platform, Block III. Complete Non-Recurring Engineering (NRE) efforts for M-Code development. Complete Small Antenna System (SAS) anti-jamming antenna co-site analysis and M-Code recurring prototyping.			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Complete the JCATD effort, and continue to support JPALS Increment 1 and 2 development and Program Management coordination meetings, Technical Interchange Meetings, and working groups.			
Title: Improved Data Modem (IDM)	10.256	25.306	-
Articles:	0	0	
Description: The IDM is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to Tactical internet and Fire Support internet for Army Aviation. The IDM provides radio connectivity to the ARC-201D/231, ARC-186, ARC-164 and the Blue Force Tracker MT-2011 and AVX-06/203 transceivers. Funds are required to continue development of an Open Systems Architecture (OSA) and Joint Battle Command - Platform (Aviation) (JBC-P(A)) solution compatible with the AH-64D, CH-47F, HH/UH-60M, OH-58D. This effort provides the foundation to develop and qualify a new hardware architecture to host IDM and Army Common Operating Environment applications to ensure interoperability on the future digital battlefield.			
FY 2011 Accomplishments: Continued design and development of OSA hardware and software including creation of test plans and descriptions as well as production plans. Continued integration of the Joint Tactical Radio System (JTRS) and development, integration, and testing of JBC-P(A) products.			
FY 2012 Plans: Test and evaluate IDM OSA hardware and software against the qualification plans. Achieve Airworthiness rating and authorization to operate for the IDM OSA. Deliver engineering releases of IDM OSA hardware and software to platforms to aid integration efforts. Continue development, integration, and testing of JBC-P(A).			
Title: DGNS-128D Upgrade	2.934	8.157	-
Articles:	0	0	
Description: The ASN-128D upgrade program conducts system engineering trade studies to reduce space, weight, and power with the introduction of new navigation support capabilities such as inertial sensor, MIL-STD-1553 interface card, and Instrument Flight Rules (IFR) map display, and prepares Engineering Change Proposals (ECPs) to the existing ASN-128D Line Replaceable Units (LRUs) as a result of those trade studies. The effort also derives ASN-128D GATM compliance matrices for current and planned GATM capabilities for the upcoming decade.			
FY 2011 Accomplishments: Initiated DGNS-128D Upgrade ECP prep effort.			
FY 2012 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Complete the DGNS-128D Upgrade ECP effort.			
Title: Aviation Mission Planning System (AMPS)	3.003	0.900	-
Articles:	0	0	
Description: The AMPS is a mission planning battle synchronization tool that automates aviation mission planning tasks, including tactical command and control, mission planning, and flight planning. It interfaces with Army Mission Command Systems (AMCS) and associated networks which furnish the aviation commander with continuous situational awareness, allowing the commander to rapidly adjust mission plans. The electronic formats are loaded onto the aircraft platforms, initializing the communication, navigation, situational awareness, and weapons systems on the aircraft including the AH-64 A/D, CH-47 D/F, OH-58D Kiowa Warrior, UH-60 A/L/M/Q, HH-60 L/M, and Unmanned Aircraft Systems (UAS). This effort will allow for the integration of new route server, calculation engine, and tabular editor components into the AMPS configuration and modifications to the Aircraft Weapons Electronics (AWE) modules to make use of the new components. ***FY 2011 Accomplishments:*** Continued design, development, integration, and test of additional software components needed for the XPLAN application. Continued the updates required to modify platform AWEs allowing them to function in the XPLAN architecture. Continued development platform AWEs to support new aircraft to include the Block III programs for UH-60M, CH-47, and OH-58D CDS4. ***FY 2012 Plans:*** Complete design, development, integration, and test of additional software components needed for the XPLAN application. Complete the updates required to modify platform AWEs allowing them to function in the XPLAN architecture. Complete development platform AWEs to support new aircraft to include the Block III programs for UH-60M, CH-47, and OH-58D CDS4.			
Title: Apache Block III	-	10.076	-
Articles:		0	
Description: A requirement exists for Apache Block III to be interoperable through the future force network. Funds are included in the project for the integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via FACE. This includes the non-recurring engineering for integration, test, and air worthiness qualification. As part of the Army's migration to a net-centric fighting force, it is necessary for aircraft to access certain critical services that enable seamless access and operation on the future force network. ***FY 2012 Plans:*** Begin integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via FACE.			
Title: Aviation Data Exploitation Capability (ADEC)	10.140	12.401	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Articles:	0	0	
Description: ADEC is an Army Aviation program to develop, integrate, and test specific capabilities needed at the Aviation unit level to implement and support improvements within aviation maintenance, operations, safety and training. ADEC will standardize data and information formats, consolidate disconnected and disparate systems containing redundant data and requiring duplicate data entry, and provide a comprehensive and fully integrated automated information system. ADEC provides a common and interoperable capability required to implement Condition Based Maintenance, Military Flight Operations Quality Assurance (MFOQA), and Platform Maintenance Environment processes. ADEC is the transformation system required for interoperability with the Army's future logistic systems. ***FY 2011 Accomplishments:*** Initiated design, development, integration, and testing of the hardware and software needed to realize the ADEC system. Hardware consist of the ADEC server, MFOQA workstation, and various network enabling technologies, such as routers, switches, hubs, etc. Software design, development, integration, and testing focused on core applications, such as the operating system, application framework, and network software. Also initiated the advanced component development and prototyping of the baseline MFOQA applications, Aviation Maintenance Software Suite, and Centralized Aviation Flight Record System (CAFRS) integration. ***FY 2012 Plans:*** Continue design, development, integration, and testing of the hardware and software needed to realize the ADEC system. Continue the advanced component development and prototyping of the baseline MFOQA applications, Aviation Maintenance Software Suite, and CAFRS integration.			
Title: Aircraft Notebook (ACN)	6.608	5.444	-
Articles:	0	0	
Description: ACN will provide users with an aviation centric suite of software utilized for streamlined documentation and completion of aviation maintenance activities. ACN will include the hardware solution as well as the digital logbook functionality and legacy software applications. ACN will work towards the reduction of the IT footprint within an aviation unit by integrating multiple pieces of software onto one piece of hardware. ***FY 2011 Accomplishments:*** Began software design, development, integration, and testing of the ACN applications. ***FY 2012 Plans:*** Continue software design, development, integration, and testing of the ACN applications.			
Title: Helicopter Terrain Avoidance and Warning System (HTAWS)	5.041	33.300	-

