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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Army **DATE:** February 2012

APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604201A: <i>AIRCRAFT AVIONICS</i>
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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: <i>ACFT AVIONICS</i>	70.926	119.573	17.294	-	17.294	39.576	23.049	1.947	1.385	Continuing	Continuing
VU3: <i>NETWORKING AND MISSION PLANNING</i>	-	-	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-

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APPROPRIATION/BUDGET ACTIVITY

2040: *Research, Development, Test & Evaluation, Army*
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R-1 ITEM NOMENCLATURE

PE 0604201A: *AIRCRAFT AVIONICS*

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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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: <i>NETWORKING AND MISSION PLANNING</i>	-	-	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 Avionics 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
<p>Title: Improved Data Modem (IDM)</p> <p>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.</p> <p>FY 2013 Plans: Deliver engineering releases of IDM OSA hardware and software to aircraft platforms to aid integration efforts. Continue development, integration, and testing of JBC-P(A) products.</p>	-	-	2.072
<p>Title: Apache Block III</p> <p>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.</p> <p>FY 2013 Plans: Continue integration of the selected middleware into the Apache Block III to support the Army Common Operating Environment convergence via FACE.</p>	-	-	5.200
<p>Title: Aviation Data Exploitation Capability (ADEC)</p> <p>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</p>	-	-	9.200