Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Army										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	76.491	89.210	144.687	-	144.687	177.218	214.390	161.111	161.700	Continuing	Continuing
C97: *ACFT AVIONICS*	76.491	89.210	144.687	-	144.687	177.218	214.390	161.111	161.700	Continuing	Continuing

Note

Change Summary Explanation:
Funding Changes:
FY12 Changes: +$11.900 for Aviation Data Exploitation Capability (ADEC) and Aircraft Notebook (ACN)

A. Mission Description and Budget Item Justification

FY 2012 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.

Aviation Tactical Communication Systems (ATCS) is an Army Aviation Program to test the Alternative Communications (Alt Comms) (ARC-231) A-Kit (hardware and software) and the Joint Tactical Radio System (JTRS) hardware on the CH-47F, AH-64D, and the Unmanned Aircraft System (UAS) Shadow aircraft. The JTRS is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations.

A delay in the JTRS Cluster 1 program resulted in a lack of critical communications equipment to support modernized Army Aviation aircraft production line requirements and Alt Comms was initiated to mitigate this issue. Alt Comms provides two ARC-231 and two ARC-201D radios with power amplifiers to meet the minimum interim JTRS requirements for Military Satellite Communications, Single Channel Ground and Airborne Radio System (SINCGARS), HAVEQUICK, Very High Frequency (VHF), Air Traffic Control (ATC), and Land Mobile Radio requirements and funds the integration and test of the radios onto each platform.

Alt Comms will be Army Aviation's communication solution until it is supplemented by the JTRS Airborne Maritime Fixed (AMF) Small Airborne (SA) radio set, beginning in FY15. Increment 1 of the AMF SA will provide the Wideband Networking Waveform, Soldier Radio Waveform, and Link-16 required for interoperation with the Future Force. Increment 2 of the AMF SA, planned for FY20, will replace the Alt Comms suite and provide legacy waveforms allowing a single hardware solution. JTRS integration efforts planned for FY12 are initiating development of common antennas, conducting platform antenna on-site analysis, continuing development of reusable control software to be provided to JTRS integrators, and continuing integration into the AH-64D resulting in a technical design review. Additionally, begin risk reduction activities for Small Form Factor-B (SFF-B) integration onto Shadow UAS.

The Improved Data Modem (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 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 (BFT) 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. FY12 funds are required to continue development and testing of Joint Battle Command-Platform (Aviation) (JBC-P(A)) and continue development of an Open Systems Architecture (OSA) IDM solution compatible with the AH-64D, CH-47F, and HH/UH-60M. This effort provides the foundation to develop and qualify a new hardware architecture to host IDM and middleware applications to ensure interoperability on the future digital battlefield.

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 JPALS effort in this project evaluates technical approaches, develops the aircraft avionics equipment for operation with the JPALS sea-based and ground systems, and integrates the avionics equipment into the various Army Aviation platforms. Increment 1 has now been split into Increment 1A (Sea Based development and test) and Increment 1B (aircraft avionics development, integration, and test). The Army's involvement in Increment 1A/1B is to address Army requirements, participate in program management and provide systems engineering, and participate in the Aircraft Integration Guide (AIG) effort which will provide early coordination and interface requirements between the sea-based system and the air component. Additionally, JPALS Army Risk Reduction (JARR) activities continue with the JPALS Common Avionics Technology Development (JCATD) efforts.

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. FY1

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	89.508	89.210	132.787	-	132.787
Current President's Budget	76.491	89.210	144.687	-	144.687
Total Adjustments	-13.017	-	11.900	-	11.900
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	10.000	-			
• SBIR/STTR Transfer	3.017	-			
• Adjustments to Budget Years	-	-	11.900	-	11.900
• Other Adjustments 1	-26.034	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
C97: *ACFT AVIONICS*	76.491	89.210	144.687	-	144.687	177.218	214.390	161.111	161.700	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

FY 2012 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.

Aviation Tactical Communication Systems (ATCS) is an Army Aviation Program to test the Alternative Communications (Alt Comms) (ARC-231) A-Kit (hardware and software) and the Joint Tactical Radio System (JTRS) hardware on the CH-47F, AH-64D, and the Unmanned Aircraft System (UAS) Shadow aircraft. The JTRS is the transformational system that provides Army Aviation interoperability capability for Future Force and Joint Force operations.