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2011	FY 2012	FY 2013
Articles:	0	0	
Description: HTAWS will develop, integrate, and test technologies to reduce the aircrew risks during flights in Degraded Visual Environment (DVE) due to loss of situational awareness. The systems will be integrated on CH-47F, AH-64D, OH-58D, and UH-60A/L/M aircraft. Received CENTCOM DVE Operational Need Statement (ONS) 11-14093, validated 20 June 2011. ***FY 2011 Accomplishments:*** Initiated the development of the DVE hardware and software. ***FY 2012 Plans:*** Continue the development of the DVE hardware and software.			
Title: ARC-220 Product Development	0.500	-	-
Articles:	0		
Description: ARC-220 radio improvements are required to increase operational capability and resolve emerging obsolescence issues. Software improvements will provide a quick Automatic Linking Process which will reduce the time for the radio to establish a communication link by more than 50%, improve secure voice reliability, and add automatic position reporting capability. ***FY 2011 Accomplishments:*** Continued testing and evaluation required to complete the ARC-220 Software Enhancements.			
Accomplishments/Planned Programs Subtotals	70.926	119.573	17.294

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• Airborne Avionics: *Airborne Avionics*	209.231									Continuing	Continuing
• Network and Mission Plan: *Network and Mission Plan*		136.432	190.789		190.789		200.733	255.439	185.804	Continuing	Continuing
• COMMS, NAV Surveillance: *COMMS, NAV Surveillance*		117.855	133.191		133.191		216.082	192.600	174.806	Continuing	Continuing

D. Acquisition Strategy

This project is comprised of multiple systems supporting aircraft avionics. While the detailed acquisition strategy varies from program to program, the general strategy is for each individual program to complete the development and testing efforts in coordination with the aircraft platforms on integration issues, use the various contracts

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of the aircraft platforms original equipment manufacturers on integration efforts, and utilize the Aviation & Missile Research, Development, and Engineering Center for software development. This requires the use of various contract methods and types to accomplish the aircraft avionics development efforts. All required acquisition program documentation is prepared.

