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

Integrated Air and Missile Defense (IAMD)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name
Integrated Air and Missile Defense (IAMD)

DoD Component
Army

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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 October 8, 2014

Mission and Description

The Army Integrated Air and Missile Defense (IAMD) program is a direct response to the U.S. Army Air and Missile Defense (AMD) Concept and Operational and Organizational Plan for the Future Force, the Army IAMD System of Systems (SoS) CDD and the AMD Task Force Concept of Operations. The IAMD program is uniquely structured to enable the development of an overarching SoS capability with all participating Air Defense Artillery components functioning interdependently to provide total operational capabilities not achievable by the individual element systems. The IAMD program achieves this objective by establishing the IAMD architecture and developing (1) the IAMD Battle Command Systems (IBCS) Engagement Operations Center (EOC) that provides the common mission command capability, (2) the Integrated Fire Control Relay capability for fire control connectivity and distributed operations, and (3) the common Plug and Fight (P&F) Kits that network enable multiple sensor components, weapon components, and the IBCS EOC.

The IAMD program will provide advanced capabilities to the Army and the Soldier by allowing transformation to a network-centric SoS capability that integrates AMD sensors and weapons with the IBCS EOC. The IAMD SoS architecture will enable extended range and non-line-of-sight engagements, to include joint kill chain engagements across the full spectrum of aerial threats, providing fire control quality data to the most appropriate weapon to complete the mission successfully. Further, it will mitigate the coverage gaps and the single points of failure that plagued AMD design in the past. The IAMD program will provide the user with the ability to train on a single IBCS that will result in overall training savings. The IAMD program will provide the Army with the ability to procure components that interface with the Integrated Fire Control Network, alleviating the cost of procuring total system capabilities in the future.

Executive Summary

Program Highlights Since Last Report

The IAMD requirement is stable and funding is adequate to meet cost, schedule, and performance objectives through EMD and LRIP. The Army will submit an updated Acquisition Program Baseline at Milestone C in September 2020. Risk did not increase since the 2018 SAR.

A new task order for the Plug & Fight A-Kit Indefinite Delivery Indefinite Quantity contract was awarded to Raytheon on March 1, 2019. This contract allows Raytheon to continue IAMD Battle Command System (IBCS) A-Kit software development and maintenance, Engagement Control Station to Radar Interface Unit (RIU) conversions, Department of the Army modification work order activities to add voice over internet protocol phones, alarms/horns to the RIUs and battery maintenance centers, as well as to continue the Launcher Integration Network Kit engineering change proposal.

An undefinitized contract action was awarded to Northrop Grumman on March 13, 2019 for Wisła Phase I of the Poland IBCS/Patriot Foreign Military Sales Case, to provide the IBCS, training, and logistics support to Poland.

The IAMD program began Developmental Testing in April 2019 using IBCS v4.5 software and production representative hardware. IAMD successfully completed Developmental Flight Test (FT) 4 demonstrating the capability of IBCS to detect, track, and kill a cruise missile surrogate (MQM-178) using a composite track from multiple sensors integrated with the IBCS Fire Control Network to command the launch of a Patriot Advanced Capability-3 Cost Reduction Initiative interceptor to defeat the threat at long range.

The IAMD Program completed delivery of production-representative major end items in September 2019.

The IAMD Program completed delivery of the final build of IBCS v4.5 software ahead of schedule in October 2019. The Army IAMD program was selected as an Agile pilot program under section 873 of the 2019 National Defense Authorization Act. The foundation of the Army IAMD Program, the IBCS, is a much needed, software intensive capability for the Warfighter with complex program requirements. Through Agile methods, it is the IAMD Project Office's intent to provide the Warfighter with incremental capabilities faster, and with minimal re-work, due to Warfighter involvement from requirements development to final product testing and deployment. IAMD awarded a competitive Other Transaction Authority to Northrop Grumman, with multi-company sub-contractors including several non-traditional DoD vendors, for transition to Agile software development in November 2019.

On December 6, 2019 Army IAMD successfully completed New Equipment Training (NET) of 291 Soldiers and leaders of 3rd Battalion, 43rd Air Defense Artillery (3/43 ADA) at Fort Bliss, TX. NET took place from August 16 through December 6 2019 and prepares the battalion for Collective Training January - April 2020 and LUT.

On December 12, 2019, Army IAMD and Soldiers from the 3-6 Air and Missile Defense Test Detachment successfully conducted Flight Test 5, two near simultaneous engagements against two maneuvering Cruise Missile surrogates utilizing Patriot Advanced Capability-2 (PAC-2) Guidance Enhanced Missile-TBM (GEM-T) interceptors. This flight test was re-designed from the original plan to demonstrate capability to defend against recent real world threats. Flight Test 5 demonstrated the Army's capability to identify, track, engage and kill maneuvering targets using a composite track of Army, Marine, and Air Force sensors integrated with the IBCS Fire Control Network under the control of the IBCS to command the launch of interceptors from an Army Air Defense system, utilizing Soldier operators.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
December 2009	Army IAMD Milestone B ADM approved entry into EMD and program initiation. The Milestone B decision resulted in down-select to an IAMD Battle Command System prime contractor award to Northrop Grumman.
February 2012	Army IAMD program restructure ADM was approved. The ADM approved an Army Acquisition Objective increase from 285 to 431. The Army IAMD architecture was expanded to incorporate the brigade combat team's: Air Defense Airspace Management Cell, Air Defense Artillery Brigade, Army Air and Missile Defense Command Headquarters, Indirect Fire Protections Capability / Avenger Battalions and Componentized Patriot system. The ADM approved the program as a designated system for the Defense Exportability Feature pilot program.
November 2012	DAE approved the Army IAMD program restructure APB.
October 2014	DAE approved Army IAMD Change 2 APB. The schedule breach occurred as a result of resourcing priorities in the FY 2015 PB affecting only schedule.
December 2017	In response to a Program Deviation Report submitted for Army IAMD, the DAE approved the program re-plan in an ADM, dated December 13, 2017. The ADM validated the Army Acquisition Objective of 454, approved the program to update the APB cost and schedule at Milestone C, and approved the revision of the EMD reliability exit criteria.