A delay in the JTRS Cluster 1 program resulted in a lack of critical communications equipment to support modernized Army Aviation aircraft production line requirements and Alt Comms was initiated to mitigate this issue. Alt Comms provides two ARC-231 and two ARC-201D radios with power amplifiers to meet the minimum interim JTRS requirements for Military Satellite Communications, Single Channel Ground and Airborne Radio System (SINCGARS), HAVEQUICK, Very High Frequency (VHF), Air Traffic Control (ATC), and Land Mobile Radio requirements and funds the integration and test of the radios onto each platform.

Alt Comms will be Army Aviation's communication solution until it is supplemented by the JTRS Airborne Maritime Fixed (AMF) Small Airborne (SA) radio set, beginning in FY15. Increment 1 of the AMF SA will provide the Wideband Networking Waveform, Soldier Radio Waveform, and Link-16 required for interoperation with the Future Force. Increment 2 of the AMF SA, planned for FY20, will replace the Alt Comms suite and provide legacy waveforms allowing a single hardware solution. JTRS integration efforts planned for FY12 are initiating development of common antennas, conducting platform antenna on-site analysis, continuing development of reusable control software to be provided to JTRS integrators, and continuing integration into the AH-64D resulting in a technical design review. Additionally, begin risk reduction activities for Small Form Factor-B (SFF-B) integration onto Shadow UAS.

The Improved Data Modem (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 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 (BFT) 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. FY12 funds are required to continue development and testing of Joint Battle Command-Platform (Aviation) (JBC-P(A)) and continue development of an Open Systems Architecture (OSA) IDM solution compatible with the AH-64D, CH-47F, and HH/UH-60M. This effort provides the foundation to develop and qualify a new hardware architecture to host IDM and middleware applications to ensure interoperability on the future digital battlefield.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

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 JPALS effort in this project evaluates technical approaches, develops the aircraft avionics equipment for operation with the JPALS sea-based and ground systems, and integrates the avionics equipment into the various Army Aviation platforms. Increment 1 has now been split into Increment 1A (Sea Based development and test) and Increment 1B (aircraft avionics development, integration, and test). The Army's involvement in Increment 1A/1B is to address Army requirements, participate in program management and provide systems engineering, and participate in the Aircraft Integration Guide (AIG) effort which will provide early coordination and interface requirements between the sea-based system and the air component. Additionally, JPALS Army Risk Reduction (JARR) activities continue with the JPALS Common Avionics Technology Development (JCATD) efforts.

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. FY11 funds will complete ARC-220 software and test system changes.

The Aviation Mission Planning System (AMPS) interfaces with Army Battle Command Systems (ABCS) 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. This includes the non-recurring engineering for integration, test, and air worthiness qualification. FY12 funds are to begin integration of the selected middleware into Apache Block III to support the Army Common Operating Environment convergence.

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. FY12 funds are required to design, develop, integrate and test an ADEC system.