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Army			DATE: February 2012
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Spt (ACN)	Various	Various:Various	0.528	0.441		-		-		-	0.000	0.969	0.000
PM Spt (IDM)	Various	Various:Various	0.174	0.175		-		-		-	Continuing	Continuing	Continuing
PM Spt (ADEC)	Various	Various:Various	1.500	1.295		-		-		-	Continuing	Continuing	Continuing
PM Spt (HTAWS)	Various	Various:Various	0.872	0.927		-		-		-	Continuing	Continuing	Continuing
		Subtotal	3.074	2.838		-		-		-			

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JTRS Common Radio Control Software Development	Various	AMRDEC Software Engineering Directorate:Redstone Arsenal, AL	1.378	1.295		2.725		-		2.725	Continuing	Continuing	Continuing
JTRS Antenna/RF Switching Development	MIPR	CERDEC:Lakehurst, NJ	1.108	0.778		1.772		-		1.772	Continuing	Continuing	Continuing
JBC-P(A) development and testing (IDM)	Various	AMRDEC Software Engineering Directorate:Redstone Arsenal, AL	6.000	5.000		-		-		-	0.000	11.000	0.000
Tri-Service XPlan component integration/AWE modifications (AMPS)	PO	AMRDEC Software Engineering Directorate:Redstone Arsenal, AL	3.003	0.900		-		-		-	0.000	3.903	0.000
JTRS Shadow Integration and Qualification	SS/CPFF	AAI Corporation:Huntvalley, MD	3.312	1.350		-		-		-	0.000	4.662	0.000
Air Integration Guides (AIG) (JPALS)	Various	Various:Various	1.700	0.231		-		-		-	0.000	1.931	0.000
JPALS Army Risk Reduction (JARR)/ M-Code Development	C/CPFF	Honeywell:Clearwater, FL	0.218	-		-		-		-	0.000	0.218	0.000

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JPALS Common Avionics Technology Development (JCATD)	C/CPFF	Honeywell:Clearwater, FL	7.607	6.838		-		-		-	0.000	14.445	0.000
Middleware integration onto Apache Block III	Various	Various:Various	-	10.076		-		-		-	Continuing	Continuing	Continuing
Design, develop, and integrate ADEC software and hardware	Various	AMRDEC Software Engineering Directorate:Redstone Arsenal, AL	6.657	9.410		-		-		-	Continuing	Continuing	Continuing
DGNS AN/ASN-128D Upgrade	C/CPFF	TBD:TBD	2.934	8.157		-		-		-	0.000	11.091	0.000
Develop and qualify OSA hardware to host IDM	Various	Various:Various	1.082	17.131		-		-		-	Continuing	Continuing	Continuing
Develop and qualify the DVE hardware and software (HTAWS)	Various	Various:Various	4.169	32.373		-		-		-	Continuing	Continuing	Continuing
ARC-220 Operational Capability Improvements	SS/CPFF	Rockwell Collins:Iowa	0.500	-		-		-		-	0.000	0.500	0.000
Design, develop, and integrate ACN software and hardware	Various	AMRDEC Software Engineering Directorate:Redstone Arsenal, AL	4.381	3.400		-		-		-	0.000	7.781	0.000
JTRS Engineering Design Model (EDM) technical support	C/CPIF	Lockheed Martin:San Diego, CA	-	1.175		0.500		-		0.500	Continuing	Continuing	Continuing
JTRS Link-16 Integration onto AH-64D	SS/CPFF	Boeing:Mesa, AZ	15.135	10.048		12.297		-		12.297	Continuing	Continuing	Continuing
		Subtotal	59.184	108.162		17.294		-		17.294			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Army		DATE: February 2012
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering, Logistics, and Technical Support (ADEC)	Various	Various:Various	1.314	0.761		-		-		-	Continuing	Continuing	Continuing
System Engineering, Logistics, and Technical Support (JPALS)	Various	Various:Various	1.986	2.274		-		-		-	0.000	4.260	0.000
Data (ADEC)	Various	Various:Various	0.487	0.570		-		-		-	0.000	1.057	0.000
System Engineering, Logistics, and Technical Support (ACN)	TBD	Various:Various	1.016	0.925		-		-		-	0.000	1.941	0.000
Data (ACN)	Various	Various:Various	0.114	0.201		-		-		-	0.000	0.315	0.000
		Subtotal	4.917	4.731		-		-		-			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation (ACN)	Various	Various:Various	0.569	0.477		-		-		-	0.000	1.046	0.000
ASIF Test Lab (IDM)	Various	AMCOM:Redstone Arsenal, AL	3.000	3.000		-		-		-	Continuing	Continuing	Continuing
Test and Evaluation (ADEC)	Various	Various:Various	0.182	0.365		-		-		-	Continuing	Continuing	Continuing
		Subtotal	3.751	3.842		-		-		-			