Threshold Breaches

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

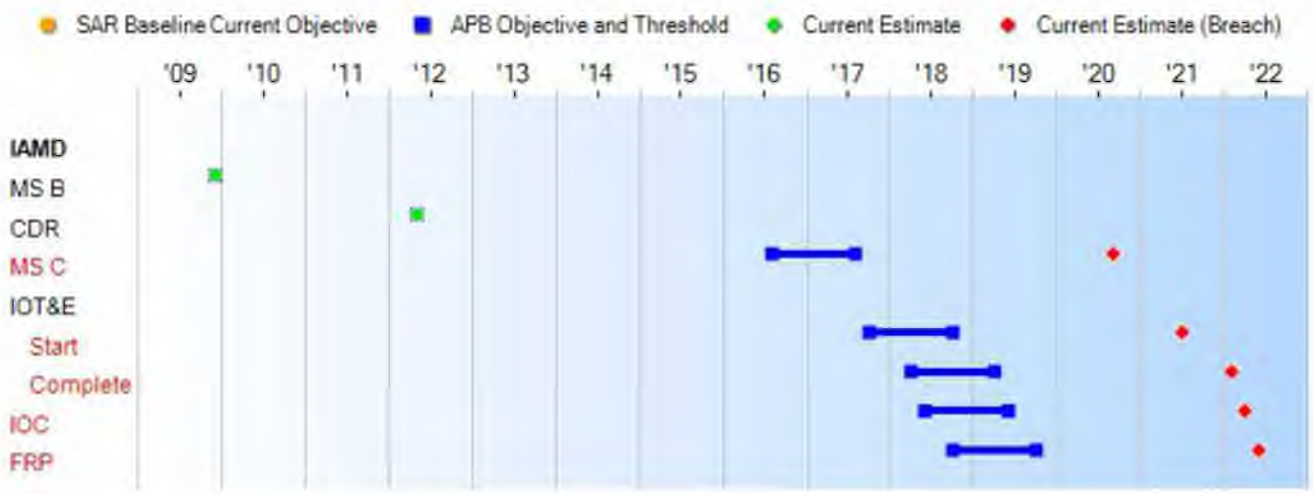
Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

The Schedule, RDT&E, and O&S Cost deviations were previously reported in the December 2018 SAR.

Per the December 13, 2017 DAE approved IAMD ADM, the program will revise APB cost and schedule at Milestone C.

Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
MS B	Dec 2009	Dec 2009	Dec 2009	Dec 2009
CDR	Aug 2011	May 2012	May 2012	May 2012
MS C	Dec 2014	Aug 2016	Aug 2017	**Sep 2020**[1]
IOT&E				
Start	Jan 2016	Oct 2017	Oct 2018	**Jul 2021**[1]
Complete	Jul 2016	Apr 2018	Apr 2019	**Feb 2022**[1]
IOC	Aug 2016	Jun 2018	Jun 2019	**Apr 2022**[1]
FRP	May 2017	Oct 2018	Oct 2019	**Jun 2022**[1]

[1] *APB Breach*

Change Explanations

None

Notes

The IAMD ADM, approved by the DAE on December 13, 2017, directed the program to update the APB at Milestone C. Therefore, the program will continue to report the above deviations, previously identified in the December 2018 SAR, until a revised APB is approved.

Acronyms and Abbreviations

CDR - Critical Design Review
IOT&E - Initial Operational Test and Evaluation
MS - Milestone

Performance

Performance Characteristics				
SAR Baseline Development Estimate	**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 •Information assurance 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 information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint- and system-integrated architecture views.	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 including availability, integrity, authentication, confidentiality, 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.	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 requirements including availability, integrity, authentication, confidentiality, 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-	TBD	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. Information assurance requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA. Operationally effective information exchanges.

		integrated architecture views.		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 range from 50% to 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 greater defense effectiveness for high-priority assets while increasing defense effectiveness to full 360-degree coverage against attacking non-	To support attainment of a commander's defense effectiveness objectives, which would normally 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 engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing greater defense effectiveness for high -priority assets while	To support attainment of a commander's defense effectiveness objectives, which would normally 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 engagements up to the operationally effective range of selected missile kinematics. The Army IAMD SoS shall be capable of allowing greater defense effectiveness for high -priority assets while	TBD	To support attainment of a commander's defense effectiveness objectives, which would normally range from 50% to 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 engagements up to the operationally effective range of selected missile kinematics. The	(Ch-1)

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.	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.	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.		Army IAMD SoS shall be 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, battle monitor and control, network interface and management, track management, 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	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface, battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface, battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward compatibility to enable integration and common functionality (as	TBD	The Army IAMD SoS common C2 components (Battalion and below) shall incorporate common functionality that includes: defense planning, defense design, warfighter-machine interface, battle monitor and control, network interface and management, track management, engagement planning, engagement decision, engagement monitoring, and staff functions. The Army IAMD SoS shall provide backward

Increment 2 equipped Task Force.	defined above) of a current force Patriot Battery/SLAMRAAM Platoon with the Increment 2 equipped Task Force.	defined above) of a current force Patriot Battery/SLAMRAAM Platoon with the Increment 2 equipped Task Force.		compatibility to enable integration and common functionality (as defined above) of a current force PATRIOT Battery/ SLAMRAAM Platoon with the Increment 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 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 protection sufficient to repel enemy small arms as developed by the PM, FMTV. Manned	All Army IAMD SoS common C2 vehicle cabs and manned shelters shall 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.	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 understanding commensurate 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 decontamination 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 protection sufficient to repel enemy small arms as developed	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 understanding commensurate 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 decontamination procedures in such a manner that it can quickly return (within 30 min) to full operational capability. All Army IAMD SoS common C2

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.		by the PM, FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamination during a CBRNE event that is sustainable through decontamination.		vehicle cabs shall be capable of adding up-armor protection sufficient to repel enemy small arms as developed by PM FMTV. Manned rigid wall shelters incorporated into the Army IAMD SoS shall provide an active overpressure system to prevent contamination during a CBRNE event that is sustainable through decontamination.

