Department of Defense
Fiscal Year (FY) 2026 Budget Estimates

June 2025

Army

Justification Book Volume 1a of 1

Research, Development, Test & Evaluation, Army

Budget Activity 1

Volume 1a Table of Contents

RESEARCH, DEVELOPMENT, TEST AND EVALUATION, ARMY
APPROPRIATION LANGUAGE

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, $15,395,757,000.00 to remain available for obligation until September 30, 2027.

The FY 2026 Overseas Operations accounted for in the base budget are as follows:

In-theater and in-CONUS expenses that remain after combat operations cease and have been previously funded in Overseas Operations $3,201,000.00.

COST STATEMENT

The following Justification Books were prepared at a cost of $301,924.00: Aircraft (ACFT), Missile (MSLS), Weapons & Tracked Combat Vehicles (WTCV), Ammunition (AMMO), Other Procurement Army (OPA) 1 - Tactical & Support Vehicles, Other Procurement Army (OPA) 2 - Communications & Electronics, Other Procurement Army (OPA) 3 & 4 - Other Support Equipment & Spares, Other Procurement Army (OPA) 6 - Agile Portfolio Management, Research, Development, Test and Evaluation (RDTE) for: Budget Activity 1, Budget Activity 2, Budget Activity 3, Budget Activity 4, Budget Activity 5A, Budget Activity 5B, Budget Activity 6, Budget Activity 7, Budget Activity 8, and Budget Activity 9.

FY 2026 RDT&E, ARMY PROGRAM ELEMENT DESCRIPTIVE SUMMARIES
Introduction and Explanation of Contents

1. General. The purpose of this document is to provide summary information concerning the Research, Development, Test and Evaluation, Army program. The descriptive summaries are comprised of R-2 (Army RDT&E Budget Item Justification – program element level), R-2A (Army RDT&E Budget Item Justification – project level), R-3 (Army RDT&E Cost Analysis), R-4 (Schedule Profile Detail) and R-5 (Termination Liability Funding for MDAPs) Exhibits, which provide narrative information on all RDT&E program elements and projects through FY 2026.

2. Relationship of the FY 2026 Budget Submitted to Congress to the FY 2025 Budget Submitted to Congress. This paragraph provides a list of program elements/projects that are major new starts and terminated programs. Explanations for these changes can be found in the narrative sections of the Program Element R-2A Exhibits.

New Start Programs:

Budget Activity	***OSDPE / Project***	***Project Title***
02	0602141A / DN6	Science of Massed Responsive Fires
02	0602147A / DM6	Cannon Fires Automation Research
02	0602150A / HP1	High Power Microwave Technology
02	0602180A / DM7	Counter AI App Rsch
02	0602180A / DM8	AI Enabled Contested Logistics Spt Tools App Tech
02	0602182A / DM9	Distributed Multi-Agent Reasoning and Data Fusion
02	0602184A / DN1	Directed Energy Biological Effects
02	0602184A / DN2	Joint Service Small Arms Enabling Tech
02	0602184A / DO1	Modernized Composites & Manufacturing
03	0603040A / DN3	AI Enabled Contested Logistics Spt Tools Adv Tech
03	0603044A / DN4	Joint Service Small Arms Adv Tech
03	0603044A / DO2	Modernized Composites & Manufacturing Adv Dev
03	0603464A / DM5	Affordable High Speed Strike
04	0603639A / DK7	155mm Artillery Propulsion Mod - Adv Component Dev
04	0603639A / DN7	Mobile Long Range Precision Strike Pgm (M-LRPSM)
05	0604270A / DN9	Modular Electro-Magnetic Spectrum Sys (MEMSS)
05	0604804A / H01	Combat Engineer Eq Ed

05	0604818A / DL8	Predictive Logistics
05	0604854A / DH7	Next Generation Howitzer
05	0605037A / DM1	Detainee Management, Accountability, and Reporting
09	0609277A / A83	Electronic Warfare Technology Maturation
09	0609277A / A85	EW-SIGINT Technology-Innovation Pipeline
09	0609278A / A92	Counter Surveillance Reconnaissance (CSR)

Program Terminations (including transfers to Procurement and Sustainment):

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Budget Activity	***OSDPE / Project***	***Project Title***
02	0602141A / AH8	Lethality Materials and Processes Technology
02	0602181A / CM7	Collaborative Convergence Applied Research
02	0602182A / CX5	Sensing in Contested Environments Technologies
02	0602182A / DE6	Understanding Environment as a Threat Tech
02	0602183A / CL5	Air Platform Enabling University Applied Research
03	0603042A / CX9	Sensing in Contested Environments Adv Technologies
04	0604020A / DC8	Army Experimentation and Prototyping
05	0604641A / CF5	Robotic Combat Vehicle (BA5) NGCV-CFT
07	0205412A / EE6	Environmental Information Tech Modernization

3. Classification: This document contains no classified data. Appropriately cleared individuals can obtain further information on Classified/Special Access Programs by contacting the Department of the Army.

Department of Defense
FY 2026 President's Budget
Exhibit R-1 FY 2026 President's Budget
Total Obligational Authority

(Dollars in Thousands)

Jun 2025

Appropriation	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
Research, Development, Test and Evaluation, Army	17,119,530	14,322,031	41,400	14,363,431	14,549,223	846,534	15,395,757
Total Research, Development, Test, & Evaluation	**17,119,530**	**14,322,031**	**41,400**	**14,363,431**	**14,549,223**	**846,534**	**15,395,757**

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FY 2026 President's Budget
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Total Obligational Authority

(Dollars in Thousands)

Jun 2025

	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
Summary Recap of Budget Activities							
Basic Research	528,659	505,156		505,156	486,544		486,544
Applied Research	1,690,089	1,162,089		1,162,089	860,545		860,545
Advanced Technology Development	2,333,689	1,696,216		1,696,216	1,240,191		1,240,191
Advanced Component Development & Prototypes	4,227,715	2,170,345		2,170,345	2,420,915	417,120	2,838,035
System Development & Demonstration	4,890,110	5,758,500		5,758,500	5,378,817	304,614	5,683,431
Management Support	2,109,102	1,741,185	41,400	1,782,585	1,956,082	103,000	2,059,082
Operational Systems Development	1,236,118	1,213,992		1,213,992	1,426,619	21,800	1,448,419
Software And Digital Technology Pilot Programs	104,048	74,548		74,548	89,238		89,238
Agile RDT&E Portfolio Management					690,272		690,272
Total Research, Development, Test, & Evaluation	**17,119,530**	**14,322,031**	**41,400**	**14,363,431**	**14,549,223**	**846,534**	**15,395,757**
Summary Recap of FYDP Programs							
General Purpose Forces	370,362	452,813		452,813	896,230		896,230
Intelligence and Communications	244,739	144,756		144,756	70,382		70,382
Research and Development	16,356,977	13,053,148	41,400	13,094,548	13,040,127	846,534	13,886,661
Central Supply and Maintenance	118,797	87,187		87,187	67,002		67,002
Administration and Associated Activities	669						
Classified Programs	27,986	584,127		584,127	475,482		475,482
Total Research, Development, Test, & Evaluation	**17,119,530**	**14,322,031**	**41,400**	**14,363,431**	**14,549,223**	**846,534**	**15,395,757**

Department of the Army
FY 2026 President's Budget
Exhibit R-1 FY 2026 President's Budget
Total Obligational Authority
(Dollars in Thousands)