	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	70.926	119.573		17.294		-		17.294			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Army		DATE: February 2012
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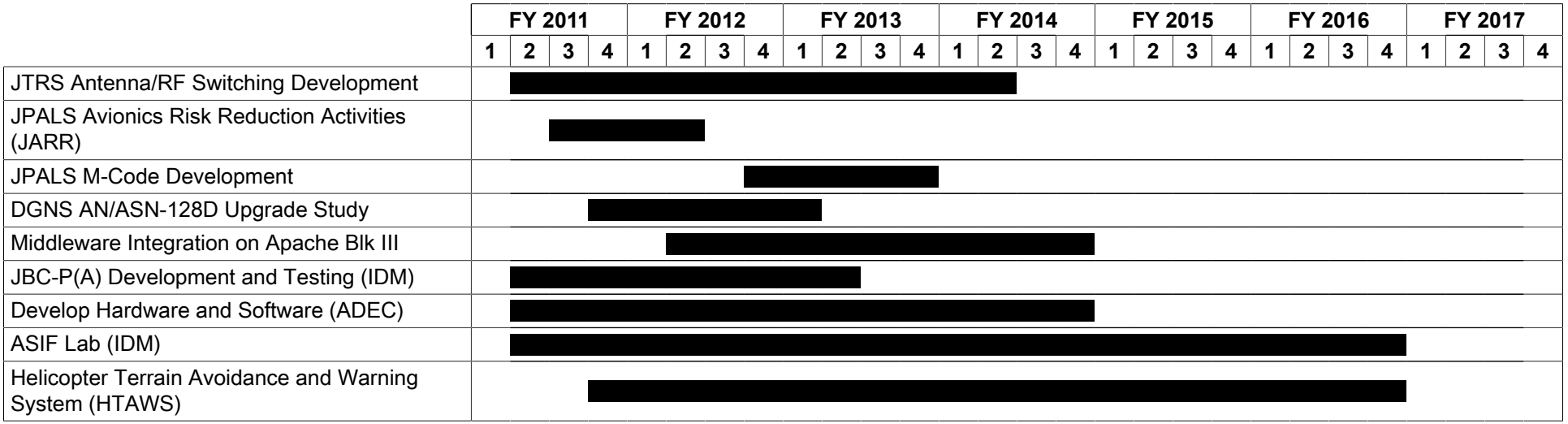

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Army		DATE: February 2012
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Schedule Details