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 (IT) 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 technology to reduce the risks of Degraded Visual Environment resulting in Controlled Flight into Terrain. The system will be integrated on CH-47F, AH-64D, OH-58D, and UH-60 modernized aircraft.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: ARC-220 Product Development	3.288	0.500	-
Articles:	0	0	
Description: ARC-220 radio improvements are required to increase operational capability and resolve emerging obsolescence issues. Software imporvements 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 2010 Accomplishments:*** Upgrade the ARC-220 software: Specific enhancements include Improved Link Quality Analysis algorithms, Automatic Position Reporting, Update GPS Position for Position Reports, Position Report Data Assurance, Enhanced Built In Test (BIT) fault isolation, Full Military Grid Reference System (MGRS) coordinate in position reports, Display link frequency on Control Display Unit (CDU), Army Quick Call (AQC) Automatic Link Establishment (ALE), CDU setup page enhancements, Increase Radio Self Address Capability, Modify Global Positioning System (GPS) Time at Power Up, and Mute ALE Tones when Linked. ***FY 2011 Plans:*** Conduct testing and evaluation required to complete the ARC-220 Software Enhancements.			
Title: JTRS AMF A A-Kit development, integration, and system testing for AH-64D and Shadow Unmanned Aerial System (UAS).	28.496	20.040	35.030
Articles:	0	0	
Description: Joint Tactical Radio System (JTRS) Airborne Maritime Fixed (AMF) Small Airborne radio set will supplement Alt Comms beginning in FY15. Increment 1 of the AMF SA will provide Wideband Networking Waveform (WNW), Soldier Radio Waveform (SRW), and Link-16 required for interoperation with the Future Force. Increment 2 of the AMF SA, planned for FY20, will replace the Alt Comms suite and provide legacy waveforms allowing a single hardware solution. ***FY 2010 Accomplishments:*** Procured 32 AMF Engineering Design Models for use in aircraft integration programs. Conducted SDD Apache Block 3 (AB3) AMF/Link 16 integration activities leading to an AB3 Link 16 Design Review event. Initiated Risk Reduction activities to integrate AMF radios into UH-60M and CH-47F aircraft. Initiated development of a common control software for integration of AMF radios into Army Aviation Platforms. Initiated SRW/WNW antenna characterization/development activity. ***FY 2011 Plans:*** Begin development of common antennas, conducting platform on-site antenna analysis, continuing development of reusable control software to be provided to JTRS integrators, and continuing integration into the AH-64D, resulting in a technical design review. Additionally, will begin risk reduction activities for AMF integration of the Small Form Fit Radio Set onto Shadow UAS. ***FY 2012 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Continue development of Link 16 integration into Apache Block 3 to support a Lot 4 Critical Design Review (CDR).			
Title: Alt Comms A-Kit development, integration, and system testing for AH-64D, CH-47F, and UH-60M ***Articles:*** ***Description:*** A delay in the JTRS Cluster 1 program resulted in a lack of critical communications equipment to support modernized Army Aviation aircraft production line requirements and Alt Comms was initiated to mitigate this issue. Alt Comms provides two ARC-231 and two ARC-201D radios with power amplifiers to meet the interim JTRS requirements for Military Satellite Communications, Single Channel Ground and AIrborne Radio System (SINCGARS), HAVEQUICK, Very HIgh Frequency (VHF), AIr Traffic Control (ATC), and Land Mobile Radio requirements and funds the integration and test of the radios onto each platform. ***FY 2010 Accomplishments:*** Conduct CH-47F Demand Assigned Multiple Access Improved Waveform (DAMA IW) Phase I and II, which will upgrade the Common Avionics Architecture System (CAAS) Comms SW Partition to incorporate modifications required to implement additional ARC-231 DAMA IW Phases I and II capabilities; CH-47F software partition, which will continue efforts to develop common software for reuse during communications integration activities on CAAS and other platforms; and Software Application Programming Interface (API) to develop an API that enables the reusable comms software to interact with other software and software-defined radios.	12.297 0	-	-
Title: Joint Precision Approach and Landing System (JPALS) ***Articles:*** ***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 operations missions including those operating from fixed base, ship, tactical, and special mission environments under a wide range of meteorological and jamming conditions. ***FY 2010 Accomplishments:*** Continue to develop and define requirements and interfaces between the JPALS Sea-Based system and the air components. The Air Integration Guide (AIG) provides a list of options to be considered for implementation of JPALS capabilities in the Aircraft System (AS) to include reference and amplifying documents such as AS Spec, External Interface Requirements Specification (EIRS), and Algorithm Description Documents (ADD). Continue the AIG effort for UH-60M and CH-47F. ***FY 2011 Plans:***	12.560 0	17.954 0	30.230