Requirements Reference

CDD dated May 17, 2010

Change Explanations

(Ch-1) The Integrated Defense Effectiveness current estimate has changed from [0.50% to 0.99%] to [50% to 99%] to correct percentage representation.

Notes

The Common Command and Control KPP no longer includes SLAMRAAM backward compatibility. This change will be reflected in the approved requirements documentation supporting Milestone C.

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 - Global Information Grid
IA - Information Assurance
ID - Identification
IT - Information Technology
KIP - Key Information Profile
min - minute
mm - millimeter
MOPP - Mission Oriented Protective Posture
NCOW RM - Net-Centric Operations and Warfare Reference Model
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)

Appn	BA	PE
Army	2040	05	0605457A

Project	Name	
DU4	Advanced Electronic Protection Enhancements	(Sunk)
S40	Army Integrated Air and Missile Defense	

Procurement

Appn	BA	PE
Army	2035	02	0214400A

Line Item	Name
BZ5075	IAMD Battle Command System

Acq O&M

Appn	BA	PE
Army	2020	04	0702806A

Subactivity Group	Name	
435	Acquisition and Management Support: IAMD	(Shared)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2009 $M			BY 2009 $M	TY $M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	1540.6	2199.5	2419.5	3071.4[1]	1627.5	2402.6	3471.3
Procurement	3316.0	3174.8	3492.3	3182.1	4164.1	3939.2	4408.6
Flyaway	--	--	--	2685.0	--	--	3707.1
Recurring	--	--	--	2652.0	--	--	3662.7
Non Recurring	--	--	--	33.0	--	--	44.4
Support	--	--	--	497.1	--	--	701.5
Other Support	--	--	--	423.1	--	--	596.0
Initial Spares	--	--	--	74.0	--	--	105.5
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	43.6	0.0	0.0	57.6
Total	4856.6	5374.3	N/A	6297.1	5791.6	6341.8	7937.5

[1] *APB Breach*

Current APB Cost Estimate Reference

CAPE ICE dated June 07, 2012

Cost Notes

CAPE Cost Risks: No new programmatic risks were identified in the latest POE

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	11	16	25
Procurement	285	431	454
Total	296	447	479

Quantity Notes

The IAMD unit of measure is defined as 25 fully-configured prototype RDT&E-funded units and 454 IAMD Battle Command System Engagement Operation Center procurement quantities which enable system of systems operation of Air and Missile Defense units.

Cost and Funding

Funding Summary

Appropriation Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	2802.2	208.6	193.9	63.7	33.2	94.8	74.9	0.0	3471.3
Procurement	20.9	29.6	201.6	353.6	417.0	413.4	417.4	2555.1	4408.6
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	3.9	4.7	4.7	5.0	5.1	5.2	5.4	23.6	57.6
PB 2021 Total	2827.0	242.9	400.2	422.3	455.3	513.4	497.7	2578.7	7937.5
PB 2020 Total	2831.6	243.2	390.4	422.5	455.6	513.7	500.5	2345.0	7702.5
Delta	-4.6	-0.3	9.8	-0.2	-0.3	-0.3	-2.8	233.7	235.0

Quantity Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	25	0	0	0	0	0	0	0	0	25
Production	0	0	6	13	29	39	41	40	286	454
PB 2021 Total	25	0	6	13	29	39	41	40	286	479
PB 2020 Total	25	0	6	18	29	39	41	52	269	479
Delta	0	0	0	-5	0	0	0	-12	17	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 2040 | RDT&E | Research, Development, Test, and Evaluation, Army							
		TY $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
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	--	--	--	--	--	--	358.2
2015	--	--	--	--	--	--	147.3
2016	--	--	--	--	--	--	222.1
2017	--	--	--	--	--	--	273.2
2018	--	--	--	--	--	--	339.0
2019	--	--	--	--	--	--	318.9
2020	--	--	--	--	--	--	208.6
2021	--	--	--	--	--	--	193.9
2022	--	--	--	--	--	--	63.7
2023	--	--	--	--	--	--	33.2
2024	--	--	--	--	--	--	94.8
2025	--	--	--	--	--	--	74.9
Subtotal	25	--	--	--	--	--	3471.3

Annual Funding 2040 | RDT&E | Research, Development, Test, and Evaluation, Army							
		BY 2009 $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2006	--	--	--	--	--	--	24.8
2007	--	--	--	--	--	--	37.1
2008	--	--	--	--	--	--	48.1
2009	--	--	--	--	--	--	113.4
2010	--	--	--	--	--	--	160.5
2011	--	--	--	--	--	--	235.7
2012	--	--	--	--	--	--	246.5
2013	--	--	--	--	--	--	228.9
2014	--	--	--	--	--	--	324.9
2015	--	--	--	--	--	--	131.4
2016	--	--	--	--	--	--	196.2
2017	--	--	--	--	--	--	236.5
2018	--	--	--	--	--	--	288.6
2019	--	--	--	--	--	--	267.4
2020	--	--	--	--	--	--	171.2
2021	--	--	--	--	--	--	156.3
2022	--	--	--	--	--	--	50.4
2023	--	--	--	--	--	--	25.7
2024	--	--	--	--	--	--	72.0
2025	--	--	--	--	--	--	55.8
Subtotal	25	--	--	--	--	--	3071.4

Annual Funding 2035 | Procurement | Other Procurement, Army							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	--	16.3	--	4.6	20.9	--	20.9
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	6	28.7	--	0.3	29.0	0.6	29.6
2021	13	178.4	--	2.0	180.4	21.2	201.6
2022	29	316.4	--	3.7	320.1	33.5	353.6
2023	39	354.7	--	4.0	358.7	58.3	417.0
2024	41	354.9	--	3.9	358.8	54.6	413.4
2025	40	356.2	--	3.9	360.1	57.3	417.4
2026	53	438.1	--	4.8	442.9	69.4	512.3
2027	46	429.2	--	4.6	433.8	74.9	508.7
2028	54	353.0	--	3.6	356.6	76.0	432.6
2029	60	385.9	--	4.3	390.2	78.2	468.4
2030	73	412.1	--	4.7	416.8	87.4	504.2
2031	--	38.8	--	--	38.8	90.1	128.9
Subtotal	454	3662.7	--	44.4	3707.1	701.5	4408.6