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
1	0601102A	Defense Research Sciences	01	U	322,341	297,680		297,680	237,678		237,678
2	0601103A	University Research Initiatives	01	U	72,781	78,166		78,166	78,947		78,947
3	0601104A	University and Industry Research Centers	01	U	117,872	113,476		113,476	69,391		69,391
4	0601121A	Cyber Collaborative Research Alliance	01	U	5,459	5,525		5,525	5,463		5,463
5	0601275A	Electronic Warfare Basic Research	01	U					88,053		88,053
6	0601601A	Artificial Intelligence and Machine Learning Basic Research	01	U	10,206	10,309		10,309	7,012		7,012
	Basic Research				**528,659**	**505,156**		**505,156**	**486,544**		**486,544**
7	0602002A	Army Agile Innovation and Development-Applied Research	02	U	964	1,000		1,000	9,455		9,455
8	0602134A	Counter Improvised-Threat Advanced Studies	02	U	6,014	6,163		6,163	6,174		6,174
9	0602135A	Counter Small Unmanned Aerial Systems (C-SUAS) Applied Research	02	U					12,618		12,618
10	0602141A	Lethality Technology	02	U	145,375	128,659		128,659	97,157		97,157
11	0602142A	Army Applied Research	02	U	38,072						
12	0602143A	Soldier Lethality Technology	02	U	209,084	137,771		137,771	72,670		72,670
13	0602144A	Ground Technology	02	U	266,663	155,829		155,829	56,342		56,342
14	0602145A	Next Generation Combat Vehicle Technology	02	U	248,335	167,233		167,233	71,547		71,547
15	0602146A	Network C3I Technology	02	U	135,543	110,417		110,417	56,529		56,529
16	0602147A	Long Range Precision Fires Technology	02	U	96,154	67,589		67,589	25,744		25,744
17	0602148A	Future Verticle Lift Technology	02	U	104,850	52,350		52,350	20,420		20,420
18	0602150A	Air and Missile Defense Technology	02	U	102,784	49,188		49,188	25,992		25,992
19	0602180A	Artificial Intelligence and Machine Learning Technologies	02	U	23,702	20,319		20,319	13,745		13,745

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Total Obligational Authority
(Dollars in Thousands)

Jun 2025

Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
20	0602181A	All Domain Convergence Applied Research	02	U	13,775	12,269		12,269			
21	0602182A	C3I Applied Research	02	U	31,635	25,839		25,839	22,317		22,317
22	0602183A	Air Platform Applied Research	02	U	53,611	48,854		48,854	53,305		53,305
23	0602184A	Soldier Applied Research	02	U	17,622	14,131		14,131	27,597		27,597
24	0602213A	C3I Applied Cyber	02	U	20,664	28,656		28,656	4,716		4,716
25	0602275A	Electronic Warfare Applied Research	02	U					45,415		45,415
26	0602276A	Electronic Warfare Cyber Applied Research	02	U					17,102		17,102
27	0602345A	Unmanned Aerial Systems Launched Effects Applied Research	02	U					18,408		18,408
28	0602386A	Biotechnology for Materials - Applied Research	02	U	16,060	11,780		11,780	8,209		8,209
30	0602785A	Manpower/Personnel/Training Technology	02	U	19,667	19,795		19,795	17,191		17,191
31	0602787A	Medical Technology	02	U	139,515	68,481		68,481	143,293		143,293
999	999999999	Classified Programs	02	U		35,766		35,766	34,599		34,599
	Applied Research				**1,690,089**	**1,162,089**		**1,162,089**	**860,545**		**860,545**
32	0603002A	Medical Advanced Technology	03	U	18,730	8,112		8,112	1,860		1,860
33	0603007A	Manpower, Personnel and Training Advanced Technology	03	U	15,845	16,716		16,716	13,559		13,559
34	0603025A	Army Agile Innovation and Demonstration	03	U	25,513	14,608		14,608	19,679		19,679
35	0603040A	Artificial Intelligence and Machine Learning Advanced Technologies	03	U	23,909	30,263		30,263	20,487		20,487
36	0603041A	All Domain Convergence Advanced Technology	03	U	26,721	23,722		23,722	10,560		10,560
37	0603042A	C3I Advanced Technology	03	U	18,590	21,889		21,889	15,028		15,028

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
38	0603043A	Air Platform Advanced Technology	03	U	13,648	17,076		17,076	41,266		41,266
39	0603044A	Soldier Advanced Technology	03	U	1,170	14,094		14,094	18,143		18,143
40	0603116A	Lethality Advanced Technology	03	U	70,529	49,629		49,629	13,232		13,232
41	0603117A	Army Advanced Technology Development	03	U	140,980						
42	0603118A	Soldier Lethality Advanced Technology	03	U	125,951	98,032		98,032	95,186		95,186
43	0603119A	Ground Advanced Technology	03	U	276,299	87,775		87,775	30,507		30,507
44	0603134A	Counter Improvised-Threat Simulation	03	U	20,965	21,398		21,398	15,692		15,692
45	0603135A	Counter Small Unmanned Aerial Systems (C-SUAS) Advanced Technology	03	U					7,773		7,773
46	0603275A	Electronic Warfare Advanced Technology	03	U					83,922		83,922
47	0603276A	Electronic Warfare Cyber Advanced Technology	03	U					15,254		15,254
48	0603345A	Unmanned Aerial Systems Launched Effects Advanced Technology Development	03	U					13,898		13,898
49	0603386A	Biotechnology for Materials - Advanced Research	03	U	57,686	36,360		36,360	24,683		24,683
50	0603457A	C3I Cyber Advanced Development	03	U	28,275	39,616		39,616	3,329		3,329
51	0603461A	High Performance Computing Modernization Program	03	U	246,739	239,597		239,597	241,855		241,855
52	0603462A	Next Generation Combat Vehicle Advanced Technology	03	U	433,324	254,662		254,662	141,301		141,301
53	0603463A	Network C3I Advanced Technology	03	U	214,351	142,224		142,224	78,539		78,539
54	0603464A	Long Range Precision Fires Advanced Technology	03	U	233,806	164,943		164,943	162,236		162,236

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
55	0603465A	Future Vertical Lift Advanced Technology	03	U	219,137	175,369		175,369	66,686		66,686
56	0603466A	Air and Missile Defense Advanced Technology	03	U	98,784	61,333		61,333	23,330		23,330
58	0603920A	Humanitarian Demining	03	U	22,737	23,272		23,272	9,349		9,349
999	999999999	Classified Programs	03	U		155,526		155,526	72,837		72,837
	Advanced Technology Development				**2,333,689**	**1,696,216**		**1,696,216**	**1,240,191**		**1,240,191**
60	0603305A	Army Missle Defense Systems Integration	04	U	48,763	20,031		20,031	8,141		8,141
61	0603308A	Army Space Systems Integration	04	U	28,813	29,659		29,659	83,080		83,080
62	0603327A	Air and Missile Defense Systems Engineering	04	U	13,000	30,000		30,000			
63	0603619A	Landmine Warfare and Barrier - Adv Dev	04	U	60,202	60,617		60,617	41,516		41,516
64	0603639A	Tank and Medium Caliber Ammunition	04	U	90,139	102,027		102,027	85,472	100,000	185,472
65	0603645A	Armored System Modernization - Adv Dev	04	U	54,456	23,235		23,235	22,645		22,645
66	0603747A	Soldier Support and Survivability	04	U	3,420	4,059		4,059	4,033		4,033
67	0603766A	Tactical Electronic Surveillance System - Adv Dev	04	U	72,259	87,765		87,765	107,525		107,525
68	0603774A	Night Vision Systems Advanced Development	04	U	41,941	20,714		20,714	5,153		5,153
69	0603779A	Environmental Quality Technology - Dem/Val	04	U	19,369	23,299		23,299	11,343		11,343
70	0603790A	NATO Research and Development	04	U	3,987	4,184		4,184	5,031		5,031
71	0603801A	Aviation - Adv Dev	04	U	1,452,331	4,943		4,943			
72	0603804A	Logistics and Engineer Equipment - Adv Dev	04	U	22,846	19,995		19,995	15,435		15,435
73	0603807A	Medical Systems - Adv Dev	04	U	7,999	582		582	1,000		1,000

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(Dollars in Thousands)