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Continue Increment II waveform definitization, development of a Ground Based Local Area Augmentation System (LAAS), and developing a common JPALS solution for the fixed wing Land-Based Differential GPS (LDGPS) ***FY 2012 Plans:*** Complete the AIG effort related to the AH-64D platform, Block III. Begin the Local Area Differential Global Positioning System (LDGPS) AIG effort. Initiate Non-Recurring Engineering (NRE) efforts for M code development and begins the development of the JPALS B-kit.			
Title: Improved Data Modem (IDM) ***Articles:*** ***Description:*** The Improved Data Modem (IDM) is the common solution for digitizing Army Aviation. It performs as an internet controller and gateway to Tactical internet (TI) and Fire Support (FS) internet for Army Aviation. The IDM provides radio connectivity to the ARC-201D/231, ARC-186, ARC-164 and the Blue Force Tracker (BFT) 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 2010 Accomplishments:*** Initial development of the Open Systems Architecure (OSA) requirements and other systems engineering activities. System specifications down through Component Item Development Specifications (CIDS) were created. The architecture was developed using model driven design which allows for incremental testing as the development was on-going. Preliminary designs were created for both hardware and software. Begin the development of Battle Command Core Asset(s) to meet Aviation operational requirements for CS 15-16. ***FY 2011 Plans:*** Continue design and development of OSA hardware and software including creation of test plans and descriptions as well as production plans. Integration of the Joint Tactical Radio System (JTRS). Development, integration, and testing of JBC-P(A) products. ***FY 2012 Plans:*** Test and evaluate IDM OSA hardware and software againt 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 afforts. Continue development, integration, and testing of Joint Battle Command - Platform (Aviation) (JBC-P(A)) products.	14.479 0	17.419 0	26.206
Title: Aviation Mission Planning System (AMPS)	2.354	3.003	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Articles:	0	0	
Description: The Aviation Mission Planning System (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 Battle Command Systems (ABCS) 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 Aerial Systems (UAS). This effort will allow for the integration of new route server, calclulation 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 2010 Accomplishments:*** FY10 funds are required to design, develop, integrate and test software components needed for the XPLAN application. Software design, development, integration, and testing will focus on core applications, such as the Mission Server and updates to FalconView. Additionally, FY10 funds begin the updates required to modify platform AWEs allowing them to function in the XPLAN architecture. ***FY 2011 Plans:*** FY11 funds are required to complete design, development, integration, and test of additional software components needed for the XPLAN application. FY11 funds complete the updates required to modify platform AWEs allowing them to function in the XPLAN architecture. Additionally, FY11 funds complete development platform AWEs to support new aircraft to include the UH-60M B3, CH-47F B3, and OH-58D CDS4 B3.			
Title: Apache Block III	-	13.922	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. 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. FY12 funds are to continue integration of the selected middleware into the Apache Block III to support the Army Common Operation Environment convergence. ***FY 2011 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Begin integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence. ***FY 2012 Plans:*** Continue integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence.			
Title: Aviation Data Exploitation Capability (ADEC) ***Articles:*** ***Description:*** 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. ADEC is the transformation system required for interoperability with the Army's future logistic systems. ***FY 2011 Plans:*** FY 11 funds are required to begin design, development, integration, and testing of the hardware and software needed to realize the ADEC system. Hardware consist of the ADEC server, Military Flight Operations Quality Assurance (MFOQA) workstation, and various network enabling technologies, such as routers, switches, hubs, etc. Software design, development, integration, and testing will focus on core applications, such as the operating system, application framework, and network software. Additionally, FY 11 funds begin 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:*** FY 12 funds are required to continue design, development, integration, and testing of the hardware and software needed to realize the ADEC system. FY 12 funds continue the advanced component development and prototyping of the baseline MFOQA applications, Aviation Maintenance Software Suite, and CAFRS integration.	-	11.246 0	12.401
Title: Aircraft Notebook (ACN) ***Description:*** 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	-	-	5.444

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
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 2012 Plans:*** FY12 funding will be utilized to begin software design, development, integration, and testing of the ACN applications.			
Title: Helicopter Terrain Avoidance and Warning System (HTAWS) ***Articles:*** ***Description:*** The Helicopter Terrain Avoidance and Warning System (HTAWS) is an OSD RMD 700 directive to develop, integrate, and test technology to reduce the risks of Degraded Visual Environment (DVE) resulting in controlled flight into terrain. The system will be integrated on CH-47F, AH-64D, OH-58D, and UH60 modernized aircraft. ***FY 2011 Plans:*** Begin development and qualification of the DVE hardware and software. ***FY 2012 Plans:*** Continue development and qualification of the DVE hardware and software.	- -	5.126 0	25.300
Title: Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) ***Articles:*** ***Description:*** SBIR/STTR ***FY 2010 Accomplishments:*** SBIR/STTR	3.017 0	-	-
Accomplishments/Planned Programs Subtotals	76.491	89.210	144.687

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• AA0700: *Airborne Avionics*	207.064	244.408								Continuing	Continuing
• AA0712: *Network and Mission Plan*			138.832		138.832		182.645	198.038	251.937	Continuing	Continuing
			132.855		132.855		166.892	183.381	137.159	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• AA0723: *COMMS, NAV Surveillance*											

D. Acquisition Strategy

This project is comprised of multiple systems:

1) Alt Comms - Alt Comms is required to meet minimum acceptable near-term communications requirements as defined by the U.S. Army Aviation Center of Excellence (USAACE) to mitigate production line communications equipment gaps for modernized Army aircraft (UH-60M, CH-47F, and AH-64D). The Alt Comms acquisition strategy is to use currently available communications equipment to fill these gaps. However, this equipment must be incorporated onto the modernized aviation platforms through A-Kit development, platform hardware and software development/integration, and platform testing of the Alt Comms suite.