Annual Funding 2035 | Procurement | Other Procurement, Army							
Fiscal Year	Quantity	BY 2009 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2016	--	14.3	--	4.1	18.4	--	18.4
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	6	23.3	--	0.2	23.5	0.5	24.0
2021	13	142.0	--	1.6	143.6	16.9	160.5
2022	29	246.9	--	2.9	249.8	26.2	276.0
2023	39	271.4	--	3.1	274.5	44.6	319.1
2024	41	266.2	--	2.9	269.1	41.0	310.1
2025	40	262.0	--	2.9	264.9	42.1	307.0
2026	53	315.9	--	3.5	319.4	50.0	369.4
2027	46	303.4	--	3.3	306.7	52.9	359.6
2028	54	244.6	--	2.5	247.1	52.7	299.8
2029	60	262.2	--	2.9	265.1	53.1	318.2
2030	73	274.5	--	3.1	277.6	58.2	335.8
2031	--	25.3	--	--	25.3	58.9	84.2
Subtotal	454	2652.0	--	33.0	2685.0	497.1	3182.1

Cost Quantity Information 2035 | Procurement | Other Procurement, Army		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2009 $M**
2016	--	--
2017	--	--
2018	--	--
2019	--	--
2020	6	37.6
2021	13	142.0
2022	29	246.9
2023	39	271.4
2024	41	266.2
2025	40	262.0
2026	53	315.9
2027	46	303.4
2028	54	244.6
2029	60	262.2
2030	73	299.8
2031	--	--
Subtotal	454	2652.0

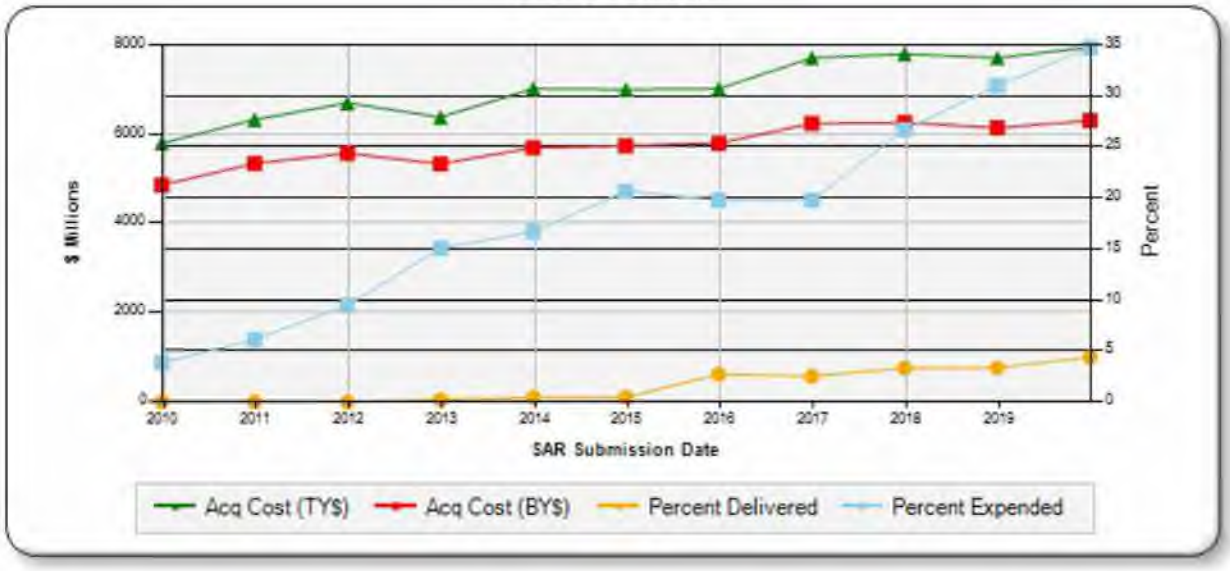
Annual Funding 2020 | Acq O&M | Operation and Maintenance, Army	
Fiscal Year	TY $M Total Program
2019	3.9
2020	4.7
2021	4.7
2022	5.0
2023	5.1
2024	5.2
2025	5.4
2026	4.1
2027	4.2
2028	4.2
2029	4.3
2030	3.5
2031	2.7
2032	0.6
Subtotal	57.6

Annual Funding 2020 | Acq O&M | Operation and Maintenance, Army	
Fiscal Year	BY 2009 $M
	Total Program
2019	3.3
2020	3.9
2021	3.8
2022	4.0
2023	4.0
2024	4.0
2025	4.0
2026	3.0
2027	3.0
2028	3.0
2029	3.0
2030	2.4
2031	1.8
2032	0.4
Subtotal	43.6