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
74	0603827A	Soldier Systems - Advanced Development	04	U	41,551	24,284		24,284	41,856		41,856
75	0604017A	Robotics Development	04	U	2,912	13,039		13,039	35,082		35,082
76	0604019A	Expanded Mission Area Missile (EMAM)	04	U	109,752	83,516		83,516	178,137	99,000	277,137
77	0604020A	Cross Functional Team (CFT) Advanced Development & Prototyping	04	U	61,779	40,409		40,409			
78	0604035A	Low Earth Orbit (LEO) Satellite Capability	04	U	37,433	21,935		21,935	17,063		17,063
79	0604036A	Multi-Domain Sensing System (MDSS) Adv Dev	04	U	185,831	188,228		188,228	239,813		239,813
80	0604037A	Tactical Intel Targeting Access Node (TITAN) Adv Dev	04	U	10,626	4,317		4,317	3,092		3,092
81	0604100A	Analysis Of Alternatives	04	U	10,690	11,234		11,234	9,865		9,865
82	0604101A	Small Unmanned Aerial Vehicle (SUAV) (6.4)	04	U	4,956	1,800		1,800			
83	0604103A	Electronic Warfare Planning and Management Tool (EWPMT)	04	U	2,260	2,004		2,004			
84	0604113A	Future Tactical Unmanned Aircraft System (FTUAS)	04	U	67,143	127,870		127,870			
85	0604114A	Lower Tier Air Missile Defense (LTAMD) Sensor	04	U	511,014	127,428		127,428	196,448	14,000	210,448
86	0604115A	Technology Maturation Initiatives	04	U	244,710	252,000		252,000	267,619		267,619
87	0604117A	Maneuver - Short Range Air Defense (M-SHORAD)	04	U	290,256	274,542		274,542	238,247	60,120	298,367
88	0604119A	Army Advanced Component Development & Prototyping	04	U	204,914						
89	0604120A	Assured Positioning, Navigation and Timing (PNT)	04	U	39,223	24,168		24,168	8,686		8,686
90	0604121A	Synthetic Training Environment Refinement & Prototyping	04	U	115,519	115,140		115,140	240,899		240,899

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91	0604134A	Counter Improvised-Threat Demonstration, Prototype Development, and Testing	04	U	15,826	17,341		17,341	5,491		5,491
92	0604135A	Strategic Mid-Range Fires	04	U	25,342				231,401		231,401
93	0604182A	Hypersonics	04	U	201,193				25,000		25,000
94	0604386A	Biotechnology for Materials - Dem/Val	04	U		10,651		10,651			
95	0604403A	Future Interceptor	04	U	3,899	8,058		8,058	8,019	144,000	152,019
97	0604531A	Counter - Small Unmanned Aircraft Systems Advanced Development	04	U	54,854	79,983		79,983	45,281		45,281
99	0604541A	Unified Network Transport	04	U	47,233	31,837		31,837	29,191		29,191
100	0305251A	Cyberspace Operations Forces and Force Support	04	U	74	2,270		2,270	5,605		5,605
999	999999999	Classified Programs	04	U	19,200	277,181		277,181	203,746		203,746
	Advanced Component Development & Prototypes				**4,227,715**	**2,170,345**		**2,170,345**	**2,420,915**	**417,120**	**2,838,035**
101	0604201A	Aircraft Avionics	05	U	21,173	7,171		7,171	2,696		2,696
102	0604270A	Electronic Warfare Development	05	U	12,310	33,247		33,247	9,153		9,153
103	0604601A	Infantry Support Weapons	05	U	80,777	57,686		57,686	56,553		56,553
104	0604604A	Medium Tactical Vehicles	05	U	17,561	3,565		3,565	18,503		18,503
105	0604611A	JAVELIN	05	U	7,541	10,405		10,405	9,810		9,810
106	0604622A	Family of Heavy Tactical Vehicles	05	U	40,175	34,690		34,690	47,064		47,064
107	0604633A	Air Traffic Control	05	U	11,093	982		982			
108	0604641A	Tactical Unmanned Ground Vehicle (TUGV)	05	U	136,937	92,540		92,540			
109	0604642A	Light Tactical Wheeled Vehicles	05	U	3,394	3,000		3,000			
110	0604645A	Armored Systems Modernization (ASM) - Eng Dev	05	U	95,580	48,097		48,097	16,593		16,593
111	0604710A	Night Vision Systems - Eng Dev	05	U	145,135	139,309		139,309	351,274		351,274

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112	0604713A	Combat Feeding, Clothing, and Equipment	05	U	2,170	3,286		3,286	5,654		5,654
113	0604715A	Non-System Training Devices - Eng Dev	05	U	20,585	28,427		28,427	19,063		19,063
114	0604741A	Air Defense Command, Control and Intelligence - Eng Dev	05	U	86,990	73,653		73,653	13,892		13,892
115	0604742A	Constructive Simulation Systems Development	05	U	29,854	30,097		30,097	7,790		7,790
116	0604746A	Automatic Test Equipment Development	05	U	13,129	12,927		12,927	9,512		9,512
117	0604760A	Distributive Interactive Simulations (DIS) - Eng Dev	05	U	8,481	8,914		8,914	7,724		7,724
118	0604798A	Brigade Analysis, Integration and Evaluation	05	U	21,750	26,352		26,352	24,318		24,318
119	0604802A	Weapons and Munitions - Eng Dev	05	U	270,231	251,949		251,949	150,344		150,344
120	0604804A	Logistics and Engineer Equipment - Eng Dev	05	U	58,554	46,829		46,829	50,194		50,194
121	0604805A	Command, Control, Communications Systems - Eng Dev	05	U	47,965	92,300		92,300	63,725		63,725
122	0604807A	Medical Materiel/Medical Biological Defense Equipment - Eng Dev	05	U	10,984	7,143		7,143	6,252		6,252
123	0604808A	Landmine Warfare/Barrier - Eng Dev	05	U	33,085	54,134		54,134	9,862		9,862
124	0604818A	Army Tactical Command & Control Hardware & Software	05	U	154,317	134,162		134,162	430,895	2,430	433,325
125	0604820A	Radar Development	05	U	78,363	41,584		41,584	53,226	18,000	71,226
126	0604822A	General Fund Enterprise Business System (GFEBS)	05	U	16,011	1,995		1,995			
127	0604827A	Soldier Systems - Warrior Dem/Val	05	U	18,892	29,132		29,132	4,137		4,137
128	0604852A	Suite of Survivability Enhancement Systems - EMD	05	U	70,384	77,864		77,864	76,903		76,903

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
129	0604854A	Artillery Systems - EMD	05	U	45,939	42,479		42,479	80,862		80,862
130	0605013A	Information Technology Development	05	U	96,090	102,704		102,704	125,701		125,701
131	0605018A	Integrated Personnel and Pay System-Army (IPPS-A)	05	U	86,914	121,354		121,354	164,600		164,600
132	0605030A	Joint Tactical Network Center (JTNC)	05	U	17,981	20,191		20,191	20,954		20,954
133	0605031A	Joint Tactical Network (JTN)	05	U	29,221	31,214		31,214	41,696		41,696
134	0605035A	Common Infrared Countermeasures (CIRCM)	05	U	10,959	11,691		11,691	10,789		10,789
135	0605036A	Combating Weapons of Mass Destruction (CWMD)	05	U	1,012	7,846		7,846	13,322		13,322
136	0605037A	Evidence Collection and Detainee Processing	05	U					4,619		4,619
137	0605038A	Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) Sensor Suite	05	U		7,886		7,886	13,459		13,459
138	0605041A	Defensive CYBER Tool Development	05	U	13,386	4,176		4,176	3,611		3,611
139	0605042A	Tactical Network Radio Systems (Low-Tier)	05	U	4,160	4,288		4,288	3,222		3,222
140	0605047A	Contract Writing System	05	U	12,390	9,276		9,276	8,101		8,101
141	0605049A	Missile Warning System Modernization (MWSM)	05	U	19,508						
142	0605051A	Aircraft Survivability Development	05	U	23,991	38,225		38,225	44,182		44,182
143	0605052A	Indirect Fire Protection Capability Inc 2 - Block 1	05	U	172,705	140,912		140,912	248,659		248,659
144	0605053A	Ground Robotics	05	U	26,704	28,378		28,378	227,038		227,038
145	0605054A	Emerging Technology Initiatives	05	U	115,356	126,658		126,658	57,546	87,000	144,546
146	0605144A	Next Generation Load Device - Medium	05	U	36,970	2,931		2,931	24,492		24,492