2) Joint Tactical Radio System (JTRS) - JTRS is a software programmable radio system that enables net-centric communications capabilities. Army Aviation is now aligned with the Airborne Maritime Fixed (AMF) JTRS program and is planning to initiate JTRS Increment 1 fielding on Apache Block III (AB3) as the lead aircraft. The CH-47F and UH-60M integration of the Increment 1 capabilities will be delayed, with initial fielding on those platforms beyond FY15. Increment 1 of the AMF JTRS program will provide the Wideband Networking Waveform (WNW), Soldier Radio Waveform (SRW), and LINK-16 required for interoperation with the Future Force. Increment 2, planned for FY20, replaces Alt Comms and will provide all legacy waveforms. These efforts will be accomplished using host platform development contracts, integration labs, and Airworthiness testing and certification.

3) IDM - Develop and qualify a new hardware architecture and integrate IDM OSA applications onto the new hardware. Develop and test Joint Battle Command-Platform (Aviation) (JBC-P(A)). These development efforts will be accomplished by the Aviation and Missile Research and Development Center's (AMRDEC) Software Engineering Directorate (SED).

4) Joint Precision Approach and Landing System (JPALS) - The Navy is the lead service for this joint program. An updated JPALS acquisition strategy separates Increment I into two increments (1A and 1B). Increment 1A provides for development, integration, and test of the shipboard system. Increment 1B provides for development, integration, and testing of the aircraft shipboard related avionics system. The Army activity in the budget years, focused on the aircraft component, is to complete the current risk reduction effort. Army Aviation avionics includes a series of JPALS Avionics Risk Reduction (JARR) sole source, cost-plus fixed fee, firm fixed price, and time and materials contracts to reduce technical risk on critical components. Army will also participate in the Air Integration Guide (AIG) effort which is part of the JPALS Increment 1A EMD contract. The JPALS Common Avionics Technology Development (JCATD) effort continues engineering, prototyping, and testing tasks that capitalize on the previous results of the JARR efforts. The output of the JARR, AIG, and JCATD contracts will be used to evaluate potential technical approaches and define the best solution. Based on that evaluation, contracts will be awarded for development, integration, and test of JPALS avionics beginning in FY 12. Development will be done through either a Cost Plus or Fixed Price Incentive contract. Aircraft platform integration and test will be accomplished using host platform contracts beginning with UH-60M.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

5) ARC-220 - The ARC-220 box level software improvements will be done through a sole-source cost-plus fixed fee contract with Rockwell Collins.

6) AMPS - The core Portable Flight Planning Software (PFPS) will be improved by developing new route server, calculation engine and tabular editor components in coordination with the Air Force Intelligence, Surveillance, and Reconnaissance Innovations Directorate and Unmanned Aeriel Systems Task Force (AF/A2U) and the Special Operations Forces Mission Planning Office (SOFMPO) to ensure continued interoperability with other DoD components. Army-specific components and platform-specific Aircraft Weapons Electronics modules (AWE) will be upgraded to work with new components. This contracted effort will be executed through the AMRDEC SED.

7) Apache Block III interoperability - to enable future force network interoperability. Integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence. 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. These efforts will be accomplished using host platform development contracts and AMRDEC SED.

8) ADEC- Develop and qualify new hardware and develop and integrate software applications into the new hardware. This development effort will be accomplished by various contract methods and types.

9) ACN- Develop and qualify new hardware and software applications into the hardware. ACN will integrate multiple pieces of software onto one piece of hardware. This effort will be accomplished by various contract methods and types.

10) HTAWS- Develop, integrate, and test new hardware to reduce the risks of Degraded Visual Environment resulting in Controlled Flight into Terrain. This development effort will be accomplished by various contract methods and types.

