Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-205

Integrated Air and Missile Defense (IAMD)

As of FY 2015 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations

Acq O&M - Acquisition-Related Operations and Maintenance
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
BA - Budget Authority/Budget Activity
BY - Base Year
DAMIR - Defense Acquisition Management Information Retrieval
Dev Est - Development Estimate
DoD - Department of Defense
DSN - Defense Switched Network
Econ - Economic
Eng - Engineering
Est - Estimating
FMS - Foreign Military Sales
FY - Fiscal Year
IOC - Initial Operational Capability
$K - Thousands of Dollars
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MILCON - Military Construction
N/A - Not Applicable
O&S - Operating and Support
Oth - Other
PAUC - Program Acquisition Unit Cost
PB - President's Budget
PE - Program Element
Proc - Procurement
Prod Est - Production Estimate
QR - Quantity Related
Qty - Quantity
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
Sch - Schedule
Spt - Support
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting

Program Information

Program Name

Integrated Air and Missile Defense (IAMD)

DoD Component

Army

Responsible Office

Responsible Office

COL Robert A. Rasch Jr.
5250 Martin Road
Redstone Arsenal, AL 35898-8000

robert.a.rasch2.mil@mail.mil

Phone 256-313-3576
Fax 256-313-3460
DSN Phone 897-3576
DSN Fax 897-3460
Date Assigned September 26, 2011

References

SAR Baseline (Development Estimate)

FY 2011 President's Budget dated February 1, 2010

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated November 20, 2012

Mission and Description

The mission of the Army Integrated Air and Missile Defense (IAMD) Project Office (PO) is to define, develop, acquire, field and sustain the Army’s portion of the Joint IAMD System of Systems capability to be deployed as integrated components in Army, Joint, Interagency, Inter-Governmental and Multi-National net-centric architectures. Additionally, the IAMD PO will develop, acquire, field and sustain the IAMD Battle Command System (IBCS) component of the architecture and integrate externally developed sensors and shooters to provide an effective IAMD capability.

The IAMD program will allow transformation to a network-centric system of systems capability (also referred to as "Plug and Fight") that integrates all Air and Missile Defense (AMD) sensors, weapons, and mission control. The IAMD program will integrate the Patriot and Improved Sentinel components to support the engagement of air breathing targets, cruise missiles, unmanned aerial vehicles, and the tactical ballistic missiles threat. Each sensor and weapon platform will have a "Plug and Fight" interface module, which supplies distributed battle management functionality to enable network-centric operations. Additionally, the IBCS functionality will be incorporated into Air Defense Airspace Management Cells, Air Defense Artillery Brigade Headquarters, and Army Air and Missile Defense Command Headquarters.

The common IBCS provides the functional capabilities to control and manage the IAMD sensors and weapons via the Integrated Fire Control Network capability for fire control connectivity and enabling distributed operations. Central to the IAMD program is the IBCS Development Program consisting of the IBCS Major End Items (MEI); the Engagement Operations Center and "Plug and Fight" modules. The development of these MEIs is essential to achieving Army transformation imperatives, connectivity to the Global Interface Grid for Joint operations, obtaining a Joint Single Integrated Air Picture, establishing Engage on Network capabilities, enabling Net-Ready operations for Army AMD components, and providing a common IAMD mission command capability. This innovative approach at modernization will reduce O&S costs and will enhance training.

Executive Summary

The IAMD Project Office (PO) hosted the Army Acquisition Executive on a software deep dive into the Northrop Grumman IAMD Battle Command System (IBCS) software development efforts on April 3, 2013. IAMD PO, senior Northrop Grumman officials, and independent software engineers provided an in-depth analysis of the current status of IBCS software design progress. Based on this analysis, the IAMD Project Manager proposed a replan for the IBCS software development. The IAMD PO is proceeding in accordance with the development replan.

The IAMD PO briefed at the Defense Acquisition Executive Summary Review on September 16, 2013. The purpose of the brief was to provide an update on the software replan activities for the Northrop Grumman software effort and to provide an update on the test asset issue resulting from the loss of the Test Battalion from 32nd Army Air and Missile Defense Command (AAMDC).

The 2013 Army IAMD Demonstration was conducted October 22, 2013 through November 6, 2013. The purpose was to demonstrate a 2013 “snap-shot” of development efforts focused on achieving common AAMDC capability from the Brigade Combat Teams Air Defense Air Space Management/Brigade Aviation Element to the AAMDC.

