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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605457A / <i>Army Integrated Air and Missile Defense (AIAMD)</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	318.850	208.638	193.929	-	193.929	63.678	33.162	94.758	74.936	0.000	987.951
S40: <i>Army Integrated Air and Missile Defense</i>	-	318.850	208.638	193.929	-	193.929	63.678	33.162	94.758	74.936	0.000	987.951

Program MDAP/MAIS Code: 205

A. Mission Description and Budget Item Justification

The Army Integrated Air and Missile Defense (AIAMD) program is a designated Major Defense Acquisition Program (MDAP).

The AIAMD program is a direct response to the U.S. Army Air and Missile Defense (AMD) Concept and Operational and Organizational (O&O) Plan for the Future Force, the AIAMD System of Systems (SoS) Capabilities Development Document (CDD) and the AMD Task Force Concept of Operations (CONOPS). The AIAMD Program is uniquely structured to enable the development of an overarching SoS capability with all participating Air Defense Artillery (ADA) components functioning interdependently to provide total operational capabilities not achievable by the individual element systems. The AIAMD program achieves this objective by establishing the AIAMD 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 AIAMD Program will provide advanced capabilities to the Army and the soldier by allowing transformation to a network-centric SoS capability (also referred to as "Plug and Fight") that integrates AMD sensors and weapons with the IBCS EOC. The AIAMD 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 have plagued AMD design in the past. The AIAMD program will provide the user with the ability to train on a single IBCS that will result in overall training savings. The AIAMD program will also provide the Army with the ability to procure components that will interface with the Integrated Fire Control Network (IFCN), alleviating the cost of procuring total system capabilities in the future.

AIAMD IOC will be delivered through the fielding of the IBCS-based AIAMD architecture including the IBCS EOC, Integrated Fire Control Network (IFCN) Relay, Sentinel, and Patriot components working in an integrated manner through the IFCN connection. The government controlled open architecture enables integration of future capabilities to meet emerging threats and fielding to include Indirect Fire Protection Capability (IFPC), Air Defense Airspace Management (ADAM) Cells, ADA Brigade, Army Air and Missile Defense Command (AAMDC), and Terminal High Altitude Area Defense (THAAD).

Funding in FY 2021 supports agile software development and integration, developmental testing, and operational testing, with an Initial Operational Test and Evaluation (IOT&E) beginning in fourth quarter FY 2021. Software development in version 4.6.0 will include required changes for IOT&E and beyond-IOC capabilities. The exact composition of the software build will be determined based on agile development concepts in which the user determines the priorities from the backlog in a 4.6.0 Capabilities Review in the third quarter FY 2020 and Program Increment (PI) planning sessions just prior to the start of each PI. Specific test efforts include:

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developmental testing and requirements verification of the versions 4.5.1 and 4.6.0 software; delta qualification; interoperability certification; events leading up to IOT&E including Logistics Demonstration, New Equipment Training, Collective Training, and test planning; and the start of IOT&E. The IOT&E supports a Full Rate Production Decision in third quarter FY 2022.

AIAMD is a critical component of the Army's Air and Missile Defense strategy and is the number one AMD Cross Functional Team modernization priority program.

B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	322.263	208.938	130.859	-	130.859
Current President's Budget	318.850	208.638	193.929	-	193.929
Total Adjustments	-3.413	-0.300	63.070	-	63.070
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-15.300			
• Congressional Rescissions	-	-			
• Congressional Adds	-	15.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.413	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	63.070	-	63.070

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: S40: *Army Integrated Air and Missile Defense*

Congressional Add: *Counter Emerging Threat*

Congressional Add: *Cyber Security*

Congressional Add Subtotals for Project: S40

Congressional Add Totals for all Projects

	FY 2019	FY 2020
	30.000	12.069
	15.000	-
Congressional Add Subtotals for Project: S40	45.000	12.069
Congressional Add Totals for all Projects	45.000	12.069

Change Summary Explanation

The FY 2019 net decrease of \$3.413 million is from: -\$10.163 million SBIR/STTR transfer and +\$6.750 million in below threshold reprogramming actions. FY 2020 net decrease of \$0.300 million is from: -\$15.300 million for "prior year carryover due to test delays" and +\$15.000 million for "accelerated integration to counter emerging threats". FY 2021 increase of \$63.070 million is for development and integration of additional capability beyond that delivered at Initial Operational Capability (IOC).