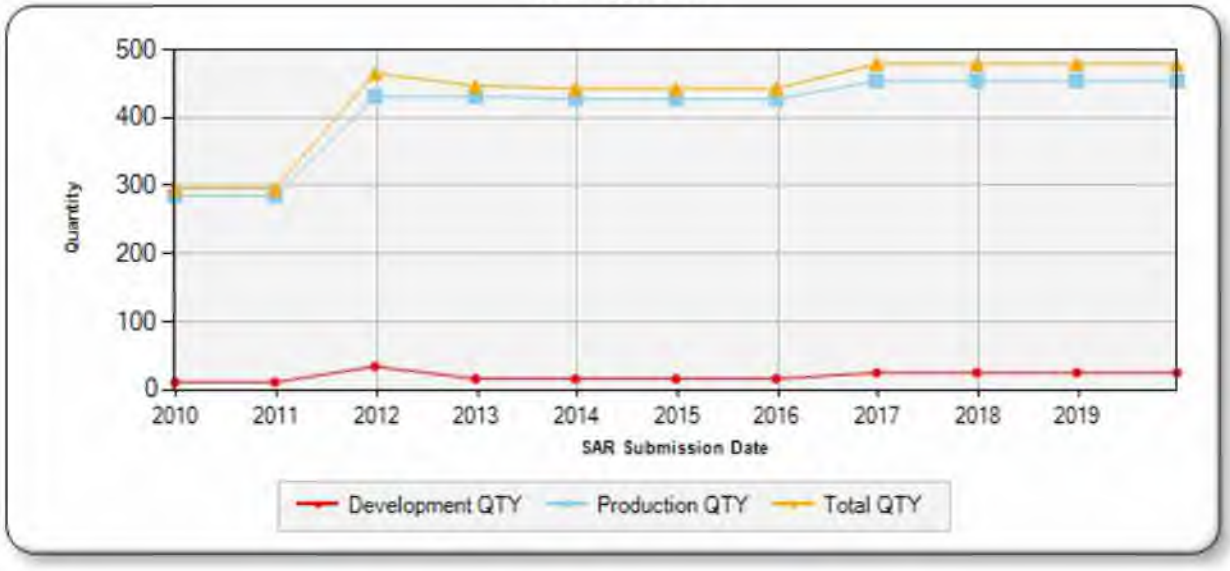
Charts

IAMD first began SAR reporting in December 2009

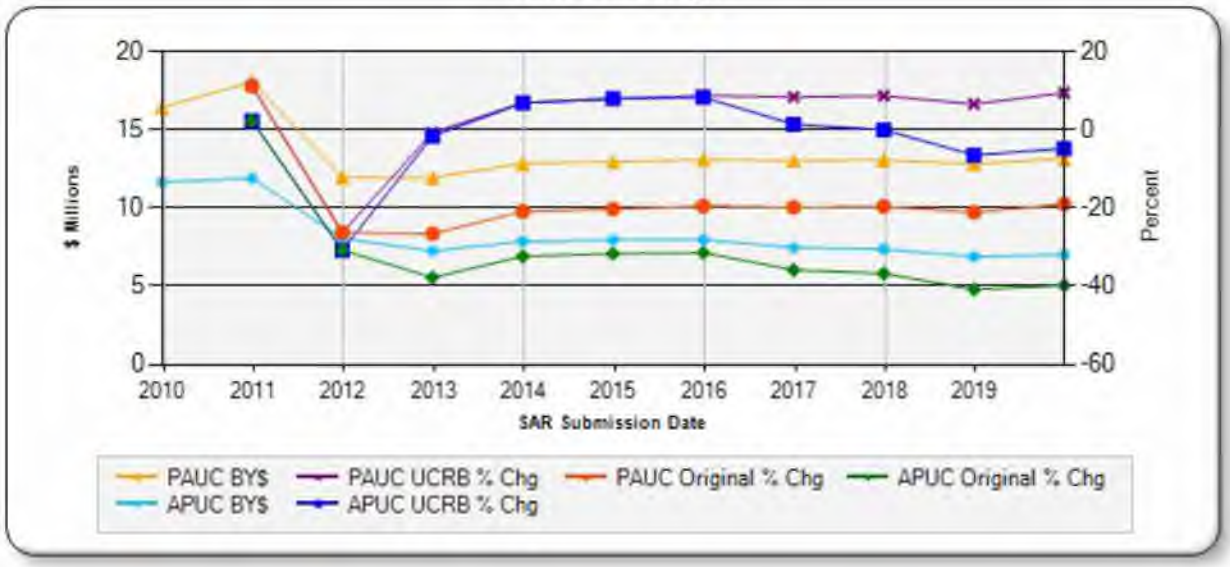
Program Acquisition Cost - IAMD
Base Year 2009 $M



Quantity - IAMD



Unit Cost - IAMD
Base Year 2009 $M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Milestone B (December 2009)	
1.	Track Management - This risk is currently assessed as Moderate based on the mitigation steps completed to date, primarily the conduct of Digital Simulation and Hardware-in-the-Loop Technology Demonstrations utilizing various potential track management solutions.
2.	Schedule Risk to Integrated Test and Evaluation - This risk is currently assessed as Moderate. Mitigation efforts have focused on defining the test strategy, re-launching the Test and Evaluation Working Integrated Product Team, developing the draft Test and Evaluation Master Plan, and developing an integrated test schedule.
Current Estimate (December 2019)	
1.	Resource Utilization Central Processing Unit (CPU) Load - Risk Driver: IF the CPU utilization is not (or not projected to be) 50% or less under a maximum loading scenario using the LRIP configuration, THEN IAMD Battle Command System may not be able to meet the combined performance requirements for simultaneous engagements, Single Integrated Air Picture, and maximum track load.
2.	IAMD Reliability - Risk Driver: IF the AIAMD Program cannot demonstrate adequate reliability growth, THEN the CDD Reliability KSA requirement will be breached at IOC. A significant deviation of the Materiel Reliability KSA would also constitute a deviation of the Sustainment KPP - Operational Availability.

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (October 2014)	
1.	There is no significant development risk associated with the IAMD hardware as it consists primarily of commercial-off-the-shelf and Government-off-the-shelf items. The technical, cost and schedule risks during the EMD are associated with the development of IAMD software. A senior analyst with the Software Engineering Institute of Carnegie Mellon reviewed the IAMD program in May 2012. This review concluded that the program estimates of the software sizing are reasonable, but expressed concern with the planned schedule duration for the development of the Version 3 software. The greatest perceived risks to the IAMD program are likely to be exogenous factors associated with continuing budgetary pressures, changes to the Army's force structure, and acquisition decisions affecting the associated air and missile defense programs.
Original Baseline Estimate (June 2010)	
1.	The risk confidence level for this program is difficult to quantify. Since the IAMD program is still in the source selection process the program office developed a "generic" Government program description in the CARD. It is "generic" in the sense that it is not based on the content of the proposals submitted by the bidding contractors. The SCP is, therefore, based on the CARD and not on the specific programs the contractors plan to execute. Through the Cost Review Board (CRB) process, the Army significantly reduced the risk in the Government program described in the CARD. The program office significantly reduced the scope of work they intend to have the winning contractor execute. The system will still provide all required capabilities, however, IAMD will be less integrated than originally planned. The SCP reduces the amount of software development concurrency by increasing the number of software builds from two builds to three builds and extends the development schedule by 20 months. Additionally, the SCP uses software development productivity factors based on analogous systems including systems identified by the bidding contractors.
Revised Original Estimate (N/A)	
None	
Current Procurement Cost (December 2019)	
1.	A Risk and Sensitivity Analysis has not been conducted for Current Procurement Cost; this will occur to support Milestone C.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	12/23/2009	12/13/2017
Approved Quantity	27	33
Reference	Milestone B ADM	IAMD ADM
Start Year	2015	2020
End Year	2016	2021