In October 2012, programmatic issues with IBCS Software requirements collapse, software performance, and a desire to place increased emphasis on flight test objectives and hardware deferrals resulted in an Undefinitized Contract Action (UCA) issued to Northrop Grumman. The outstanding UCA was definitized January 17, 2014. Northrop Grumman will be authorized to replan efforts directly affected by UCA definitization. This replan data is reflected in the February Earned Value submission.

The schedule breach is a result of the Army's decision to defer IOC from FY 2016 to FY 2018 due to budget reductions based on the FY 2015 PB. A Program Deviation Report is in the submission process to provide notification that the current estimate for the IAMD Schedule milestones are projected to exceed current APB thresholds for Milestone C, Initial Operational Test and Evaluation start and completion, IOC, and Full Rate Production.

There are no significant software-related issues with this program at this time.

Threshold Breaches

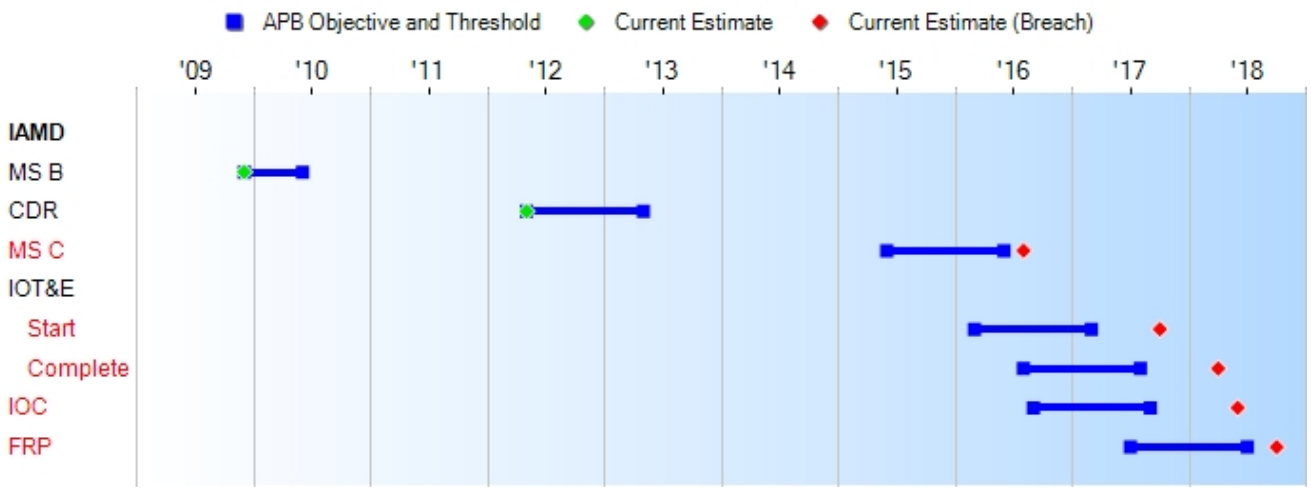
APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

The schedule breach is a result of the Army's decision to defer Initial IOC from FY 2016 to FY 2018 due to budget reductions based on the FY 2015 PB. A Program Deviation Report is in the submission process to provide notification that the current estimate for the IAMD Schedule milestones are projected to exceed current APB thresholds for Milestone C, Initial Operational Test and Evaluation start and completion, IOC, and Full Rate Production.

Schedule



Milestones	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate	
MS B	DEC 2009	DEC 2009	JUN 2010	DEC 2009	
CDR	AUG 2011	MAY 2012	MAY 2013	MAY 2012	
MS C	DEC 2014	JUN 2015	JUN 2016	**AUG 2016**[1]	(Ch-1)
IOT&E					
Start	JAN 2016	MAR 2016	MAR 2017	**OCT 2017**[1]	(Ch-1)
Complete	JUL 2016	AUG 2016	AUG 2017	**APR 2018**[1]	(Ch-1)
IOC	AUG 2016	SEP 2016	SEP 2017	**JUN 2018**[1]	(Ch-1)
FRP	MAY 2017	JUL 2017	JUL 2018	**OCT 2018**[1]	(Ch-1)

[1] *APB Breach*

Change Explanations

(Ch-1) Based on the FY 2015 PB the following current estimates have changed due to budget reductions and the Army's decision to defer IOC to FY 2018:
MS C changed from June 2015 to August 2016
IOT&E Start changed from March 2016 to October 2017
IOT&E Completion changed from August 2016 to April 2018
IOC changed from September 2016 to June 2018
FRP changed from July 2017 to October 2018