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
147	0605148A	Tactical Intel Targeting Access Node (TITAN) EMD	05	U	128,784	149,112		149,112	44,273		44,273
148	0605203A	Army System Development & Demonstration	05	U	81,657						
149	0605205A	Small Unmanned Aerial Vehicle (SUAV) (6.5)	05	U	20,865	24,474		24,474			
150	0605206A	CI and HUMINT Equipment Program-Army (CIHEP-A)	05	U	2,170	1,296		1,296			
151	0605216A	Joint Targeting Integrated Command and Coordination Suite (JTIC2S)	05	U	8,951	21,415		21,415			
152	0605224A	Multi-Domain Intelligence	05	U	23,605	18,913		18,913	34,844		34,844
153	0605231A	Precision Strike Missile (PrSM)	05	U	262,829	184,046		184,046		197,184	197,184
154	0605232A	Hypersonics EMD	05	U	772,174	469,775		469,775	513,027		513,027
155	0605233A	Accessions Information Environment (AIE)	05	U	26,362	32,265		32,265	32,710		32,710
156	0605235A	Strategic Mid-Range Capability	05	U	255,121	182,823		182,823	186,304		186,304
157	0605236A	Integrated Tactical Communications	05	U	18,065	12,224		12,224	22,732		22,732
158	0605241A	Future Long Range Assault Aircraft Development	05	U		1,253,637		1,253,637	1,248,544		1,248,544
159	0605242A	Theater SIGINT System (TSIGS)	05	U		3,660		3,660			
160	0605244A	Joint Reduced Range Rocket (JR3)	05	U		13,565		13,565	28,893		28,893
161	0605247A	Spectrum Situational Awareness System (S2AS)	05	U		4,665		4,665			
162	0605450A	Joint Air-to-Ground Missile (JAGM)	05	U	2,904	3,030		3,030			
163	0605457A	Army Integrated Air and Missile Defense (AIAMD)	05	U	285,411	587,068		587,068	146,056		146,056
164	0605531A	Counter - Small Unmanned Aircraft Systems Sys Dev & Demonstration	05	U	34,701	59,563		59,563	55,196		55,196
166	0605625A	Manned Ground Vehicle	05	U	565,047	499,478		499,478	386,393		386,393

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
167	0605766A	National Capabilities Integration (MIP)	05	U	15,129	16,565		16,565	16,913		16,913
168	0605812A	Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development Phase (EMD)	05	U					2,664		2,664
169	0605830A	Aviation Ground Support Equipment	05	U	1,124	979		979	930		930
170	0303032A	TROJAN - RH12	05	U	3,879	3,930		3,930	3,920		3,920
171	0303767A	AMBIT - Pre-Auctioned SRF	05	U	20,791						
172	0304270A	Electronic Warfare Development	05	U	133,834	81,232		81,232			
999	999999999	Classified Programs	05	U		83,136		83,136	117,428		117,428
	System Development & Demonstration				**4,890,110**	**5,758,500**		**5,758,500**	**5,378,817**	**304,614**	**5,683,431**
173	0604256A	Threat Simulator Development	06	U	71,587	75,298		75,298	74,767		74,767
174	0604258A	Target Systems Development	06	U	33,940	27,788		27,788	16,004		16,004
175	0604759A	Major T&E Investment	06	U	87,687	98,613		98,613	101,027		101,027
176	0605103A	Rand Arroyo Center	06	U	35,312	38,122		38,122	10,892		10,892
177	0605301A	Army Kwajalein Atoll	06	U	341,771	321,755	41,400	363,155	379,283		379,283
178	0605326A	Concepts Experimentation Program	06	U	86,765	80,845		80,845	58,606		58,606
179	0605502A	Small Business Innovative Research	06	U	409,981						
180	0605601A	Army Test Ranges and Facilities	06	U	441,173	466,085		466,085	425,108		425,108
181	0605602A	Army Technical Test Instrumentation and Targets	06	U	45,679	74,004		74,004	69,328		69,328
182	0605604A	Survivability/Lethality Analysis	06	U	37,005	36,815		36,815	31,306		31,306
183	0605606A	Aircraft Certification	06	U	2,718	2,201		2,201	1,887		1,887
184	0605706A	Materiel Systems Analysis	06	U	23,402	23,338		23,338	19,100		19,100
185	0605709A	Exploitation of Foreign Items	06	U	7,805	6,245		6,245	6,277		6,277

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
186	0605712A	Support of Operational Testing	06	U	74,128	76,088		76,088	63,637		63,637
187	0605716A	Army Evaluation Center	06	U	71,118	73,220		73,220	62,343		62,343
188	0605718A	Army Modeling & Sim X-Cmd Collaboration & Integ	06	U	6,136	11,257		11,257	11,825		11,825
189	0605801A	Programwide Activities	06	U	86,384	91,895		91,895	54,172		54,172
190	0605803A	Technical Information Activities	06	U	30,422	32,385		32,385	26,592		26,592
191	0605805A	Munitions Standardization, Effectiveness and Safety	06	U	56,069	50,766		50,766	44,465		44,465
192	0605857A	Environmental Quality Technology Mgmt Support	06	U	1,570	1,659		1,659	2,857		2,857
193	0605898A	Army Direct Report Headquarters - R&D - MHA	06	U	55,497	59,727		59,727	53,436		53,436
194	0606002A	Ronald Reagan Ballistic Missile Defense Test Site	06	U	89,911	73,400		73,400	72,302		72,302
195	0606003A	CounterIntel and Human Intel Modernization	06	U	6,348	9,574		9,574	5,660		5,660
196	0606118A	AIAMD Software Development & Integration	06	U					358,854	103,000	461,854
197	0606942A	Assessments and Evaluations Cyber Vulnerabilities	06	U	6,025	10,105		10,105	6,354		6,354
198	0909999A	Financing for Cancelled Account Adjustments	06	U	669						
	Management Support				**2,109,102**	**1,741,185**	**41,400**	**1,782,585**	**1,956,082**	**103,000**	**2,059,082**
199	0603778A	MLRS Product Improvement Program	07	U	13,937	14,188		14,188	14,639		14,639
200	0605024A	Anti-Tamper Technology Support	07	U	7,274	7,489		7,489	6,449		6,449
201	0607101A	Combating Weapons of Mass Destruction (CWMD) Product Improvement	07	U		271		271	115		115
202	0607131A	Weapons and Munitions Product Improvement Programs	07	U	61,735	31,563		31,563	13,687		13,687

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Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
203	0607136A	Blackhawk Product Improvement Program	07	U	40,923	125,000		125,000	23,998		23,998
204	0607137A	Chinook Product Improvement Program	07	U	20,386	4,816		4,816	10,859		10,859
205	0607139A	Improved Turbine Engine Program	07	U	182,204	130,029		130,029			
206	0607142A	Aviation Rocket System Product Improvement and Development	07	U	2,904						
207	0607143A	Unmanned Aircraft System Universal Products	07	U	24,466	24,539		24,539			
208	0607145A	Apache Future Development	07	U	44,762	8,243		8,243	44,371		44,371
209	0607148A	AN/TPQ-53 Counterfire Target Acquisition Radar System	07	U	52,190	53,652		53,652	43,054		43,054
210	0607150A	Intel Cyber Development	07	U	4,345	9,753		9,753	13,129		13,129
211	0607212A	TENCAP Enhancements	07	U						6,800	6,800
212	0607312A	Army Operational Systems Development	07	U	19,000						
213	0607313A	Electronic Warfare Development	07	U	6,389	5,559		5,559			
215	0607665A	Family of Biometrics	07	U	768	590		590	1,594		1,594
216	0607865A	Patriot Product Improvement	07	U	170,729	168,458		168,458	183,763	15,000	198,763
217	0203728A	Joint Automated Deep Operation Coordination System (JADOCS)	07	U	37,535	27,582		27,582	8,424		8,424
218	0203735A	Combat Vehicle Improvement Programs	07	U	223,719	326,579		326,579	744,085		744,085
219	0203743A	155mm Self-Propelled Howitzer Improvements	07	U	22,066	47,870		47,870	107,826		107,826
220	0203752A	Aircraft Engine Component Improvement Program	07	U	146	142		142	237		237
221	0203758A	Digitization	07	U	1,460	1,562		1,562	1,013		1,013
222	0203801A	Missile/Air Defense Product Improvement Program	07	U	4,203	1,511		1,511	1,338		1,338