Notes

The December 2017 ADM approved an LRIP quantity of 33 for FY 2020 and FY 2021. As a result of budget reductions in the FY 2020 PB, the LRIP quantity decreased from 33 to 24. The FY 2021 PB reflects the delay of enduring Indirect Fire Protection Capability initial fielding, which shifts five Engagement Operation Centers from LRIP to FRP, bringing the total LRIP quantity down from 24 to 19. The total procurement quantity remains 454.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Description
Poland	3/28/2018	6	6500.0	The IAMD Project Office FMS case (PL-B-UCW) with Poland for a core capability (known as WISŁA) consists of the U.S. baseline IAMD Battle Command System (IBCS) with Patriot components.

Notes

The IAMD and LTPO project offices received a Letter of Request (LOR) for Letter of Offer and Acceptance (LOA) from Poland for the IAMD Battle Command System with Patriot components. The LOR is for a core capability (known as WISŁA) consisting of the U.S. baseline IAMD program with Patriot components and the addition of incremental capability to include the integration of Polish sensors, an active electronically scanned array radar, a low-cost interceptor and the a short range air defense capability.

The LOA for the core capability was signed on March 28, 2018 in Warsaw, Poland and implemented on April 12, 2018. Northrop Grumman was awarded a Firm-Fixed-Price undefinitized contract for the IAMD components on March 13, 2019. On May 13, 2019, Poland submitted a LOR for Price and Availability (P&A) requesting cost and schedule data for potential follow-on Poland WISŁA incremental capability program that would integrate Polish sensors and effectors into their future IBCS system. The IAMD Project Office developed and completed the P&A program data and submitted to Aviation and Missile Command Security Assistance Management Directorate in June 2019.

Formal responses for Price and Availability have been provided for Japan and India.

Other countries expressing interest are United Kingdom, Switzerland, Australia, Norway, Taiwan, the Republic of Korea and United Arab Emirates.

Acronyms and Abbreviations

LOA - Letter of Offer and Acceptance
LOR - Letter of Request
P&A - Price and Availability

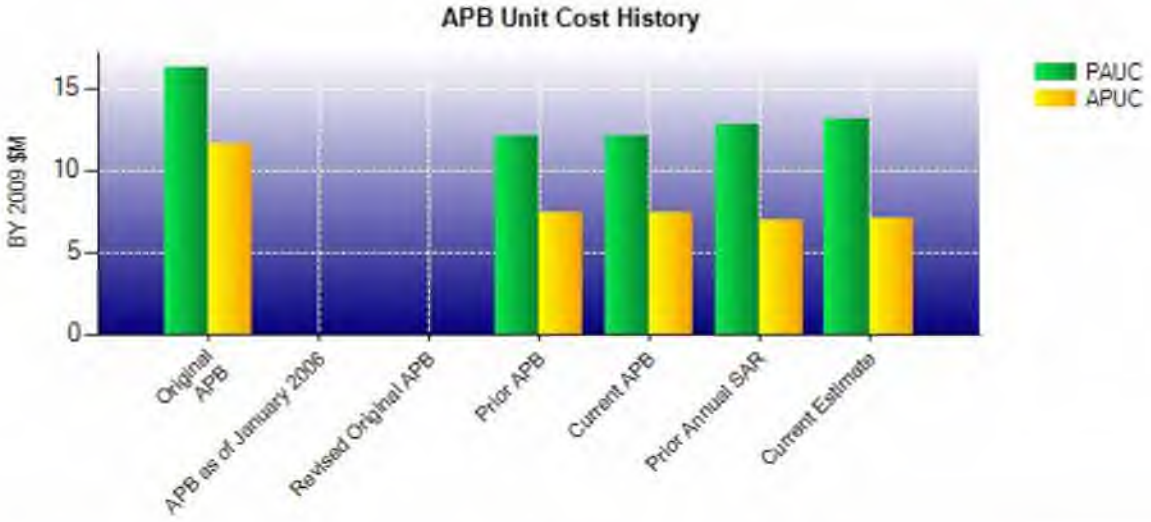
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2009 $M Current UCR Baseline (Oct 2014 APB)	BY 2009 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	5374.3	6297.1	
Quantity	447	479	
Unit Cost	12.023	13.146	+9.34
Average Procurement Unit Cost			
Cost	3174.8	3182.1	
Quantity	431	454	
Unit Cost	7.366	7.009	-4.85

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2009 $M Original UCR Baseline (Jun 2010 APB)	BY 2009 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	4806.8	6297.1	
Quantity	296	479	
Unit Cost	16.239	13.146	-19.05
Average Procurement Unit Cost			
Cost	3316.0	3182.1	
Quantity	285	454	
Unit Cost	11.635	7.009	-39.76



APB Unit Cost History					
Item	Date	BY 2009 $M		TY $M	
		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	Nov 2012	12.023	7.366	14.187	9.140
Current APB	Oct 2014	12.023	7.366	14.187	9.140
Prior Annual SAR	Dec 2018	12.803	6.885	16.080	9.498
Current Estimate	Dec 2019	13.146	7.009	16.571	9.711

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
19.566	0.180	-2.175	0.699	0.356	-1.099	0.000	-0.956	-2.995	16.571

Current SAR Baseline to Current Estimate (TY $M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.611	0.192	-0.081	0.529	0.000	-4.531	0.000	-1.009	-4.900	9.711

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	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	Sep 2020
IOC	N/A	Aug 2016	N/A	Apr 2022
Total Cost (TY $M)	N/A	5791.6	N/A	7937.5
Total Quantity	N/A	296	N/A	479
PAUC	N/A	19.566	N/A	16.571