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Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605457A / <i>Army Integrated Air and Missile Defense (AIAMD)</i>				Project (Number/Name) S40 / <i>Army Integrated Air and Missile Defense</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
<i>S40: Army Integrated Air and Missile Defense</i>	-	318.850	208.638	193.929	-	193.929	63.678	33.162	94.758	74.936	0.000	987.951
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Army Integrated Air and Missile Defense (AIAMD) program is a designated Major Defense Acquisition Program (MDAP).

The AIAMD program is a direct response to the U.S. Army Air and Missile Defense (AMD) Concept and Operational and Organizational (O&O) Plan for the Future Force, the AIAMD System of Systems (SoS) Capabilities Development Document (CDD) and the AMD Task Force Concept of Operations (CONOPS). The AIAMD Program is uniquely structured to enable the development of an overarching SoS capability with all participating Air Defense Artillery (ADA) components functioning interdependently to provide total operational capabilities not achievable by the individual element systems. The AIAMD program achieves this objective by establishing the AIAMD 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 AIAMD Program will provide advanced capabilities to the Army and the soldier by allowing transformation to a network-centric SoS capability (also referred to as "Plug and Fight") that integrates AMD sensors and weapons with the IBCS EOC. The AIAMD 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 have plagued AMD design in the past. The AIAMD program will provide the user with the ability to train on a single IBCS that will result in overall training savings. The AIAMD program will also provide the Army with the ability to procure components that will interface with the Integrated Fire Control Network (IFCN), alleviating the cost of procuring total system capabilities in the future.

AIAMD IOC will be delivered through the fielding of the IBCS-based AIAMD architecture including the IBCS EOC, Integrated Fire Control Network (IFCN) Relay, Sentinel, and Patriot components working in an integrated manner through the IFCN connection. The government controlled open architecture enables integration of future capabilities to meet emerging threats and fielding to include Indirect Fire Protection Capability (IFPC), Air Defense Airspace Management (ADAM) Cells, ADA Brigade, Army Air and Missile Defense Command (AAMDC), and Terminal High Altitude Area Defense (THAAD).

Funding in FY 2021 supports agile software development and integration, developmental testing, and operational testing, with an Initial Operational Test and Evaluation (IOT&E) beginning in fourth quarter FY 2021. Software development in version 4.6.0 will include required changes for IOT&E and beyond-IOC capabilities. The exact composition of the software build will be determined based on agile development concepts in which the user determines the priorities from the backlog in a 4.6.0 Capabilities Review in the third quarter FY 2020 and Program Increment (PI) planning sessions just prior to the start of each PI. Specific test efforts include: developmental testing and requirements verification of the versions 4.5.1 and 4.6.0 software; delta qualification testing; interoperability certification; events leading up

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to IOT&E including Logistics Demonstration, New Equipment Training, Collective Training, and test planning; and the start of IOT&E. The IOT&E supports a Full Rate Production Decision in third quarter FY 2022. AIAMD is a critical component of the Army's Air and Missile Defense strategy and is the number one AMD Cross Functional Team modernization priority program.					
B. Accomplishments/Planned Programs (\$ in Millions)					
Title: Product Development					
Description: Product development in support of software development and developmental test phase activities.					
FY 2020 Plans: The AIAMD Systems Engineering and Integration and Engineering Manufacturing and Development (EMD) will provide support for developmental test activities; to include software integration testing and preparation/conduct of the Limited User Test. Agile software development will continue to support future capabilities and will include software changes to defeat emerging threats. Government Furnished Equipment for EOC and Relay MEIs will be provided to EMD contractors. Government Systems Engineering and Logistics and AIAMD EMD will continue LUT NET development/Collective Training development.					
FY 2021 Base Plans: Agile software development in version 4.6.0 supports IOC, with required changes for IOT&E, and beyond-IOC capabilities. The exact composition of the software build will be determined based on agile development concepts, directed in the FY 2019 National Defense Authorization Act (NDAA), in which the user determines the priorities from the backlog in a 4.6.0 Capabilities Review in the third quarter FY 2020 and Program Increment (PI) planning sessions just prior to the start of each PI. Anticipated changes for IOC include software changes to defeat emerging threats, address user-identified suitability requirements, and implement corrective fixes to issues identified in Limited User Test (LUT). Continued contract requirements supporting the IOC capability will address: hardware issues identified in LUT, reliability improvements, version 4.5.1 software requirements verification, logistics product updates, test support, Information Assurance /Cyber Security support, and integration of PATRIOT Ground Equipment to include corrective actions for LINK hardware and software from LUT. Government Systems Engineering and Logistics support will continue version 4.5.1 software requirements verification, Technical Data Package (TDP) updates for hardware obsolescence and engineering change proposals (ECPs); along with programmatic and logistics support.					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to the end of EMD phase and transitioning to production and development of follow-on capability that is separately broken out with this submission.					
Title: Test and Evaluation					
	220.524	155.098	86.181	-	86.181
	53.326	32.677	40.722	-	40.722