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 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Spt (JTRS)	TBD	AMCOM:Redstone Arsenal	13.478	-		-		-		-	Continuing	Continuing	Continuing
PM Spt (IDM)	TBD	AMCOM:Redstone Arsenal	1.845	0.262		0.181		-		0.181	Continuing	Continuing	Continuing
PM Spt (ACN)	TBD	AMCOM:Redstone Arsenal, AL	-	-		0.200		-		0.200	Continuing	Continuing	Continuing
PM Spt (ADEC)	TBD	AMCOM:Redstone Arsenal	-	1.500		1.385		-		1.385	Continuing	Continuing	Continuing
PM Spt (Apache Block III)	TBD	AMCOM:Redstone Arsenal	-	0.611		-		-		-	Continuing	Continuing	Continuing
PM Spt (HTAWS)	TBD	AMCOM:Redstone Arsenal	-	0.872		0.927		-		0.927	Continuing	Continuing	Continuing
Small Business Innovative Research/Small Technology Transfer (SBIR/STTR)	TBD	NA:NA	-	-		-		-		-	Continuing	Continuing	Continuing
		Subtotal	15.323	3.245		2.693		-		2.693			

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Continue Alt Comms Demand Assigned Multiple Access Improved Waveform (DAMA IW) Phases I & II.	SS/CPFF	Rockwell Collins:...	242.257	-		-		-		-	Continuing	Continuing	0.000
JTRS Engineering Design Model (EDM) development & testing	C/CPFF	Lockheed Martin:...	13.500	2.486		-		-		-	Continuing	Continuing	Continuing
ARC-220 operational capability improvements	SS/CPFF	Rockwell Collins:...	-	2.195		-		-		-	Continuing	Continuing	Continuing
Develop and qualify OSA hardware to host IDM (IDM)	Various	Various:Various	3.300	10.157		18.025		-		18.025	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JPALS Avionics Risk Reduction (JARR) (JPALS)/B-Kit Development	C/CPFF	Honeywell:Honeywell	0.577	3.979		24.990		-		24.990	Continuing	Continuing	Continuing
Air Integration Guides (AIG) (JPALS)	SS/CPFF	Boeing:...	1.896	1.700		1.743		-		1.743	Continuing	Continuing	Continuing
JPALS Common Avionics Technology Development (JCATD) (JPALS)	C/CPFF	Honeywell:...	5.938	7.607		-		-		-	Continuing	Continuing	Continuing
JBC-P(A) development and testing (IDM)	TBD	TBD:TBD	-	6.000		5.000		-		5.000	Continuing	Continuing	Continuing
Tri-Service XPlan component integration/AWE modifications (AMPS)	Various	Software Engineering Directorate:Redstone Arsenal, AL	-	2.663		-		-		-	Continuing	Continuing	Continuing
Middleware integration onto Apache Block III	TBD	TBD:TBD	-	13.311		10.076		-		10.076	Continuing	Continuing	Continuing
Design, develop, and integrate ADEC software and hardware	TBD	Various:Various	-	7.763		8.442		-		8.442	Continuing	Continuing	Continuing
JTRS LINK-16 Integration (AH-64D)	SS/CPFF	Boeing:...	-	14.242		35.030		-		35.030	Continuing	Continuing	Continuing
Develop and qualify the DVE hardware and software (HTAWS)	TBD	TBD:TBD	-	4.254		24.373		-		24.373	Continuing	Continuing	Continuing
JTRS Shadow Development and Testing	SS/CPFF	AAI Corporation:...	-	3.312		2.350		-		2.350	Continuing	Continuing	Continuing
Design, develop, and integrate ACN software and hardware	TBD	Various:Various	-	-		2.800		-		2.800	0.000	2.800	0.000
		Subtotal	267.468	79.669		132.829		-		132.829			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering, Logistics, and Technical Support (JPALS)	TBD	Various:Various	6.677	1.573		1.147		-		1.147	Continuing	Continuing	Continuing
System Engineering, Logistics, and Technical Support (ADEC)	TBD	Various:Various	-	1.314		1.337		-		1.337	Continuing	Continuing	Continuing
System Engineering, Logistics, and Technical Support (ACN)	TBD	Various:Various	-	-		1.591		-		1.591	0.000	1.591	Continuing
Data (ADEC)	TBD	TBD:TBD	-	0.487		0.495		-		0.495	Continuing	Continuing	Continuing
Data (ACN)	TBD	TBD:TBD	-	-		0.272		-		0.272	Continuing	Continuing	Continuing
		Subtotal	6.677	3.374		4.842		-		4.842			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation (JPALS)	TBD	Various:Various	0.651	0.900		-		-		-	Continuing	Continuing	Continuing
Test and Evaluation (AMPS)	TBD	ATTC; ATEC:Ft. Rucker, AL; Arlington, VA	-	0.340		-		-		-	Continuing	Continuing	Continuing
Test and Evaluation (ARC-220)	TBD	Various:Various	-	0.500		-		-		-	Continuing	Continuing	Continuing
ASIF Test Lab (IDM)	TBD	AMCOM:Redstone Arsenal, AL	-	1.000		3.000		-		3.000	Continuing	Continuing	Continuing
Test and Evaluation (ACN)	TBD	Various:Various	-	-		0.581		-		0.581	Continuing	Continuing	Continuing
Test and Evaluation (ADEC)	TBD	TBD:TBD	-	0.182		0.742		-		0.742	Continuing	Continuing	Continuing
		Subtotal	0.651	2.922		4.323		-		4.323			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0604201A: *AIRCRAFT AVIONICS*	PROJECT C97: *ACFT AVIONICS*	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	290.119	89.210		144.687		-		144.687			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604201A: *AIRCRAFT AVIONICS*	**PROJECT** C97: *ACFT AVIONICS*