	Start		End	
Events	Quarter	Year	Quarter	Year
JTRS Antenna/RF Switching Development	2	2011	2	2014
JPALS Avionics Risk Reduction Activities (JARR)	3	2011	2	2012
JPALS M-Code Development	4	2012	4	2013
DGNS AN/ASN-128D Upgrade Study	4	2011	1	2013
Middleware Integration on Apache Blk III	2	2012	4	2014
JBC-P(A) Development and Testing (IDM)	2	2011	2	2013
Develop Hardware and Software (ADEC)	2	2011	4	2014
ASIF Lab (IDM)	2	2011	4	2016
Helicopter Terrain Avoidance and Warning System (HTAWS)	4	2011	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army			DATE: February 2012
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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
VU3: *NETWORKING AND MISSION PLANNING*	-	-	61.244	-	61.244	80.268	49.308	1.426	4.626	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

The FY 2013 budget request funds the development of Networking and Mission Planning systems required to horizontally and vertically integrate the battlefield and the integration of those systems into Army aircraft. Tasks in this Project support research, development, and test efforts in the Engineering and Manufacturing Development (EMD) phases of these systems. Beginning in FY 2013, the Networking and Mission Planning funds were moved from Project C97 Aircraft Avinonics to Project VU3 Networking and Mission Planning.

The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to the Tactical Internet and Fire Support internet for Army aircraft. With interfaces supporting a six channel transmit/receive terminal, the IDM provides radio connectivity to the ARC-201D/231, ARC-186, ARC-164, and the Blue Force Tracker's MT-2011 and AVX-06/203 Transceivers. IDM provides a flexible, software driven digital messaging system that is interoperable with existing Army and Joint forces battlefield operating systems. The IDM provides Situational Awareness and Variable Message Format messages capability to the cockpit.

A requirement exists for Apache Block III to be interoperable through the future force network. Funds are included for the integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via the Future Airborne Capability Environment (FACE). This includes the non-recurring engineering for integration, test, and air worthiness qualification.

The Aviation Data Exploitation Capability (ADEC) is an Army Aviation program to develop, integrate, and test specific capabilities needed at the Aviation unit level to implement and support improvements within aviation maintenance, operations, safety and training. ADEC will standardize data and information formats, consolidate disconnected and disparate systems containing redundant data and requiring duplicate data entry, and provide a comprehensive and fully integrated automated information system. ADEC provides a common and interoperable capability required to implement Condition Based Maintenance, Military Flight Operations Quality Assurance, and Platform Maintenance Environment processes.

The Aircraft Notebook (ACN) will provide users with an aviation centric suite of software utilized for streamlined documentation and completion of aviation maintenance activities. ACN will include the hardware solution as well as the digital logbook functionality and legacy software applications. ACN will reduce the Information Technology footprint within an aviation unit by integrating multiple pieces of software onto one piece of hardware.

The Helicopter Terrain Avoidance and Warning System (HTAWS) will develop, integrate, and test technologies to reduce the aircrew risks during flights in Degraded Visual Environment (DVE) due to loss of situational awareness. The systems will be integrated on the CH-47F, AH-64D, OH-58D, and the UH-60A/L/M aircraft.