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>Description: Test and Evaluation support for modeling and simulation, developmental test phase activities, a Limited User Test, and Initial Operational Test and Evaluation (IOT&E).</p> <p>FY 2020 Plans: Provided for continuation of Modeling and Simulation efforts at the Government Systems Integration Lab, Joint Interoperability Test Support, Army Test and Evaluation Center and White Sands Missile Range test support for developmental test activities. Provided for preparation and conduct of the Limited User Test.</p> <p>FY 2021 Base Plans: Provides for continuation of Modeling and Simulation efforts at the Government Systems Integration Lab, Joint Interoperability Test Support, Army Test and Evaluation Center and White Sands Missile Range test support for developmental test activities. Provides for preparation and conduct of the IOT&E. Specific test efforts include: developmental testing and requirements verification of the versions 4.5.1 and 4.6.0 software; delta qualification testing; interoperability certification; procurement of targets for IOT&E; events leading up to IOT&E including Logistics Demonstration, New Equipment Training, Collective Training, and test planning; and the start of IOT&E. The IOT&E supports a Full Rate Production Decision in third quarter FY 2022.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: The net increase is driven by breaking out efforts beyond IOC capability into a separate planned program with this submission, an increase to procure targets for IOT&E, and an increase for the initial incremental funding of IOT&E test operations.</p>					
<p>Title: Product Development - Beyond Initial Operational Capability (IOC)</p> <p>Description: Product development in support of software development and integration efforts for additional capability beyond that fielded at IOC.</p> <p>FY 2021 Base Plans: Agile software development in version 4.6.0 will support IOC and will also include beyond-IOC capabilities. As part of the DoD Section 873 pilot as directed in Section 869 of the FY 2019 National Defense Authorization Act (NDAA), IAMD will use Agile development processes to develop additional capabilities above and beyond those delivered at IOC. The exact composition of the software build will be determined based on agile development concepts in which the user determines the priorities from the backlog in a 4.6.0 Capabilities Review in the third quarter FY 2020 and Program Increment (PI) planning sessions just prior to the start of each PI. As part of the Agile process, the user will prioritize and direct the firm requirements/capabilities to be developed within the</p>	-	-	60.395	-	60.395

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B. Accomplishments/Planned Programs (\$ in Millions)					
development cycle as guided by a user-prioritized roadmap. The specific requirements to be developed in FY 2021 may include: convergence of integrated fires capability; incorporation of THAAD planner; integration of Lower Tier AMD Sensor (LTAMDS); integration of other user directed sensors; and other requirements pulled from the backlog. Additional efforts will include system engineering and integration, software requirements verification, logistics product updates, contractor test support, Information Assurance /Cyber Security support, integration support from prime contractors of integrated systems, Technical Data Package (TDP) updates for hardware obsolescence and engineering change proposals (ECPs); and government systems engineering and programmatic support.					
FY 2020 to FY 2021 Increase/Decrease Statement: The increase in this cost element is driven by additional funding provided for development and integration of beyond-IOC capabilities.					
Title: Test and Evaluation - Beyond IOC Capability					
Description: Test and Evaluation support for modeling and simulation, developmental test, and follow-on operational test events for additional capability beyond that fielded at IOC.					
FY 2021 Base Plans: Provides for continuation of Modeling and Simulation efforts at the Government Systems Integration Lab, Joint Interoperability Test Support, Army Test and Evaluation Center and White Sands Missile Range test support for developmental test activities. Specific test efforts include: requirements verification of the version 4.6.0 software; interoperability certification; cyber testing; and test planning of future developmental and operational tests.					
FY 2020 to FY 2021 Increase/Decrease Statement: The increase in this cost element is driven by additional funding provided for development and integration of beyond-IOC capabilities.					
Title: FY 2020 SBIR/STTR Transfer					
Description: Funding transferred in accordance with Title 15 USC ?638					
FY 2020 Plans: Funding transferred in accordance with Title 15 USC ?638					
FY 2020 to FY 2021 Increase/Decrease Statement:					
	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
	-	-	6.631	-	6.631
	-	8.794	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Funding transferred in accordance with Title 15 USC 7638					
Accomplishments/Planned Programs Subtotals	273.850	196.569	193.929	-	193.929