Acronyms and Abbreviations

CDR - Critical Design Review
FRP - Full Rate Production
IOT&E - Initial Operational Test and Evaluation
MS - Milestone

Performance

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
Net Ready	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 •DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services •Inf	The Army IAMD SoS must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services IA requirements	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applicable joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1 DISR mandated GIG KIPs identified in the KIP declaration table NCOW RM Enterprise Services IA	TBD	The Army IAMD SoS must fully support execution of joint critical operational activities identified in the applic-able joint- and system-integrated architectures, and the system must satisfy the technical requirements for transition to Net-Centric military operations to include the following: DISR mandated GIG IT standards and profiles identified in the TV-1. DISR mandated GIG KIPs identified in the KIP declaration table. NCOW RM Enterprise Services. Information

	ormation assurance requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA •Operat ionally effective information exchanges • Mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.	including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA Operationally effective information exchanges Mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA Operationally effective information exchanges Mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.		assurance requirements including availability, integrity, authentica-tion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA. Operationally effective information exchanges. Mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.
Integrated Defense Effectiveness	To support attainment of a command-er's defense effectiveness objectives, which would normally	To support attainment of a command-er's defense effectiveness objectives, which would normally	To support attainment of a command-er's defense effectiveness objectives, which would normally	TBD	To support attainment of a comman-der's defense effectiveness objectives, which would

	range from 0.50% to 0.99%, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engage-ments up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of	range from 0.5 to 0.99, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engage-ments up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing	range from 0.5 to 0.99, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the commander without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engage-ments up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing		normally range from 0.50% to 0.99%, the Army IAMD SoS shall provide flexible interceptor selection and firing doctrine within the Task Force. The Army IAMD SoS-integrated defenses shall enable defeat of non-ballistic and ballistic platforms at times and locations not otherwise available to the comman-der without an integrated operations capability by exploiting fused organic and non-organic sensor data to execute engage-ments up to the operation-ally effective range of selected missile kinematics. The Army IAMD SoS shall be

	allowing greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.	greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.	greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.		capable of allowing greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-ballistic threats. The Army IAMD SoS defense effectiveness levels shall not degrade and be equal to or greater than the effectiveness levels of fielded TBM and CM/ABT defense systems.
Common Command and Control	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface,	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface,	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface,	TBD	The Army IAMD SoS common C2 components (Battalion and below) shall incor-porate common functionality that includes: defense planning, defense design, warfighter-machine interface,

	battle monitor and control, network interface and manage-ment, track manage-ment, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLA MRAAM Platoon with the Increment 2 equipped Task Force.	battle monitor and control, network interface and manage-ment, track manage-ment, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLA MRAAM Platoon with the Increment 2 equipped Task Force.	battle monitor and control, network interface and manage-ment, track manage-ment, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force Patriot Battery/SLA MRAAM Platoon with the Increment 2 equipped Task Force.		battle monitor and control, network interface and manage-ment, track manage-ment, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as defined above) of a current force PATRIOT Battery/ SLAMRAAM Platoon with the Incre-ment 2 equipped Task Force.
Material Availability	The Army IAMD SoS C2 shall achieve an Operational Availability (Ao) of at least 95%.	The Army IAMD SoS common C2 shall achieve an Ao 99%.	The Army IAMD SoS common C2 shall achieve an Ao of at least 95%.	TBD	The Army IAMD SoS C2 shall achieve an Ao of at least 95%.
Force Protection and Survivability	The Army IAMD SoS common C2 equipment shall be designed to	All Army IAMD SoS common C2 vehicle cabs and manned shelters shall	The Army IAMD SoS common C2 equipment shall be designed to	TBD	The Army IAMD SoS common C2 equipment shall be designed to

	be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and under-standing commens-urate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontami-nation procedures in such a manner that it can quickly return (within 30 minutes) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor	be capable of adding up-armor protection sufficient to repel enemy small arms as developed by the PM, FMTV. All equipment manned during transport or operations shall mitigate the effects of 7.62mm rounds and below.	be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and under-standing commens-urate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontami-nation procedures in such a manner that it can quickly return (within 30 min) to full operational capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor		be operated by Soldiers wearing body armor and equipped with appropriate weapons; shall have situational awareness and understand-ing commensur-ate with the supported force; will report the position and ID of all Army IAMD SoS system into the COP and BFT nets; shall be operable by Soldiers in MOPP 4; and shall survive decontami-nation procedures in such a manner that it can quickly return (within 30 min) to full opera-tional capability. All Army IAMD SoS common C2 vehicle cabs shall be capable of adding up-armor

	protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contaminat-ion during a CBRNE event that is sustainable through decontami-nation.		protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contaminat-ion during a CBRNE event that is sustainable through decontami-nation.		protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamina-tion during a CBRNE event that is sustainable through decontami-nation.