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The Aviation Logistics Enterprise-Platform (ALE-P) will replace the Unit Level Logistics System-Aviation (Enhanced) (ULLS-A[E]) and the Unmanned Aviation Systems-Initiative (UAS-I) which currently only provides automated logistics capabilities for the UAS community. ALE-P will provide an Aviation enterprise capability interface to the Global Combat Support System-Army (GCSS-Army). ALE-P will be a combination of software and hardware that forms a Decision Support System which receives, processes, analyzes, and transmits data from Quality Control, Production Control, Tech Supply, Backshop, and Phase Module activities. ALE-P will seamlessly interface with the Aircraft Notebook (ACN) and the Aviation Data Exploitation Capability (ADEC) as an integrated Family of Systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: Improved Data Modem (IDM) ***Description:*** The IDM is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to Tactical internet and Fire Support internet for Army Aviation. The IDM provides radio connectivity to the ARC-201D/231, ARC-186, ARC-164 and the Blue Force Tracker MT-2011 and AVX-06/203 transceivers. Funds are required to continue development of an Open Systems Architecture (OSA) and Joint Battle Command -Platform (Aviation) (JBC-P(A)) solution compatible with the AH-64D, CH-47F, HH/UH-60M, OH-58D. This effort provides the foundation to develop and qualify a new hardware architecture to host IDM and Army Common Operating Environment applications to ensure interoperability on the future digital battlefield. ***FY 2013 Plans:*** Deliver engineering releases of IDM OSA hardware and software to aircraft platforms to aid integration afforts. Continue development, integration, and testing of JBC-P(A) products.	-	-	2.072
Title: Apache Block III ***Description:*** A requirement exists for Apache Block III to be interoperable through the future force network. Funds are included in the project for the integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via the Future Airborne Capability Environment (FACE). This includes the non-recurring engineering for integration, test, and air worthiness qualification. As part of the Army's migration to a net-centric fighting force, it is necessary for aircraft to access certain critical services that enable seamless access and operation on the future force network. FY 2013 funds are to continue integration of the selected middleware into the Apache Block III to support the Army Common Operation Environment convergence. ***FY 2013 Plans:*** Continue integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via FACE.	-	-	5.200
Title: Aviation Data Exploitation Capability (ADEC) ***Description:*** The ADEC is an Army Aviation program to develop, integrate, and test specific capabilities needed at the Aviation unit level to implement and support improvements within aviation maintenance, operations, safety and training. ADEC will	-	-	9.200

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
standardize data and information formats, consolidate disconnected and disparate systems containing redundant data and requiring duplicate data entry, and provide a comprehensive and fully integrated automated information system. ADEC provides a common and interoperable capability required to implement Condition Based Maintenance, Military Flight Operations Quality Assurance, and Platform Maintenance Environment processes. ADEC is the transformation system required for interoperability with the Army's future logistic systems. ***FY 2013 Plans:*** Continue design, development, integration, and testing of the hardware and software needed to realize the ADEC system. Continue the advanced component development Phase II applications.			
Title: Helicopter Terrain Avoidance and Warning System (HTAWS) ***Description:*** The HTAWS will develop, integrate, and test technologies to reduce the aircrew risks during flights in Degraded Visual Environment (DVE) due to loss of situational awareness. The systems will be integrated on the CH-47F, AH-64D, OH-58D, and the UH-60A/L/M aircraft. ***FY 2013 Plans:*** Continue development of the DVE hardware and software.	-	-	43.500
Title: Aviation Logistics Enterprise-Platform (ALE-P) ***Description:*** The Aviation Logistics Enterprise-Platform (ALE-P) will replace the Unit Level Logistics System-Aviation (Enhanced) (ULLS-A[E]) and the Unmanned Aviation Systems-Initiative (UAS-I) which currently only provides automated logistics capabilities for the UAS community. ALE-P will provide an Aviation enterprise capability interface to the Global Combat Support System-Army (GCSS-Army). ALE-P will be a combination of SW and HW that forms a Decision Support System which receives, processes, analyzes, and transmits data from Quality Control, Production Control, Tech Supply, Backshop, and Phase Module activities. ALE-P will seamlessly interface with the Aircraft Notebook (ACN) and the Aviation Data Exploitation Capability (ADEC) as an integrated Family of Systems. ***FY 2013 Plans:*** Begin development of ALE-P hardware and software.	-	-	1.272
Accomplishments/Planned Programs Subtotals	-	-	61.244

Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
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C. Other Program Funding Summary ($ in Millions)

Line Item	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
• Airborne Avionics: *Airborne Avionics*	209.231									0.000	209.231
• Network and Mission Plan: *Network and Mission Plan*		136.432	190.789		190.789		200.733	255.439	185.804	0.000	1,151.842

D. Acquisition Strategy

This project is comprised of multiple systems supporting aircraft avionics. While the detailed acquisition strategy varies from program to program, the general strategy is for each individual program to complete the development and testing efforts in coordination with the aircraft platforms on integration issues, use the various contracts of the aircraft platforms original equipment manufacturers on integration efforts, and utilize the Aviation & Missile Research, Development, and Engineering Center for software development. This requires the use of various contract methods and types to accomplish the aircraft avionics development efforts. All required acquisition program documentation is prepared.