	FY 2019	FY 2020
Congressional Add: Counter Emerging Threat	30.000	12.069
FY 2019 Accomplishments: Counter Emerging Threat		
FY 2020 Plans: Counter Emerging Threat		
Congressional Add: Cyber Security	15.000	-
FY 2019 Accomplishments: Cyber Security		
Congressional Adds Subtotals	45.000	12.069

C. Other Program Funding Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• C53101: MSE Missile	1,131.276	702.437	603.188	176.585	779.773	765.887	1,008.835	908.799	804.295	Continuing	Continuing
• EF9: System Integration and Test	74.295	97.746	0.166	-	0.166	0.169	-	-	-	0.000	172.376
• EX2: Lower Tier Air Missile Defense (LTAMD) Capability	84.981	379.772	376.373	-	376.373	332.007	241.235	87.419	88.298	Continuing	Continuing
• C50016: System Integration and Test Procurement	105.395	107.157	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• DU3: IFPC2	10.324	-	0.000	-	0.000	-	-	-	-	Continuing	Continuing
• EY7: IFPC Increment 2 - Block 1	92.674	194.366	235.770	-	235.770	341.077	181.830	98.210	13.639	Continuing	Continuing
• C62002: IFPC INC 2-1 BLOCK 1 SYSTEM	31.286	9.337	106.261	-	106.261	237.803	392.134	368.447	274.566	0.000	1,419.834
• C62001: IFPC Inc 2-1 Block 1 Missile 1	166.536	-	0.000	-	0.000	-	-	-	-	0.000	166.536
• E10: Sentinel	37.847	95.720	109.259	-	109.259	116.381	65.512	69.343	30.849	Continuing	Continuing
• BZ5075: IAMD Battle Command System	-	29.629	201.587	-	201.587	353.561	416.995	413.356	417.415	Continuing	Continuing

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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2019	FY 2020	FY 2021	FY 2021	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	Cost To	
			Base	OCO	Total					Complete	Total Cost
• 146: Air & Msl Defense Planning Control Sys	23.405	12.656	8.392	-	8.392	2.912	1.227	3.402	3.197	Continuing	Continuing
• AD5070: AIR & MSL Defense Planning & Control Sys	29.913	39.061	47.374	15.143	62.517	68.778	102.399	-	-	0.000	302.668
• 149: Counter-Rockets, Artillery & Mortar	14.785	6.131	0.908	-	0.908	-	-	-	-	0.000	21.824
• 0604403A: Future Interceptor	-	2.000	7.992	-	7.992	7.993	7.993	7.993	7.993	0.000	41.964
• 0604117A: Maneuver - Short Range Air Defense (M-SHORAD)	75.711	42.900	4.995	-	4.995	39.863	271.946	308.415	446.026	0.000	1,189.856
• C14300: M-SHORAD - Procurement	-	233.300	378.654	158.300	536.954	330.738	80.412	436.129	728.215	Continuing	Continuing

Remarks

This program is an integral part of the Army Integrated Air and Missile Defense (AIAMD) architecture. It provides for development of a common Integrated Fire Control System through an open architecture approach allowing for integration of Air Defense Artillery (ADA) components as they become available. This approach enables the AIAMD program to pursue its baseline program independent of fluctuation of other programs.

D. Acquisition Strategy

The AIAMD acquisition strategy is to deliver an Initial Operational Capability (IOC) in FY 2022. The capabilities are delivered through the fielding of the IAMD Battle Command System (IBCS) based AIAMD architecture including the IBCS Engagement Operations Center (EOC), Sentinel, and Patriot (through a Radar Interface Unit (RIU)) components connected via an Integrated Fire Control Relay, working in an integrated manner. Future capabilities include the incorporation of IBCS functionality into Indirect Fire Protection Capabilities (IFPC), Air Defense Airspace Management (ADAM) Cells, ADA Brigade, Army Air and Missile Defense Command (AAMDC), Terminal High Altitude Area Defense (THAAD) batteries, and other Army and Joint net-centric architectures using an agile software development process.