Requirements Source

Capability Development Document (CDD) dated May 17, 2010

Change Explanations

None

Acronyms and Abbreviations

ABT - Air Breathing Threat
Ao - Operational Availability
ATO - Approval to Operate
BFT - Blue Force Tracking
C2 - Command and Control
CBRNE - Chemical, Biological, Radiological, Nuclear and High Yield Explosives
CM - Cruise Missile
COP - Common Operating Picture
DAA - Designated Approval Authority
DISR - DoD Information Technology Standards Registry
FMTV - Family of Medium Tactical Vehicles
GIG IT - Global Information Grid Information Technology
IA - Information Assurance
ID - Identification
KIP - Key Information Profile
MOPP - Mission Oriented Protective Posture
NCOW RM - Net-Centric Operations and Warfare Reference Model
PM - Product Manager
SLAMRAAM - Surface-Launched Advanced Medium Range Air-to-Air Missile
SoS - System of Systems
TBM - Tactical Ballistic Missile
TV - Technical View, Standards Profile

Track to Budget

RDT&E

Appn		BA	PE	
Army	2040	04	0603327A	
	Project		**Name**	
	S34		AMD System of Systems Engineering and Integration	(Sunk)
Army	2040	05	0605457A	
	Project		**Name**	
	DU4		Advanced Electronic Protection Enhancements	(Sunk)
	S40		Army Integrated Air and Missile Defense	
	Notes:		Army IAMD Project Office Engineering and Manufacturing Development program funding began in FY 2011.	

Procurement

Appn		BA	PE
Army	2035	02	0214400A
	Line Item		**Name**
	BZ5075		IAMD Battle Command System

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

Appropriation	BY2009 $M			BY2009 $M	TY $M		
	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Dev Est	Current APB Development Objective	Current Estimate
RDT&E	1540.6	2199.5	2419.5	2331.4	1627.5	2402.6	2599.0
Procurement	3316.0	3174.8	3492.3	3358.3	4164.1	3939.2	4412.9
Flyaway	--	--	--	3205.8	--	--	4212.0
Recurring	--	--	--	3201.8	--	--	4207.4
Non Recurring	--	--	--	4.0	--	--	4.6
Support	--	--	--	152.5	--	--	200.9
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	152.5	--	--	200.9
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	4856.6	5374.3	N/A	5689.7	5791.6	6341.8	7011.9

Confidence Level for Current APB Cost 50% -

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs. Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Quantity	SAR Baseline Dev Est	Current APB Development	Current Estimate
RDT&E	11	16	16
Procurement	285	431	427
Total	296	447	443

The IAMD Unit of Measure - 16 Fully Configured RDT&E units and 427 IAMD Battle Command Systems Procurement Quantities which enable System of Systems operation of Air and Missile Defense Units as defined in the IAMD Capability Development Document.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2015 President's Budget / December 2013 SAR (TY$ M)

Appropriation	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
RDT&E	1143.5	369.5	142.6	215.7	228.8	170.8	154.6	173.5	2599.0
Procurement	0.0	0.0	0.0	21.1	206.3	298.9	379.9	3506.7	4412.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2015 Total	1143.5	369.5	142.6	236.8	435.1	469.7	534.5	3680.2	7011.9
PB 2014 Total	1173.5	385.8	483.6	536.7	624.5	525.4	521.0	2124.7	6375.2
Delta	-30.0	-16.3	-341.0	-299.9	-189.4	-55.7	13.5	1555.5	636.7

Quantity	Undistributed	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
Development	16	0	0	0	0	0	0	0	0	16
Production	0	0	0	0	0	18	24	44	341	427
PB 2015 Total	16	0	0	0	0	18	24	44	341	443
PB 2014 Total	16	0	0	17	14	62	45	50	243	447
Delta	0	0	0	-17	-14	-44	-21	-6	98	-4