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Army		DATE: February 2012
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support (IDM)	TBD	AMCOM:Redstone Arsenal, AL	-	-		0.321		-		0.321	Continuing	Continuing	Continuing
PM Support (ADEC)	TBD	AMCOM:Redstone Arsenal, AL	-	-		0.349		-		0.349	Continuing	Continuing	Continuing
PM Support (HTAWS)	TBD	AMCOM:Redstone Arsenal, AL	-	-		1.396		-		1.396	Continuing	Continuing	Continuing
		Subtotal	-	-		2.066		-		2.066			

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Middleware integration onto Apache Block III	TBD	TBD:TBD	-	-		5.200		-		5.200	Continuing	Continuing	Continuing
Develop and qualify OSA hardware to host IDM	TBD	Various:Various	-	-		0.500		-		0.500	Continuing	Continuing	Continuing
Design, develop, and integrate ADEC software and hardware	Various	Various:Various	-	-		6.883		-		6.883	Continuing	Continuing	Continuing
Develop and qualify the HTAWS hardware and software	Various	Various:Various	-	-		42.104		-		42.104	Continuing	Continuing	Continuing
Develop and qualify the software and hardware for ALE-P.	Various	Various:Various	-	-		1.272		-		1.272	Continuing	Continuing	Continuing
		Subtotal	-	-		55.959		-		55.959			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Army		DATE: February 2012
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering, Logistics, and Technical Support (ADEC)	TBD	Various:Various	-	-		0.599		-		0.599	Continuing	Continuing	Continuing
		Subtotal	-	-		0.599		-		0.599			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aviation Systems Integration Facility Test Lab (IDM)	TBD	AMCOM:Redstone Arsenal, AL	-	-		1.251		-		1.251	Continuing	Continuing	Continuing
ADEC	TBD	AMCOM:Redstone Arsenal, AL	-	-		1.369		-		1.369	0.000	1.369	1.369
		Subtotal	-	-		2.620		-		2.620			

	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		61.244		-		61.244			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2013 Army		DATE: February 2012
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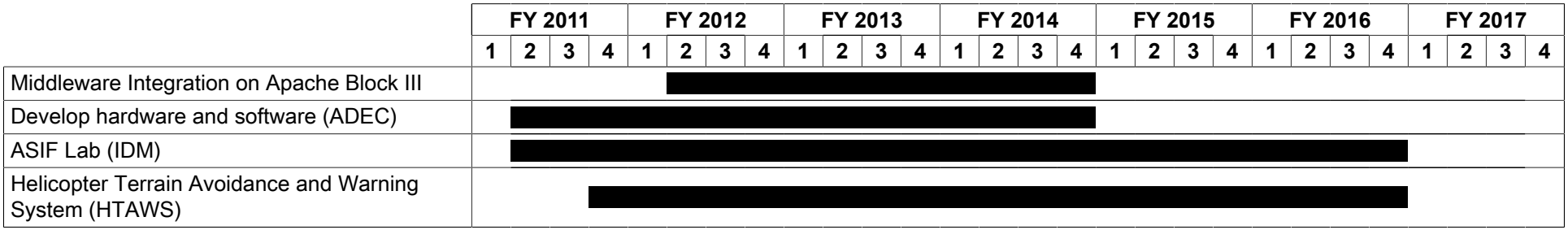

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Army		DATE: February 2012
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Middleware Integration on Apache Block III	2	2012	4	2014
Develop hardware and software (ADEC)	2	2011	4	2014
ASIF Lab (IDM)	2	2011	4	2016
Helicopter Terrain Avoidance and Warning System (HTAWS)	4	2011	4	2016