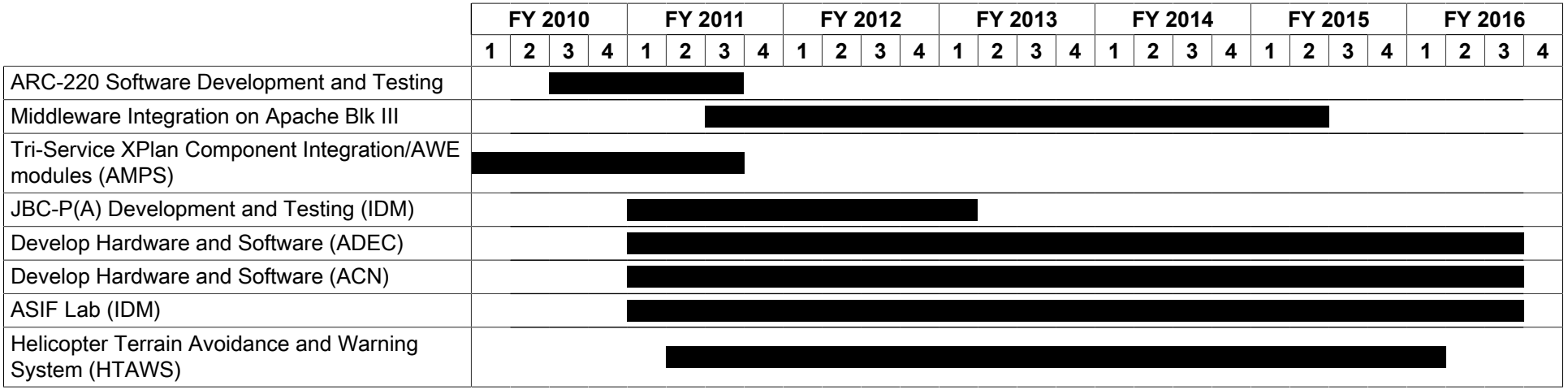

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Army		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0604201A: *AIRCRAFT AVIONICS*	**PROJECT** C97: *ACFT AVIONICS*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
ARC-220 Software Development and Testing	3	2010	3	2011
Middleware Integration on Apache Blk III	3	2011	2	2015
Tri-Service XPlan Component Integration/AWE modules (AMPS)	1	2010	3	2011
JBC-P(A) Development and Testing (IDM)	1	2011	1	2013
Develop Hardware and Software (ADEC)	1	2011	3	2016
Develop Hardware and Software (ACN)	1	2011	3	2016
ASIF Lab (IDM)	1	2011	3	2016
Helicopter Terrain Avoidance and Warning System (HTAWS)	2	2011	1	2016