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2006	--	--	--	--	--	--	23.7
2007	--	--	--	--	--	--	36.3
2008	--	--	--	--	--	--	48.0
2009	--	--	--	--	--	--	114.7
2010	--	--	--	--	--	--	164.7
2011	--	--	--	--	--	--	246.7
2012	--	--	--	--	--	--	262.0
2013	--	--	--	--	--	--	247.4
2014	--	--	--	--	--	--	369.5
2015	--	--	--	--	--	--	142.6
2016	--	--	--	--	--	--	215.7
2017	--	--	--	--	--	--	228.8
2018	--	--	--	--	--	--	170.8
2019	--	--	--	--	--	--	154.6
2020	--	--	--	--	--	--	33.6
2021	--	--	--	--	--	--	20.2
2022	--	--	--	--	--	--	30.5
2023	--	--	--	--	--	--	47.7
2024	--	--	--	--	--	--	41.5
Subtotal	**16**	**--**	**--**	**--**	**--**	**--**	**2599.0**

Annual Funding BY$
2040 | RDT&E | Research, Development, Test, and Evaluation, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2009 $M	Non End Item Recurring Flyaway BY 2009 $M	Non Recurring Flyaway BY 2009 $M	Total Flyaway BY 2009 $M	Total Support BY 2009 $M	Total Program BY 2009 $M
2006	--	--	--	--	--	--	24.8
2007	--	--	--	--	--	--	37.1
2008	--	--	--	--	--	--	48.1
2009	--	--	--	--	--	--	113.4
2010	--	--	--	--	--	--	160.4
2011	--	--	--	--	--	--	235.7
2012	--	--	--	--	--	--	246.3
2013	--	--	--	--	--	--	228.3
2014	--	--	--	--	--	--	332.3
2015	--	--	--	--	--	--	125.5
2016	--	--	--	--	--	--	186.1
2017	--	--	--	--	--	--	193.6
2018	--	--	--	--	--	--	141.7
2019	--	--	--	--	--	--	125.7
2020	--	--	--	--	--	--	26.8
2021	--	--	--	--	--	--	15.8
2022	--	--	--	--	--	--	23.4
2023	--	--	--	--	--	--	35.8
2024	--	--	--	--	--	--	30.6
Subtotal	**16**	**--**	**--**	**--**	**--**	**--**	**2331.4**

Annual Funding TY$
2035 | Procurement | Other Procurement, Army

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2016	--	16.5	--	4.6	21.1	--	21.1
2017	18	206.3	--	--	206.3	--	206.3
2018	24	293.0	--	--	293.0	5.9	298.9
2019	44	363.5	--	--	363.5	16.4	379.9
2020	47	423.6	--	--	423.6	24.0	447.6
2021	53	418.4	--	--	418.4	27.7	446.1
2022	49	488.6	--	--	488.6	29.2	517.8
2023	39	476.2	--	--	476.2	30.6	506.8
2024	33	391.0	--	--	391.0	24.8	415.8
2025	36	394.1	--	--	394.1	22.8	416.9
2026	48	279.9	--	--	279.9	9.3	289.2
2027	34	217.0	--	--	217.0	6.2	223.2
2028	2	161.7	--	--	161.7	4.0	165.7
2029	--	77.6	--	--	77.6	--	77.6
Subtotal	**427**	**4207.4**	**--**	**4.6**	**4212.0**	**200.9**	**4412.9**

Annual Funding BY$
2035 | Procurement | Other Procurement, Army

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2009 $M	Non End Item Recurring Flyaway BY 2009 $M	Non Recurring Flyaway BY 2009 $M	Total Flyaway BY 2009 $M	Total Support BY 2009 $M	Total Program BY 2009 $M
2016	--	14.2	--	4.0	18.2	--	18.2
2017	18	174.2	--	--	174.2	--	174.2
2018	24	242.6	--	--	242.6	4.9	247.5
2019	44	295.1	--	--	295.1	13.3	308.4
2020	47	337.1	--	--	337.1	19.1	356.2
2021	53	326.5	--	--	326.5	21.6	348.1
2022	49	373.8	--	--	373.8	22.3	396.1
2023	39	357.1	--	--	357.1	23.0	380.1
2024	33	287.5	--	--	287.5	18.2	305.7
2025	36	284.1	--	--	284.1	16.4	300.5
2026	48	197.8	--	--	197.8	6.6	204.4
2027	34	150.3	--	--	150.3	4.3	154.6
2028	2	109.8	--	--	109.8	2.8	112.6
2029	--	51.7	--	--	51.7	--	51.7
Subtotal	**427**	**3201.8**	**--**	**4.0**	**3205.8**	**152.5**	**3358.3**

Cost Quantity Information
2035 | Procurement | Other Procurement, Army

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2009 $M
2016	--	--
2017	18	188.4
2018	24	242.6
2019	44	295.1
2020	47	337.1
2021	53	326.5
2022	49	373.8
2023	39	357.1
2024	33	287.5
2025	36	284.1
2026	48	197.8
2027	34	150.3
2028	2	161.5
2029	--	--
Subtotal	**427**	**3201.8**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	12/23/2009	2/1/2012
Approved Quantity	27	31
Reference	Milestone B ADM	Restructure ADM
Start Year	2015	2015
End Year	2016	2016

.