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
223	0203802A	Other Missile Product Improvement Programs	07	U	9,677	26,708		26,708			
224	0205412A	Environmental Quality Technology - Operational System Dev	07	U	271	269		269			
225	0205778A	Guided Multiple-Launch Rocket System (GMLRS)	07	U	70,808	20,590		20,590	33,307		33,307
226	0208053A	Joint Tactical Ground System	07	U	477						
229	0303028A	Security and Intelligence Activities	07	U	16,290						
230	0303140A	Information Systems Security Program	07	U	15,323	15,733		15,733	15,040		15,040
231	0303141A	Global Combat Support System	07	U	12,605	2,566		2,566			
232	0303142A	SATCOM Ground Environment (SPACE)	07	U	25,858	26,643		26,643	35,720		35,720
235	0305179A	Integrated Broadcast Service (IBS)	07	U	9,456	5,701		5,701	6,653		6,653
236	0305219A	MQ-1 Gray Eagle UAV	07	U	6,629	6,681		6,681	3,444		3,444
237	0708045A	End Item Industrial Preparedness Activities	07	U	118,797	87,187		87,187	67,002		67,002
999	999999999	Classified Programs	07	U	8,786	32,518		32,518	46,872		46,872
	Operational Systems Development				**1,236,118**	**1,213,992**		**1,213,992**	**1,426,619**	**21,800**	**1,448,419**
238	0608041A	Defensive CYBER - Software Prototype Development	08	U	104,048	74,548		74,548	89,238		89,238
	Software And Digital Technology Pilot Programs				**104,048**	**74,548**		**74,548**	**89,238**		**89,238**
239	0609135A	Counter Unmanned Aerial Systems (UAS) Agile Development	09	U					143,618		143,618
240	0609277A	Electronic Warfare Agile Development	09	U					127,081		127,081
241	0609278A	Electronic Warfare Agile Systems Development	09	U					59,202		59,202
242	0609345A	Unmanned Aerial Systems Launched Effects Agile Systems Development	09	U					187,473		187,473

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Appropriation: 2040A Research, Development, Test and Evaluation, Army

Line No	Program Element Number	Item	Act	Sec	FY 2024 Actuals	FY 2025 Enacted	FY 2025 Supplemental	FY 2025 Total	FY 2026 Disc Request	FY 2026 Reconciliation Request	FY 2026 Total
243	0609346A	UAS Launched Effects Agile Development	09	U					172,898		172,898
	Agile RDT&E Portfolion Management								**690,272**		**690,272**
Total Research, Development, Test and Evaluation, Army					**17,119,530**	**14,322,031**	**41,400**	**14,363,431**	**14,549,223**	**846,534**	**15,395,757**

Program Element Table of Contents (by Budget Activity then Line Item Number)

Appropriation 2040: Research, Development, Test & Evaluation, Army

Program Element Table of Contents (Alphabetically by Program Element Title)

All figures in this exhibit are for the FY 2026 discretionary appropriations President's Budget request unless otherwise noted.

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601102A *I Defense Research Sciences*							
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
Total Program Element	-	322.341	297.680	237.678	-	237.678	-	-	-	-	-	-
AA1: *ILIR - AMC*	-	11.535	12.094	8.340	-	8.340	-	-	-	-	-	-
AA2: *ILIR - SMDC*	-	1.045	1.098	1.057	-	1.057	-	-	-	-	-	-
AA3: *Single Investigator Basic Research*	-	99.224	108.011	106.422	-	106.422	-	-	-	-	-	-
AA4: *Training and Human Science Research*	-	20.583	19.865	13.630	-	13.630	-	-	-	-	-	-
AA5: *Biotechnology and Systems Biology*	-	6.499	8.999	8.867	-	8.867	-	-	-	-	-	-
AA6: *Robotics and Mobile Energy*	-	24.774	13.761	10.772	-	10.772	-	-	-	-	-	-
AA7: *Mechanics and Ballistics*	-	34.416	34.685	33.957	-	33.957	-	-	-	-	-	-
AA8: *Sensing and Electromagnetics*	-	16.083	26.884	1.342	-	1.342	-	-	-	-	-	-
AA9: *Information and Networking*	-	42.894	43.808	30.864	-	30.864	-	-	-	-	-	-
AB1: *Basic Res in infect Dis, Oper Med and Combat Care*	-	4.397	4.672	2.967	-	2.967	-	-	-	-	-	-
AB2: *Protection, Maneuver, Geospatial, Natural Sciences*	-	19.109	19.900	15.702	-	15.702	-	-	-	-	-	-
CH9: *Advancing Concepts and Technology Forecasting*	-	3.782	3.903	3.758	-	3.758	-	-	-	-	-	-
T14: *BASIC RESEARCH INITIATIVES - AMC (CA)*	-	38.000	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE) builds fundamental scientific knowledge contributing to the sustainment of United States (US) Army scientific and technological superiority in land warfighting capability and to solving military problems related to long-term national security needs, investigates new concepts and technologies for the Army's future force, and provides the means to exploit scientific breakthroughs and avoid technological surprises. This PE fosters innovation in Army niche areas (e.g., lightweight armor, energetic materials, and night vision capability) and areas where there are no commercial investments due to limited markets (e.g., vaccines for

tropical diseases). It also focuses university single investigator research on areas of high interest to the Army (e.g., high-density compact power and novel sensor phenomenology). The in-house portion of the program capitalizes on the Army's scientific talent and specialized facilities to transition knowledge and technology into appropriate developmental activities. The extramural program leverages the research efforts of other government agencies, academia, and industry. This PE also supports basic research at the Army laboratories through the In-House Laboratory Independent Research (ILIR) program. The ILIR program serves as a catalyst for major technology breakthroughs by providing laboratory directors flexibility in implementing novel research ideas and by nurturing promising young scientists and engineers and is used to attract and retain top doctoral degreed scientists and engineers. The ILIR program also provides a source of competitive funds for peer reviewed efforts at Army laboratories to stimulate high quality, innovative research with significant opportunity for payoff to Army warfighting capability. This PE also identifies emerging and disruptive basic scientific research outcomes in order to translate, integrate, and ingrain research outcomes with Army Warfighting Concepts which describe how the Army will fight in the far-term future.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

The FY 2026 request was reduced by $7.871 million for Advisory and Assistance Services to promote efficiencies and advance the policies of the Administration in alignment with Executive Order 14222, "Implementing the President's Department of Government Efficiency Cost Efficiency Initiative."

The FY 2026 request was reduced by $1.412 million for civilian personnel to optimize the workforce in compliance with Executive Order 14210, "Implementing the President's Department of Government Efficiency Workforce Optimization Initiative."

B. Program Change Summary ($ in Millions)	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total
Previous President's Budget	296.670	310.191	321.007	-	321.007
Current President's Budget	322.341	297.680	237.678	-	237.678
Total Adjustments	25.671	-12.511	-83.329	-	-83.329
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-13.761			
• Congressional Rescissions	-	-			
• Congressional Adds	38.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-6.922	-			
• SBIR/STTR Transfer	-5.340	-			
• Adjustments to Budget Years	-	1.250	-83.329	-	-83.329
• FFRDC Transfer	-0.067	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2024	FY 2025
Project: T14: *BASIC RESEARCH INITIATIVES - AMC (CA)*		
Congressional Add: *Development of crystalline porous materials*	5.000	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army	Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2024	FY 2025
Congressional Add: *Joint Research Laboratories*	18.000	-
Congressional Add: *Quantum computing center*	10.000	-
Congressional Add: *Unmanned Aerial Systems Hybrid Propulsion*	5.000	-
Congressional Add Subtotals for Project: T14	38.000	-
Congressional Add Totals for all Projects	38.000	-