Key principles of the AIAMD acquisition approach are the following:

- Migrate from system-based acquisition to competitive component-based acquisition using agile development/operations methodology IAW FY 2019 National Defense Authorization Act direction
- Use system-of-systems acquisition approach with collaboration among AIAMD, PEO MS, PEO C3T, and Brigade Combat Team (BCT) Modernization Component Project Offices, Missile Defense Agency (MDA), and other Service Project Offices to network-enable weapons and sensor components
- Develop and procure a common Army IBCS EOC that replaces seven weapon system unique Battle Management Command, Control, Communications, Computers and Intelligence (BMC4I) components
- Establish product lines used to evaluate and select, modify and integrate modular open systems hardware and software common configuration items

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<p>- Conduct architecture-based System Engineering, Integration and Test (SEI&T) activities for an incrementally fielded configuration of the AIAMD Integrated Fire Control Network-compatible IBCS EOC, weapons and sensor system components</p> <p>Beginning in FY 2019, AIAMD is included in the DoD Section 873 Agile Development pilot as directed in Section 869 of the FY 2019 National Defense Authorization Act. As part of this pilot, the AIAMD government team will take on additional responsibilities for software development and will initially implement activities under an Other Transaction Authority (OTA) agreement through FY 2021. Beyond the initial OTA, software as a service type contracts with multiple vendors (to include non-traditional defense contractors) is planned.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)				S40 / Army Integrated Air and Missile Defense							
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Program Management	MIPR	Various : Huntsville, AL	35.528	-		-		-		-		-	Continuing	Continuing	Continuing
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		8.794		-		-		-	0.000	8.794	-
Subtotal			35.528	-		8.794		-		-		-	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Air Space and Missile Defense (ASMD) System of Systems (SOS) Hardware-in-the- Loop Testbed	C/CPFF	Various : Huntsville, AL and multiple other locations	17.697	-		-		-		-		-	0.000	17.697	-
AIAMD System Engineering & Integration	C/CPFF	Various : Huntsville, AL	183.201	17.207	Oct 2018	18.308	Oct 2019	22.004	Oct 2020	-		22.004	Continuing	Continuing	Continuing
IAMD Engineering Manufacturing and Development	SS/ Various	Northrop Grumman, Raytheon, Lockheed Martin and Other : Huntsville, AL and Various other locations	1,324.922	183.262	Oct 2018	119.957	Oct 2019	104.227	Oct 2020	-		104.227	Continuing	Continuing	Continuing
Government Furnished Equipment	MIPR	Various : Multiple	23.977	5.379	Oct 2018	2.771	Oct 2019	4.753	Oct 2020	-		4.753	Continuing	Continuing	Continuing
Government Systems Engineering and Logistics	TBD	Various : Huntsville, AL	88.928	14.676	Oct 2018	12.596	Oct 2019	15.592	Oct 2020	-		15.592	Continuing	Continuing	Continuing
Advanced Electronic Protection Enhancement (AEPE)	Various	Various : TBD	21.000	-		-		-		-		-	0.000	21.000	-
Cyber Security	Various	Huntsville, AL : TBD	53.000	15.000	Jan 2019	-		-		-		-	0.000	68.000	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army **Date:** February 2020

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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Counter Emerging Threat	Various	AMRDEC/Torch Technologies : Huntsville, AL	40.000	30.000	Jan 2019	13.901		-		-		-	0.000	83.901	-
Subtotal			1,752.725	265.524		167.533		146.576		-		146.576	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Other Test Activities/ Army Evaluation Center/ Developmental Test Command/Operational Test Command	MIPR	Various : Multiple Locations	51.298	23.185	Oct 2018	7.353	Oct 2019	15.092	Oct 2020	-		15.092	Continuing	Continuing	Continuing
Modeling & Sim/Joint Interoperability Test Spt	MIPR	SED : Huntsville, AL	193.074	22.631	Oct 2018	16.153	Oct 2019	17.559	Oct 2020	-		17.559	Continuing	Continuing	Continuing
Range Support	MIPR	WSMR : White Sands, NM	51.870	7.510	Oct 2018	8.805	Oct 2019	14.702	Oct 2020	-		14.702	Continuing	Continuing	Continuing
Subtotal			296.242	53.326		32.311		47.353		-		47.353	Continuing	Continuing	N/A

Remarks
The T&E increase from FY20 is due to procurement of targets supporting IOT&E (Other Test Activities cost category) and the initial incremental funding of IOT&E test operations (Other Test Activities and Range Support cost categories).