Foreign Military Sales

IAMD participated in a FY 2012 Office of the Secretary of Defense Defense Exportability Features study. The program received $150K in FY 2013 for refinement of the implementation approach.

The IAMD program is working with Army Special Programs to obtain approval for release of program information to Tier 1 and Tier 2 countries in support of future FMS.

Nuclear Costs

None

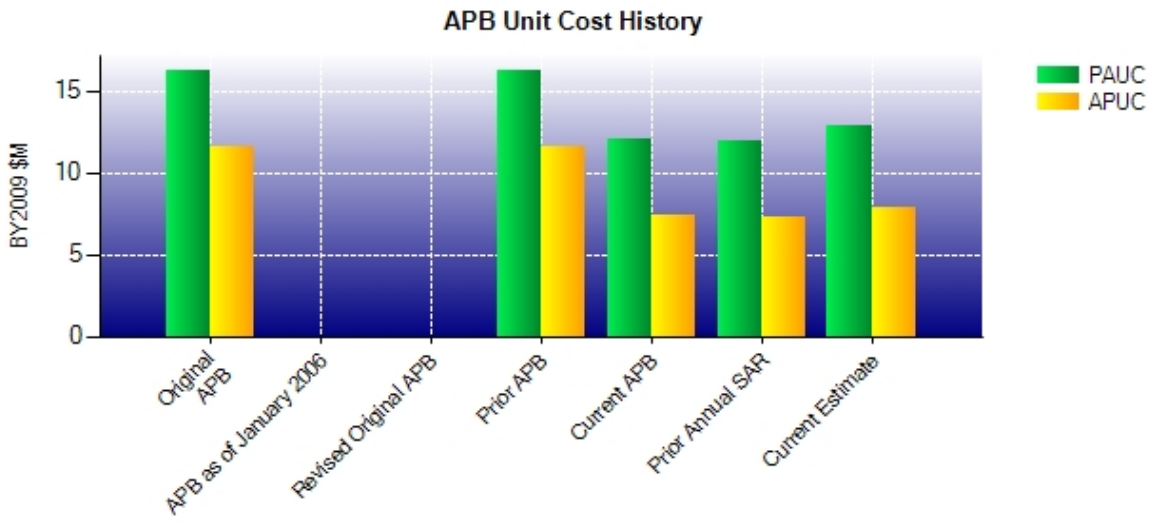
Unit Cost

Unit Cost Report

Unit Cost	BY2009 $M Current UCR Baseline (NOV 2012 APB)	BY2009 $M Current Estimate (DEC 2013 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	5374.3	5689.7	
Quantity	447	443	
Unit Cost	12.023	12.844	+6.83
Average Procurement Unit Cost (APUC)			
Cost	3174.8	3358.3	
Quantity	431	427	
Unit Cost	7.366	7.865	+6.77

Unit Cost	BY2009 $M Original UCR Baseline (JUN 2010 APB)	BY2009 $M Current Estimate (DEC 2013 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	4806.8	5689.7	
Quantity	296	443	
Unit Cost	16.239	12.844	-20.91
Average Procurement Unit Cost (APUC)			
Cost	3316.0	3358.3	
Quantity	285	427	
Unit Cost	11.635	7.865	-32.40

Unit Cost History



		BY2009 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	JUN 2010	16.239	11.635	19.382	14.611
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	JUN 2010	16.239	11.635	19.382	14.611
Current APB	NOV 2012	12.023	7.366	14.187	9.140
Prior Annual SAR	DEC 2012	11.923	7.242	14.262	9.140
Current Estimate	DEC 2013	12.844	7.865	15.828	10.335

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
19.566	0.463	-1.979	-0.215	0.385	-0.219	0.000	-2.173	-3.738	15.828

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.611	0.408	-0.151	-0.223	0.000	-2.055	0.000	-2.255	-4.276	10.335