Change Summary Explanation

Funding decrease reflects realignment of resources as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*	Project (Number/Name) AA1 / *ILIR - AMC*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
AA1: *ILIR - AMC*	-	11.535	12.094	8.340	-	8.340	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Work in this Project supports basic research at the Army Futures Command through the In-House Laboratory Independent Research (ILIR) program. Basic research lays the foundation for future developmental efforts by identifying fundamental principles governing various phenomena and appropriate pathways to exploit this knowledge. The ILIR program serves as a catalyst for major technology breakthroughs by providing laboratory directors flexibility in implementing novel research ideas and by nurturing promising young scientists and engineers and is used to attract and retain top doctoral degreed scientists and engineers. The ILIR program also provides a source of competitive funds for peer reviewed efforts at Army laboratories to stimulate high quality, innovative research with significant opportunity for payoff to Army warfighting capability.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this Project is performed by the Armaments Center (AC), Aviation and Missile Center (AvMC), Chemical Biological Center (CBC), Command, Control, Communication, Computers, Cyber, Intelligence, Surveillance and Reconnaissance Center (C5ISR), Ground Vehicle Systems Center (GVSC), and Soldier Center (SC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Chemical Materials - ILIR	1.060	1.236	1.223
Description: Conduct advanced, high-risk, basic research that explores new phenomenology at the boundaries of chemistry, biology, mathematics, and physics. Specifically, conduct fundamental research in novel materials, synthetic biology, novel sensing, molecular toxicology, obscuration, explosives forensics, aerosol sciences, and machine learning. ***FY 2025 Plans:*** Conduct first principal research in the areas of chemistry, biology, material science, and engineering that address technical performance and knowledge gaps relevant to Warfighter requirements that align to Army Modernization Priorities. Topics for research include biomanufacturing, metamaterials, reactive coatings/surfaces, material structure and processing, sensing, and analytical characterization. Research will be aided by employing artificial intelligence, machine learning, and predictive modeling and analytics as applicable. ***FY 2026 Plans:*** Will conduct fundamental research to support core elements of chemistry, biology, material science, and engineering; conduct research in bioengineering, synthetic biology, metamaterials, obscurants, and sensing properties; where applicable, machine learning will be utilized on existing problem sets to supplement research; focus on basic principles that establish the foundation for biomanufacturing, novel material processing, and particle dispersion; special consideration will be given to understanding the			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA1 / *ILIR - AMC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
fundamental properties of per- and polyfluoroalkyl substances (PFAS) with an emphasis on their behavior as chemical barriers, the nature of oil- and water-based penetration of materials to support the development of PFAS alternatives. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Structural Materials - ILIR ***Description:*** Funds basic research in weapons component physics, explosives synthesis/detection, and the fundamental science base of area denial. ***FY 2025 Plans:*** Conduct research in chemical, computational sciences, material, and life sciences with a potential for future applications in weapons, fire control, pyrotechnics, explosives, projectile and munition technologies; investigate burn rate augmentation methodologies for energetic materials to provide precise and consistent ignition processes; research energetic material design workflow algorithms and methodologies for novel approaches to new energetic molecules; explore biology-based sensors for real-time detection of hexavalent chromium below current detection thresholds. ***FY 2026 Plans:*** Will study fundamental aspects of phenomena and observable facts in fields of chemical, computational sciences, materials, and life sciences related to weapons, fire control, pyrotechnics, explosives, projectile and munition technologies; identify methodologies to predict and prevent cracking and delamination of coatings; investigate high strength ceramic and metallic materials and structures; explore advanced algorithms in support of complex design and dilemma resolution; study synthesis of novel energetic compounds. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	1.560	1.600	1.583
Title: Advanced Mobility - ILIR ***Description:*** This effort funds basic research in ground vehicle technologies, including power, mobility, and unmanned systems. ***FY 2025 Plans:*** Competitively select in-house basic research topic areas and use them to advance fundamental scientific understanding in support of ground vehicle systems, including: autonomous systems control and characterization, lightweight and composite materials, additive manufacturing, multi-physics energy conversion modeling, solid oxide fuel cell studies, and internal combustion heat transfer modeling. ***FY 2026 Plans:***	1.303	1.370	1.131

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA1 / *ILIR - AMC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will competitively select in-house basic research topic areas that will advance fundamental scientific understanding in support of ground vehicle systems, including quantum computing to solve autonomous mobility problems, human-machine integration, novel materials to minimize weight and vehicle signatures, mobility analysis in off-road situations, and advanced propulsion techniques for both internal combustion engines and solid oxide fuel cells. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Functional Materials - ILIR ***Description:*** This effort funds basic research in food sciences, textiles, and lightweight materials with potential for individual protection. ***FY 2025 Plans:*** Investigate and document results of research on responsive color of bio-inspired small molecule materials; explore controlled organic phase change materials for novel polymer and metal organic frameworks; study fundamental knowledge of processing and perception of body control under stress impacting cognitive resilience; conduct research and experiments on nonlinear dynamics of cognitive and motor behavior under dynamic conditions. ***FY 2026 Plans:*** Will investigate the tuning of materials phases within metal-organic frameworks and analyze the thermodynamics and kinetics of the transitions; explore machine learning enabled, dynamic molecular simulations; conduct research modeling human behavior under uncertainty, stress, and mental exertion with complex, nonlinear analytics. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	1.216	1.248	1.234
Title: Optical Electronics - ILIR ***Description:*** This effort funds the underlying fundamental science of Lethality and Protection Superiority for guided missile and rocket systems, unmanned vehicles, and related components. ***FY 2025 Plans:*** Model the fundamental characteristics of entangled radio frequency photons to provide a basis for their assessment for advanced sensing and electronic warfare applications; investigate the role of the free electron layer on light-matter interactions at metal-vacuum and dielectric-vacuum boundaries to inform its use in next generation metamaterial design for sensors and devices for signal detection and sensor protection; develop an understanding of key chemical functional group molecular interactions between the Nitrocellulose polymer and plastic fillers to inform the design of next generation multifunctional energetic materials; validate models of noise propagation through continuous time digital signal processing techniques to provide a more comprehensive	2.580	2.664	0.499

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA1 / *ILIR - AMC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
comparison of these techniques against traditional digital signal processing techniques; perform state-of-the-art quantum calculations to study the basic principles of atomic collisions on the resonance profiles of atoms; explore bright quantum states for their potential to enhance target detection. ***FY 2026 Plans:*** Will validate the fundamental characteristics of entangled radio frequency photons to provide a basis for their assessment for advanced sensing and electronic warfare applications; characterize the role of the free electron layer on light-matter interactions at metal-vacuum and dielectric-vacuum boundaries to inform its use in next generation metamaterial design for sensors and devices for signal detection and sensor protection; experiment with key chemical functional group molecular interactions between the Nitrocellulose polymer and plastic fillers to inform the design of next generation multifunctional energetic materials; refine state-of-the-art quantum calculations to develop an understanding of the basic principles of atomic collisions on the resonance profiles of atoms; model bright quantum states for their potential to enhance target detection; explore fundamental hardware architecture approaches for continuous-time digital signal processing instantiations. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Sol Struct Mech - ILIR ***Description:*** This effort funds basic research for aviation enabling technologies in the areas of aerodynamics, structural dynamics, and material science.	1.452	-	-
Title: Comms Cyber IR RF-ILIR ***Description:*** Funds basic research for communication and network enabling technologies in the areas of antenna design, network management, power generation and storage, and sensors. ***FY 2025 Plans:*** Conduct research on radar design characterization and image processing / machine learning algorithms for target recognition; research signal processing to enhance physical layer secrecy and covertness in multiantenna systems; conduct research to determine the fundamental electrical impact of misfit dislocation defects on Vertical HgCdTe n-p diodes to improve performance of MBE Vertical HgCdTe Focal Plane Arrays; conduct research on cathodic synthesis and battery electrolytes for high-power density batteries; research novel tilt-, rotation- and neutralization-dependent X-ray photoelectron spectroscopy (XPS) technique to directly measure the surface composition and chemistry of as-fabricated infrared focal plane arrays (IRFPAs) to gain a fundamental understanding of how surface composition resulting from specific processing steps impacts IRFPA performance and yield. ***FY 2026 Plans:*** Will explore and determine feasibility of using ionic liquids for operation of cells above 5 Volts to increase energy density while operating below room temperature; conduct research on stretchable inductors that optimizes quality factor while maintaining a	2.364	2.485	2.390

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA1 / *ILIR - AMC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
maximum stress given a dynamic load; conduct research to determine the acoustic frequency attenuation and amplification due to the human torso and Soldier equipment for chest mounted microphones and characterization, models, and estimated transfer functions of the received acoustic signal; conduct research on the enhancement of high pass filtering to enable and generalize missile warning capability for emerging and multi-functional sensors. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Aeromechanics - ILIR ***Description:*** This effort funds basic research for aviation enabling technologies in the areas of aerodynamics, structural dynamics, and material science. ***FY 2025 Plans:*** Investigate use of additive manufacturing (AM) for rotor blades for small UAS to better understand the effect of AM processes on blade structural and aerodynamic properties and rotor performance; develop parallelized three-dimensional structural dynamics solver to complement the fidelity of computational fluid dynamics solvers and apply to modern tip designs including taper, anhedral, and dihedral. ***FY 2026 Plans:*** Will explore mid-fidelity rotor aerodynamics modeling techniques and higher-order flow solvers on modern computer architectures to enable fast solutions for complex geometry full vehicle configurations. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase due to revised economic assumptions.	-	1.491	0.280
Accomplishments/Planned Programs Subtotals	11.535	12.094	8.340

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA2 / *ILIR - SMDC*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA2: *ILIR - SMDC*	-	1.045	1.098	1.057	-	1.057	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Work in this Project supports basic research at the United States Army Space and Missile Defense Command - Technical Center (USASMDC-TC) through the In-House Laboratory Independent Research (ILIR) program. Basic research lays the foundation for future developmental efforts by identifying fundamental principles governing various phenomena and appropriate pathways to exploit this knowledge. The ILIR program serves as a catalyst for major technology breakthroughs by providing laboratory directors flexibility in implementing novel research ideas and by nurturing promising young scientists and engineers and is used to attract and retain top doctoral level scientists and engineers. The ILIR program also provides a source of competitive funds for peer reviewed efforts at Army laboratories to stimulate high quality, innovative research with significant opportunity for payoff to Army warfighting capability.