Cost Variance

Summary TY $M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Development Estimate)	1627.5	4164.1	--	--	5791.6
Previous Changes					
Economic	+1.3	+91.8	--	--	+93.1
Quantity	+105.9	+2432.3	--	--	+2538.2
Schedule	+94.8	+225.2	--	--	+320.0
Engineering	+170.6	--	--	--	+170.6
Estimating	+1337.1	-2091.5	--	+53.3	-701.1
Other	--	--	--	--	--
Support	--	-509.9	--	--	-509.9
Subtotal	+1709.7	+147.9	--	+53.3	+1910.9
Current Changes					
Economic	-2.2	-4.5	--	--	-6.7
Quantity	--	--	--	--	--
Schedule	--	+14.9	--	--	+14.9
Engineering	--	--	--	--	--
Estimating	+136.3	+34.3	--	+4.3	+174.9
Other	--	--	--	--	--
Support	--	+51.9	--	--	+51.9
Subtotal	+134.1	+96.6	--	+4.3	+235.0
Total Changes	+1843.8	+244.5	--	+57.6	+2145.9
Current Estimate	3471.3	4408.6	--	57.6	7937.5

Summary BY 2009 $M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Development Estimate)	1540.6	3316.0	--	--	4856.6
Previous Changes					
Economic	--	--	--	--	--
Quantity	+89.1	+1723.6	--	--	+1812.7
Schedule	+71.8	-2.7	--	--	+69.1
Engineering	+148.7	--	--	--	+148.7
Estimating	+1116.1	-1477.8	--	+40.7	-321.0
Other	--	--	--	--	--
Support	--	-433.3	--	--	-433.3
Subtotal	+1425.7	-190.2	--	+40.7	+1276.2
Current Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	+105.1	+21.5	--	+2.9	+129.5
Other	--	--	--	--	--
Support	--	+34.8	--	--	+34.8
Subtotal	+105.1	+56.3	--	+2.9	+164.3
Total Changes	+1530.8	-133.9	--	+43.6	+1440.5
Current Estimate	3071.4	3182.1	--	43.6	6297.1

Previous Estimate: December 2018

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-2.2
Additional funding in FY 2025 for continued requirements definition, software development, and test to support future IAMD capabilities. (Estimating)	+55.8	+74.9
Revised estimate to reflect FY 2019 Small Business Innovative Research/Small Business Technology Transfer. (Estimating)	-8.6	-10.2
Revised estimate for development and integration of additional capability beyond that delivered at IOC. (Estimating)	+50.8	+63.0
Adjustment for FY 2020 Appropriations Act. (Estimating)	-0.2	-0.3
Adjustment for FY 2018 and FY 2019 actuals. (Estimating)	+5.6	+6.7
Adjustment for current and prior escalation. (Estimating)	+0.9	+1.1
Revised estimate due to application of new out year inflation indices. (Estimating)	+0.8	+1.1
RDT&E Subtotal	+105.1	+134.1

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-4.5
Re-phasing of procurement quantities in FY 2021, FY 2025-2026, and FY 2029-2030 to align with current program schedule. (Schedule)	0.0	+14.9
Revised estimate of future years hardware to incorporate current contract values. (Estimating)	+21.5	+34.3
Increase in Other Support due to revised hardware estimate. (Support)	+30.8	+45.4
Increase in Initial Spares due to revised hardware estimate. (Support)	+4.0	+6.5
Procurement Subtotal	+56.3	+96.6

Acq O&M	$M	
Current Change Explanations	Base Year	Then Year
Revised estimate to reflect changes related to core program office staffing assumptions. (Estimating)	+2.9	+4.3
Acq O&M Subtotal	+2.9	+4.3

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: IBCS EMD Bridge - 2
Contractor: Northrop Grumman
Contractor Location: Huntsville, AL 35806
Contract Number: W31P4Q-08-C-0418/2
Contract Type: Cost Plus Incentive Fee (CPIF), Fixed Price Incentive(Firm Target) (FPIF)
Award Date: October 31, 2017
Definitization Date: March 08, 2019

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
76.0	N/A	11	424.3	424.3	11	426.9	426.9

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to definitization of the not-to-exceed hardware modification at $73.6 million (reduced target price by $2.4 million); addition of the EMD 2a modification, definitized on March 8, 2019, in the amount of $289.3 million; the EMD 2a extension modification, which added $60.6 million to extend the EMD contract period of performance to March 26, 2021; and the training support change order which added $0.8 million to provide additional New Equipment Training support.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2019)	-8.5	-2.2
Previous Cumulative Variances	-5.3	-8.2
Net Change	-3.2	+6.0

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to updates extending beyond the period of performance and more fixes earlier in the product cycle than baselined for IAMD Battle Command System version 4 Software Development.

The favorable net change in the schedule variance is due to delivery of all major end items.

Notes

A CPIF modification was definitized on May 31, 2018 under the IAMD Battle Command System EMD Contract (W31P4Q-08-C-0418/2) for the procurement of hardware. A separate hybrid CPIF/FPIF contract modification for EMD 2a was issued as an undefinitized contract action on September 28, 2018 and definitized on March 8, 2019. The period of performance for this effort ends in March 2020. The EMD 2a extension, a hybrid CPIF/FPIF modification, was awarded on October 11, 2019 with a period of performance ending in March 2021. The 2a contract modification provides the development and delivery of IAMD Battle Command System (IBCS) system software V4.5, development and delivery of IBCS S280 and IBCS Integrated Fire Control Network v2 relay end items in support of operational test. The 2a extension contract modification provides the conduct of engineering, logistics, integration and test in support of operational test and milestone C. The cumulative cost and schedule variances include the hardware procurement effort, EMD 2a and EMD 2a contract extension efforts.

Contract Identification

Appropriation: RDT&E
Contract Name: IBCS Adapted Launcher
Contractor: Lockheed Martin
Contractor Location: 1701 West Marshall Drive
Grand Prairie, TX 75051
Contract Number: W31P4Q-19-D-0016
Contract Type: Cost Plus Fixed Fee (CPFF)
Award Date: December 21, 2018
Definitization Date: December 21, 2018

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
28.0	N/A	N/A	25.8	N/A	N/A	18.6	18.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the definitization of Task Order #1.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/29/2019)	+0.8	-0.9
Previous Cumulative Variances	--	--
Net Change	+0.8	-0.9

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to less level of effort to support the simulation modeling and analysis team and the advanced threat working group.