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	DEC 2009	N/A	DEC 2009
Milestone C	N/A	DEC 2014	N/A	AUG 2016
IOC	N/A	AUG 2016	N/A	JUN 2018
Total Cost (TY $M)	N/A	5791.6	N/A	7011.9
Total Quantity	N/A	296	N/A	443
Prog. Acq. Unit Cost (PAUC)	N/A	19.566	N/A	15.828

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1627.5	4164.1	--	5791.6
Previous Changes				
Economic	+46.1	+203.6	--	+249.7
Quantity	-10.8	+2068.6	--	+2057.8
Schedule	--	-264.1	--	-264.1
Engineering	+170.6	--	--	+170.6
Estimating	+602.6	-1251.1	--	-648.5
Other	--	--	--	--
Support	--	-981.9	--	-981.9
Subtotal	+808.5	-224.9	--	+583.6
Current Changes				
Economic	-14.9	-29.5	--	-44.4
Quantity	--	-58.7	--	-58.7
Schedule	--	+168.9	--	+168.9
Engineering	--	--	--	--
Estimating	+177.9	+373.8	--	+551.7
Other	--	--	--	--
Support	--	+19.2	--	+19.2
Subtotal	+163.0	+473.7	--	+636.7
Total Changes	+971.5	+248.8	--	+1220.3
CE - Cost Variance	2599.0	4412.9	--	7011.9
CE - Cost & Funding	2599.0	4412.9	--	7011.9

Summary Base Year 2009 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	1540.6	3316.0	--	4856.6
Previous Changes				
Economic	--	--	--	--
Quantity	-9.2	+1478.9	--	+1469.7
Schedule	--	--	--	--
Engineering	+148.7	--	--	+148.7
Estimating	+528.4	-924.1	--	-395.7
Other	--	--	--	--
Support	--	-749.5	--	-749.5
Subtotal	+667.9	-194.7	--	+473.2
Current Changes				
Economic	--	--	--	--
Quantity	--	-42.3	--	-42.3
Schedule	--	+3.0	--	+3.0
Engineering	--	--	--	--
Estimating	+122.9	+269.9	--	+392.8
Other	--	--	--	--
Support	--	+6.4	--	+6.4
Subtotal	+122.9	+237.0	--	+359.9
Total Changes	+790.8	+42.3	--	+833.1
CE - Cost Variance	2331.4	3358.3	--	5689.7
CE - Cost & Funding	2331.4	3358.3	--	5689.7

Previous Estimate: December 2012

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-14.9
Adjustment for current and prior escalation. (Estimating)	+7.8	+8.5
Revised estimate for test and integration efforts resulting from test plan changes. (Estimating)	+142.8	+199.4
Revised estimate to reflect actuals. (Estimating)	-27.7	-30.0
RDT&E Subtotal	+122.9	+163.0

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-29.5
Adjustment for current and prior escalation. (Estimating)	+0.3	+0.3
Extension of procurement buy profile of IAMD Battle Command System (IBCS) components from FY 2014 through FY 2016 to FY 2016 through FY 2029. (Schedule)	0.0	+164.7
Total Quantity variance resulting from a decrease of four Engagement Operation Centers (EOC) from 431 to 427. (Subtotal)	-24.9	-34.5
Quantity variance resulting from a decrease of four EOCs from 431 to 427. (Quantity)	(-42.3)	(-58.7)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+3.0)	(+4.2)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+14.4)	(+20.0)
Revised estimate for IBCS components resulting from design maturation. (Estimating)	+255.2	+353.5
Revised estimate for Initial Spares. (Support)	+6.4	+19.2
Procurement Subtotal	+237.0	+473.7

(QR) Quantity Related

Contracts

Appropriation: RDT&E	
Contract Name	**IAMD Battle Command System (IBCS) Development Program**
Contractor	Northrop Grumman Space & Mission Systems Corporpation
Contractor Location	Huntsville, AL 35805
Contract Number, Type	W31P4Q-08-C-0418, CPIF
Award Date	December 30, 2009
Definitization Date	December 30, 2009

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
375.0	N/A	11	678.6	N/A	11	742.7	742.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a contract modification to implement a revised flight test program, additional support to the Government Simulation and Integration Laboratory, and support to IAMD enterprise working groups.

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/24/2014)	+1.2	-0.1
Previous Cumulative Variances	-25.7	-25.9
Net Change	+26.9	+25.8

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to rebaselining the contractors Performance Measurement Baseline (PMB).