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2,084.495	318.850	208.638	193.929	-	193.929	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense	

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Modeling and Simulation	[Blue bar spanning all quarters from FY 2019 to FY 2025]																											
EMD DT Continuation	[Blue bar]				[Blue bar]																							
v4.5.0 Software (SW) Development	[Blue bar]				[Blue bar]																							
v4.5.0 Developmental Ground/Flight Testing					[Blue bar]																							
v4.5.1 Agile SW Development					[Blue bar]																							
v4.5.1 Agile SW HWIL Integration Testing and Reqmts Verification					[Blue bar]																							
v4.5.1 SW Developmental Ground/Flight Testing					[Blue bar]																							
Limited User Test					[Blue bar]																							
Software Version 4.6.0 Capabilities Review					▲ 1																							
Milestone C Decision					▲ 2																							
v4.6.0 Agile SW Development (IOT&E SW)									[Blue bar]																			
v4.6.0 Agile SW HWIL Integration Testing and Reqmts Verification									[Blue bar]				[Blue bar]															
V4.6.0 Developmental Ground/Flight Testing									[Blue bar]																			

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Delta Qualification Testing									■																							
Software Version 4.6.1 Capabilities Review																	▲ 3															
IOT&E (OTRR 2, Sustained Ops, M&S, Live Fire Test)																	■															
v4.6.1 Agile SW Development																					■											
v4.6.1 Agile SW HWIL Integration Testing and Requirements Verification																					■											
V4.6.1 Developmental Ground/Flight Testing																					■											
Initial Operational Capability																					▲ 4											
Full Rate Production Decision Review																					▲ 5											
v4.6.2 Agile SW Development																									■							
v4.6.2 Agile SW HWIL Integration Testing and Requirements Verification																									■							
V4.6.2 Developmental Ground/Flight Testing																									■							
Future Capability Agile SW Development and Test																									■				■			

Note
Based on IAMD Program Master Schedule v1.54 dated 13 Dec 2019.

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / <i>Army Integrated Air and Missile Defense (AIAMD)</i>	Project (Number/Name) S40 / <i>Army Integrated Air and Missile Defense</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Modeling and Simulation	1	2013	4	2025
EMD Developmental Test (DT)	4	2014	1	2017
Product Readiness Review (PRR)	4	2016	4	2016
EMD DT Continuation	1	2018	1	2020
v4.5.0 Software (SW) Development	2	2018	1	2020
v4.5.0 Developmental Ground/Flight Testing	3	2019	2	2020
v4.5.1 Agile SW Development	1	2020	4	2020
v4.5.1 Agile SW HWIL Integration Testing and Reqmts Verification	2	2020	1	2021
v4.5.1 SW Developmental Ground/Flight Testing	3	2020	2	2021
Limited User Test	3	2020	4	2020
Software Version 4.6.0 Capabilities Review	3	2020	3	2020
Milestone C Decision	4	2020	4	2020
v4.6.0 Agile SW Development (IOT&E SW)	1	2021	4	2021
v4.6.0 Agile SW HWIL Integration Testing and Reqmts Verification	2	2021	1	2023
V4.6.0 Developmental Ground/Flight Testing	2	2021	2	2022
Delta Qualification Testing	2	2021	4	2021
Software Version 4.6.1 Capabilities Review	3	2021	3	2021
IOT&E (OTRR 2, Sustained Ops, M&S, Live Fire Test)	4	2021	2	2022
v4.6.1 Agile SW Development	1	2022	4	2022
v4.6.1 Agile SW HWIL Integration Testing and Requirements Verification	2	2022	1	2023
V4.6.1 Developmental Ground/Flight Testing	2	2022	1	2023
Initial Operational Capability	3	2022	3	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605457A / Army Integrated Air and Missile Defense (AIAMD)	Project (Number/Name) S40 / Army Integrated Air and Missile Defense
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Events	Start		End	
	Quarter	Year	Quarter	Year
Full Rate Production Decision Review	3	2022	3	2022
v4.6.2 Agile SW Development	1	2023	4	2023
v4.6.2 Agile SW HWIL Integration Testing and Requirements Verification	2	2023	1	2024
V4.6.2 Developmental Ground/Flight Testing	2	2023	1	2024
Future Capability Agile SW Development and Test	1	2023	1	2026

Note

Based on IAMD Program Master Schedule v1.54 dated 13 Dec 2019.