The unfavorable cumulative schedule variance is due to delays in development of the PAC-3 Interceptor Manager, delays in completion of development flight test 4 hardware-in-the-loop record runs, and staff diverted to support extra builds of system build 4.5 software vs. system build 4.6 software.

Notes

The IAMD Battle Command System Adapted Launcher Indefinite Delivery Indefinite Quantity (IDIQ) contract was awarded as an undefinitized contract action (UCA) on December 21, 2018. Since the initial contract was awarded as a UCA the estimated price at completion is based on the first task order and does not reflect the total IDIQ contract value. Initial contract price was for the initial task order (task order #1) only. Current contract price is based on task order #1 definitization on October 17, 2019. This task order provides for Launcher Interface Network Kit boxes, software development/maintenance, and EMD support services.

Contract Identification

Appropriation: RDT&E
Contract Name: Plug and Fight A-Kit
Contractor: Raytheon Company
Contractor Location: 401 Jan Davis Dr. NW
Huntsville, AL 35806-4540
Contract Number: W31P4Q-16-D-0020
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: March 01, 2019
Definitization Date: March 01, 2019

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
32.6	N/A	N/A	32.6	N/A	N/A	31.9	31.9

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2019)	+1.0	-0.4
Previous Cumulative Variances	--	--
Net Change	+1.0	-0.4

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to the Information Technology control account experiencing lower than anticipated labor usage for the Patriot software test facilities, information technology cost distribution and Patriot test facility annex and the Software Information Assurance control account experiencing less than planned issues and preparation time for information assurance test events at White Sands Missile Range.

The unfavorable cumulative schedule variance is due to information technology and security issues with getting simulations integrated with the test bed and delays driven by a later than planned update to the IAMD Battle Command System 4.5 verification release software.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	21	21	25	84.00%
Production	0	0	454	0.00%
Total Program Quantity Delivered	21	21	479	4.38%

Expended and Appropriated (TY $M)

Total Acquisition Cost	7937.5	Years Appropriated	15
Expended to Date	2758.4	Percent Years Appropriated	55.56%
Percent Expended	34.75%	Appropriated to Date	3069.9
Total Funding Years	27	Percent Appropriated	38.68%

The above data is current as of February 10, 2020.

Notes

27 RDT&E Engagement Operation Centers (EOC) have been delivered to date (12 CPPs + 4 prototypes + 11 S280s); 6 of these RDT&E units will be refreshed to become the IOC units and are shifted from RDT&E to production units, included in the 454 total. This brings the total to 21 RDT&E EOCs to date. Four additional EOCs will be delivered in the future to support integration efforts, bringing the total to 25 RDT&E EOCs.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	January 13, 2020
Source of Estimate:	POE
Quantity to Sustain:	454
Unit of Measure:	IAMD Battle Command System Engagement Operation Center
Service Life per Unit:	20.00 Years
Fiscal Years in Service:	FY 2021 - FY 2051

The 479 quantity is comprised of 454 sustainment quantity and 25 RDT&E-funded prototypes. Six RDT&E-funded prototypes will be refreshed in LRIP I and are included in the 454 sustainment quantity.

Sustainment Strategy

IAMD will be supported by a combination of Army organic and contractor-provided resources through a Performance Based Logistics (PBL) Product Support Strategy (PSS) (includes field and sustainment/depot). Under PBL sustainment constructs, the IAMD Project Office will utilize performance based sustainment methods and performance metrics which will include a Public-Private Partnership. This PSS is documented in the June 2012 Life Cycle Sustainment Plan (LCSP). The IAMD PBL PSS provides a sustainment level product support decision that will provide the human interface, tools, and resources needed to sustain the IAMD equipment throughout its life cycle. The PSS will be updated in the LCSP to support Milestone C.

Antecedent Information

No Antecedent

Annual O&S Costs BY2009 $K		
Cost Element	**IAMD Average Annual Cost Per IAMD Battle Command System Engagement Operation Center**	**No Antecedent System (Antecedent)**
Unit-Level Manpower	--	--
Unit Operations	15.709	--
Maintenance	109.533	--
Sustaining Support	10.080	--
Continuing System Improvements	167.208	--
Indirect Support	1.713	--
Other	0.000	--
Total	304.243	--

Military Pay is not a cost that is borne directly by the Army IAMD program. The Army IAMD program is not increasing Army force structure. Other Army programs (e.g., Patriot, Sentinel, Avenger, and Stinger) have military pay accounted for in their program lines. Therefore, military pay is not included in the Army IAMD O&S cost.

Item	Total O&S Cost $M			
	IAMD			No Antecedent System (Antecedent)
	Current Development APB Objective/Threshold		Current Estimate	
Base Year	2235.9	2459.5	2762.5[1]	N/A
Then Year	3333.3	N/A	4714.6	N/A

[1] *APB O&S Cost Breach*

Disposal Cost is included in the Operating and Support Cost of the current APB objective and threshold for this program.

The O&S cost deviation reflects Army IAMD hardware architecture changes, quantity increases to support the Indirect Fire Protection Capability Increment 2 - Intercept Block 1 program and an update of the Army IAMD PSS.

Equation to Translate Annual Cost to Total Cost

Average annual cost per unit is based on 454 units x 20-years of O&S. (Total Cost = Average Annual Cost per unit ($304.243K) x number of units (454) x life per unit (20-years) = $2762.5M (BY$ 2009)

O&S Cost Variance		
Category	**BY 2009 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2018 SAR	2748.9	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	13.6	Revised estimate to reflect updated cost methodologies based on contract values.
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	13.6	
Current Estimate	2762.5	

Disposal Estimate Details

Date of Estimate: January 13, 2020

Source of Estimate: POE

Disposal/Demilitarization Total Cost (BY 2009 $M): 15.4