The favorable net change in the schedule variance is due to rebaselining the contractors PMB.

Appropriation: RDT&E

Contract Name	**A-Kit Development**
Contractor	Raytheon Company
Contractor Location	401 Jan Davis Dr Huntsville, AL 35806
Contract Number, Type	W31P4Q-12-C-0120, CPFF
Award Date	February 14, 2012
Definitization Date	September 19, 2012

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
126.0	N/A	0	126.0	N/A	0	130.4	130.4

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/26/2014)	-3.3	-1.0
Previous Cumulative Variances	+0.5	-0.1
Net Change	-3.8	-0.9

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to three major areas in software requiring more effort than planned.

The unfavorable net change in the schedule variance is due to software defects impacting the ability to complete testing.

Deliveries and Expenditures

Delivered to Date	Plan to Date	Actual to Date	Total Quantity	Percent Delivered
Development	2	2	16	12.50%
Production	0	0	427	0.00%
Total Program Quantity Delivered	2	2	443	0.45%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	7011.9	Years Appropriated	9
Expended to Date	1170.0	Percent Years Appropriated	37.50%
Percent Expended	16.69%	Appropriated to Date	1513.0
Total Funding Years	24	Percent Appropriated	21.58%

The above data is current as of 2/28/2014.

Operating and Support Cost

IAMD

Assumptions and Ground Rules

Cost Estimate Reference:
Estimate is based on initial Project Office Estimate (POE) dated February 20, 2014.

Military personnel costs are contained in the POE.

Overhaul will occur seven years after fielding.

Technology refresh will occur every five years.

Fielding of the IAMD Battle Command System and associated equipment will not increase the manpower in the Composite Battalion.

Contractor Field Service Representatives will be required during the Interim Contractor Logistics Support which will be two-years after IOC.

Demilitarization will occur after 20-years of use.

Sustainment Strategy:
The IAMD Program will be supported by a combination of Army organic and contractor-provided resources through a Performance Based Logistics (PBL) Product Support Strategy (PSS). Under PBL sustainment constructs, the IAMD Project Office will utilize performance based sustainment methods and performance metrics which may include a Product Support Integrator (PSI) overseeing the performance of its various Product Support Providers (PSP) from both the commercial and organic industrial support base. The decision for PSI/PSP designation will be the culmination of a formal (Type II) Business Case Analysis. The IAMD PBL PSS provides a Human Systems Integration/Manpower and Personnel Integration approach that will provide the human interface, tools, and resources needed to sustain the IAMD equipment throughout its life cycle.

There are 427 Procurement units.

The life of the equipment is 20-years.

Antecedent Information:
There is no antecedent system.

Unitized O&S Costs BY2009 $K		
Cost Element	**IAMD Average Annual Cost Per Unit**	**No Antecedent System (Antecedent)**
Unit-Level Manpower	0.000	--
Unit Operations	0.800	--
Maintenance	124.500	--
Sustaining Support	91.400	--
Continuing System Improvements	62.400	--
Indirect Support	0.000	--
Other	0.000	--
Total	279.100	--

Unitized Cost Comments:

Average annual cost per unit is based on 427 units times 20-years of O&S. (Total Cost = Average Annual Cost per unit ($279.1) * number of units (427) * life per unit (20-years) = $2,383.5M (BY$ 2009)

	Total O&S Cost $M			
	Current Development APB Objective/Threshold		**Current Estimate**	
	IAMD		**IAMD**	**No Antecedent System (Antecedent)**
Base Year	2235.9	2459.5	2383.5	N/A
Then Year	3333.3	N/A	3656.5	N/A

Total O&S Costs Comments:

The O&S cost increased from the December 2012 SAR to the December 2013 SAR. The major change in O&S costs is the result of adding three years of O&S from FY 2047 to FY 2050, resulting from an extension of the procurement schedule and a change in the estimating methodology for the cost of spares, technology refresh, and maintenance overhauls.

O&S Cost Variance		
Category	**Base Year 2009 $M**	**Change Explanation**
Prior SAR Total O&S Estimate December 2012	2,235.9	
Cost Estimating Methodology	+147.6	Revised cost estimate for unit operations, maintenance, sustaining support, and continuing system improvement cost estimating relationships.
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Programmatic/Planning Factors	0.0	
Other	0.0	
Total Changes	+147.6	

Current Estimate	2,383.5	

Disposal Costs:

Lifecycle demilitarization and disposal costs are $22.3M (BY$ 2009) and are not included in the above estimate.