Work in the Project provides a foundation for applied research initiatives at the Army laboratories and research, development, and engineering centers.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project complements other Army Directed Energy efforts conducted under Program Element (PE) 0602150A (Air and Missile Defense Technology) Project DC1 (Next Generation Directed Energy Concept Development and Analysis) and Project HP1 (High Power Microwave Technology).

Research is performed by the United States Army Space and Missile Defense Command - Technical Center (USASMDC-TC) in coordination with ASA(ALT) DASA R&T, AMD-CFT, Rapid Capabilities and Critical Technologies Office (RCCTO) as well as Program Executive Office (PEO) Missiles and Space (M&S).

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2024**	**FY 2025**	**FY 2026**
Title: SMDC In-house Laboratory Independent Research (ILIR)	1.045	1.098	1.057
Description: This effort provides ILIR at USASMDC-TC. This basic research and directed energy lays the foundation for future developmental efforts on directed energy systems by identifying the fundamental principles governing various scientific phenomena with the goal of developing technologies that will significantly revolutionize Directed Energy weapon systems of the future.			
FY 2025 Plans: Concluding research effort on vertical path optical turbulence and transition to an applied research effort. Completing literature studies on the interaction of pulsed lasers with various materials. Investigating beam control techniques to enable use of a supercontinuum laser in a High Energy Laser (HEL) weapon. Examining propagation phenomena of pulsed lasers with varying parameters such as wavelength, pulse temporal width, repetition rate, and energy. Continuing the development of the fiber			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA2 / *ILIR - SMDC*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
amplifier testbed to investigate nonlinear optical phenomena that occur in these highly nonlinear optical fiber systems. Continuing the evaluation of novel ideas for suppression of nonlinear optical effects in these fibers. ***FY 2026 Plans:*** Will perform experimental measurements of gain saturation impacts on transverse modal instability (TMI) at kilowatt-class levels. Results will inform laser configurations and optimization for mitigation of nonlinear effects such as Stimulated Brillouin Scattering (SBS) , Self-Phase Modulation (SPM), Stimulated Raman Scattering (SRS), broadband light generation, and Transverse Mode Instability. Will investigate these phenomena at a fundamental level to develop suppression techniques aimed at physical root-causes. Will conduct further refinements to beam control concepts and conduct low TRL experiments at range. Results will inform areas of design and development that require further research that potentially include advanced broadband coatings and architectures for supercontinuum generation. Results will also help to resolve appropriate transition paths to applied research programs for development of a Super Continuum Laser systems for defense applications. Results will also inform applied research programs for beam control concepts for broadband ultrashort pulsed lasers. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Decrease of $0.041M reflects the efforts to foster innovation and increase efficiencies.			
Accomplishments/Planned Programs Subtotals	1.045	1.098	1.057

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA3 / *Single Investigator Basic Research*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA3: *Single Investigator Basic Research*	-	99.224	108.011	106.422	-	106.422	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project fosters extramural basic research to create and exploit new scientific discoveries and technology breakthroughs, primarily from universities, that will improve the Army's transformational capabilities. The Army maintains a strong peer-reviewed scientific research program through which leap-ahead technological solutions may be discovered, matured, and transitioned to overcome the technological barriers associated with next generation capabilities. Included are research efforts for increasing knowledge and understanding in fields related to long-term future force needs in the competency areas of Biological and Biotechnology Sciences; Electromagnetic Spectrum Sciences; Energy Sciences; Humans in Complex Systems; Mechanical Sciences; Military Information Systems; Network, Cyber, and Computational Sciences; Photonics, Electronics, and Quantum Sciences; Sciences of Extreme Materials; Terminal Effects; and Weapons Sciences. The breadth of this basic research program covers approximately 800 active, ongoing research grants and contracts with leading academic researchers and approximately 2,500 graduate students and 1,100 post-doctoral fellows yearly, supporting research at nearly 210 institutions in 50 states.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2024**	**FY 2025**	**FY 2026**
Title: Basic Research in Life Sciences	9.103	11.686	9.781
Description: This effort fosters fundamental discoveries in life sciences with the ultimate goal of facilitating the development of novel biomaterials to greatly enhance Soldier protection and performance. More specifically: i) molecular genetics research that pursues fundamental studies in molecular and systems biology, and genetics; ii) neurosciences research to investigate the physiology underlying perception, neuro-motor output, and potential methods of monitoring cognitive states during activity; iii) biochemistry research focused on studies in structural and cell biology, metabolic processes, and biophysics; iv) research in microbiology that pursues studies in microbial physiology, ecology, and evolution; v) social science research that aims to elucidate the social, cultural, and other influences to human actions; and vi) auditory and signal processing research that maps the cognitive implications of multisensory information integration.			
FY 2025 Plans: Will examine control of cellular envelope and deoxyribonucleic acid supercoiling by cellular magnesium in pathogenic species to determine mechanisms by which cellular growth can be manipulated and controlled; investigate the directed evolution of thiamine-dependent proteins into artificial metalloenzymes to enable new-to-nature chemical transformations, which may yield to novel catalytic routes for synthesis of Army-relevant energetic materials, material precursors, polymers, and composites; study the impact of gut microbial metabolites, particularly short chain fatty acids, on key cognitive and behavioral core functions (e.g.,			

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
working memory, cognitive flexibility, and response and cognitive inhibition) under acute stress conditions; identify the genes and genetic networks involved in microbial polyurethane degradation and construct optimized synthetic communities of microbes that can efficiently degrade polyurethane, that if successful will enable novel bio-based methods for extending the material lifetime. ***FY 2026 Plans:*** Will investigate a mechanistic model of incremental learning based on biological architectures that if successful will inform how the brain leverages previous learning to quickly adapt to novel tasks; analyze the similarities between traditional morphology (shape) based plant pollen identification with newer DNA-based methods on a previously unheard of scale, to generate fast, reliable, and validated methods for identifying where a sample was collected from for forensic purposes; explore the impact of manipulation of ion concentrations in a model bacteria, which, if successful, will result in new methods to manipulate and direct cell growth in synthetic biology applications; conduct research to generate an entirely new paradigm in protein synthesis for synthetic biology applications, which will allow for greater control of bioconstructs and production of non-natural biological polymers. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Decrease in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: Basic Research in Chemical Sciences ***Description:*** This effort fosters basic research to achieve advanced energy control, improved threat detection, and novel responsive materials for Soldier protection. Research efforts will lead to: light-weight, reliable, compact power sources, more effective, lower vulnerability propellants and explosives for tailored precision strikes with minimum collateral damage, new approaches for shielding the Soldier and Army platforms from ballistic, chemical, and biological threats, and reducing signatures for identification by the enemy, and advance warning of explosive, chemical, and biological weapons and dangerous industrial chemicals. ***FY 2025 Plans:*** Will investigate the adsorption of biomolecules and their reaction and transformation pathways on different mineral surfaces (i.e., oxides, clays, and carbonates) to better understand how surface-biomolecular interactions impact biomolecule transformations; design and synthesize novel two-dimensional (2D) high entropy materials capable of catalyzing both oxidation and reduction reactions for electrochemical energy conversion and storage; develop new supramolecular approaches and scaffolds that enable the ability to predictably activate chemical reactivity in response to specified external cues; design and synthesize a new class of mechanically robust adaptive polymeric materials, that if successful will enable novel materials with advanced tailorable functionalities (i.e., ability to heal and reprocess, mechanical adaptability, and mechanical defect sensing). ***FY 2026 Plans:*** Will explore the synthesis of novel electrocatalysts through the creation and high-throughput screening of mega-libraries of novel nanomaterials to accelerate the discovery of catalysts with improved efficiency and stability; examine the structure-function relationship within two-dimensional organic frameworks with electron transfer functionalities that if successful will enable synthesis	10.354	10.670	10.688

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA3 / *Single Investigator Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
of novel semiconductors with tunable properties; conduct experiments on nanoporous multifunctional membrane sorbents to identify high capacity and high affinity solutions that will enable the capture of toxic chemicals and materials for portable water purification devices; validate the use of a new light-scattering-based technique for aerosolized molecule identification which will enable a low-cost, compact, portable, and accurate method for real-time aerosol identification. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Increase in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: Basic Research in Physics ***Description:*** This effort fosters research in many subfields of physics, including condensed matter physics, optical physics, atomic and molecular physics, and quantum information, with an emphasis on discovering new realms of quantum and optical phenomena. Pursuit of fundamental physics in these subfields provides new opportunities for future developments in superior optics, ultra-sensitive sensors, and novel electronic architectures for classical and quantum computing. ***FY 2025 Plans:*** Will investigate meso-scale magnonic topological insulator materials and explore their utility to enable the first-ever assessment of topological magnon edge states and topological magnon devices; study the interplay between complex light fields and metamaterials and explore the physical properties of 3-Dimensional (3D) structured light, which if successful, may enable new paradigms in optical devices and communication systems; examine measurement-induced phase transition as a means of discovering and characterizing entanglement dynamics in quantum many-body systems; investigate magnet-less ring-resonator-based isolators and circulators for superconducting quantum devices to enable ultralow insertion loss and minimal shielding, that if successful will provide a novel approach to addressing current scaling challenges in quantum information systems. ***FY 2026 Plans:*** Will examine the ground-state properties of materials ultrastrongly coupled with vacuum electromagnetic fields in a terahertz cavity to realize, analyze, and control the spontaneous appearance of ordered phases of field-matter hybridized states; conduct research into the development of a theoretical and computational framework for the interaction of optical vortices with quantum systems such as atoms, ions and their arrays, quantum dots, and color centers; investigate emergent non-equilibrium topological phenomena and entanglement in systems of polar molecules and trapped ions, generated by harnessing and controlling dipolar and phonon mediated interactions; explore a new method to study neutral atom array architecture through the interface of an optical tweezer array of Ytterbium atoms with an optical cavity to achieve a fast, local, nondestructive mid-circuit measurement. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Increase in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.	12.929	13.194	13.231
Title: Basic Research in Electronics and Photonics	9.107	9.276	9.925

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA3 / *Single Investigator Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Description: This effort fosters discoveries in electronic sensing, optoelectronics, solid state and high frequency science, electromagnetics, microwaves, and power electronics for situational awareness, communications, information processing, electromagnetic warfare, and power efficiency. ***FY 2025 Plans:*** Will investigate the design, arrangement, and structural/optical properties of Aluminum Gallium Nitride (AlGaN) quantum dot epitaxial nanoridge waveguide laser structures, and assessment lasing operation in the mid and deep ultraviolet (UV) spectrum; investigate and design a bioelectronic synaptic system capable of neuromorphic computing capabilities to examine dynamic physiological profiles in stress response, that if successful will enable a novel mechanism for stress classification and human performance monitoring; study the underlying mechanisms of shift current generation in real-world materials to enable shift-current based ultrafast photodetectors capable of operating at room temperature in the infrared (IR) spectral range; examine novel physical mechanisms permitted by the coupling of functionalities in paraelectric, ferroelectric, and magnetic two-dimensional (2D) semiconductors; explore bioelectric signaling mechanisms across different taxa to determine how these non-verbal signals facilitate communication. ***FY 2026 Plans:*** Will explore room-temperature tunable broadband photodetection via the construction of two-dimensional heterojunctions that can enable the development of a new generation of detector technology for sensing under poor visibility conditions; investigate the advantages of combining nanostructures with epitaxial ridge-waveguides that if successful will enable high power output and low threshold current in mid and deep wave laser diodes; analyze real-time cell physiology measurements to develop an artificial intelligence language model capable of translating biological signals into bi-directional, human-understandable communication systems for hybrid biological/computational top-down control of biological systems; study the effects of bioelectric signals on mammalian and microbial systems to examine the communication between the skin-gut-brain axis. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase due to revised economic assumptions.			
Title: Basic Research in Materials Sciences ***Description:*** Research that provides innovations in materials design and process through the elucidation of fundamental relationships linking composition, microstructure, defect structure, processing and properties of materials. Revolutionary materials provide support for the Army in firepower, mobility, communications, personnel protection, infrastructure and installations, and will directly affect virtually all mission areas. ***FY 2025 Plans:*** Will explore a new class of amorphous coordination polymers with tunable and programmable electronic and magnetic properties; design and synthesize liquid crystal elastomer materials with embedded photonic crystals and local head control, and study	12.074	14.073	14.092

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA3 / *Single Investigator Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
the ability of these materials to dynamically change color and/or surface texture; study the influence of electromagnetic fields on the crystallization process during ceramic material formation to better understand how crystal nucleation influences the final ceramic properties; investigate neuromorphic metasurfaces capable of performing computations using both elastic and inelastic mechanical loads, that if successful will enable materials capable of performing and adapting in extreme or remote environments where conventional electronics and associated equipment may be prohibitive or impossible to utilize; study the impact of municipal development and atmospheric phenomena on mass, energy, and momentum exchange processes in urban environments, that if successful will help predict urban climate variability. ***FY 2026 Plans:*** Will investigate the creation of novel photoactive metal-organic chalcogenolate semiconductors and tuning their optical and electronic properties to create unusual and transformational capabilities that if successful will yield a new field of optoelectronic devices; explore the ability of a photon avalanche upconversion technique to create nanostructures within the volume of soft materials without the use of expensive high powered femtosecond lasers and with structural resolution below the diffraction limit of light; examine the relationships between interface structure, strain mediating interfactial line defects, and their activation energy during sintering to better understand microstructure formation and grain size density trajectory within the sintering process; investigate the interactions of impact-generated shock waves in gradient compositions and architectures that if successful will lead to alloys and microstructure systems resistant to damage under extreme blast loading and high strain rate impact; study the effect of electrokinetically precipitated crystals on the properties and behavior of coarse-grained soils that will identify parameters related to soil binding, porosity, and mass transfer. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Increase in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: Basic Research in Mechanical Sciences	11.001	11.023	12.061
Description: This effort focuses on improved understanding of propulsion and combustion for improved efficiency and fuel flexibility, energetics initiation for insensitive munitions, fluid dynamics for rotorcraft, complex dynamic systems for novel sensors, energy generation and multi-dimensional systems, and solid mechanics especially at high strain rates in composite materials for novel armor and protection systems. ***FY 2025 Plans:*** Will develop a new random probability distribution modeling framework that enables the systematic description and integration of model uncertainties in molecular dynamics simulations, that if successful will provide simulation-based predictive capabilities for robust material design and multiscale mechanistic studies; investigate the principles of dissipative self-assembly and space-time synchronization in collections of self-spinning motors that may enable new concepts in topological active matter; develop network theoretic methodologies and models to better understand the fundamental and dominant pathways of energy transfer and the inter-connectedness of energy transfer interactions in complex vortex-dominated flows; investigate the interaction of low-			

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
frequency shockwaves and laminar separation bubbles for a range of Mach numbers to determine the physical mechanisms of bubble bursting and compressibility effects; examine the role of nonlinear solid mechanics and irreversible deformations in phase separation that if successful could permit autonomous patterning of synthetic structural materials. ***FY 2026 Plans:*** Will investigate the underlying physics of wind-particle-blade interactions and assess the impact of air-sand two phase flows on the aerodynamic performance of rotor blades in different operational conditions via laboratory experiments and theoretical interpretation; explore the role of astrocytes in neural circuits to design energy efficient brain-like machine learning algorithms and hardware for autonomous control of complex dynamic mechanical systems; examine the use of fractional-order calculus to describe multiscale and multi-physics fatigue dynamics to understand material lifetime and improve the reliability of vehicles and structures; conduct research to improve understanding of fundamental high strain-rate damage propagation mechanisms in heterogeneous anisotropic materials by quantifying processing-structure-property relationships; explore novel diagnostic and analysis techniques to examine the effects of shock-wave boundary-layer interaction fluctuations as a function of Reynolds number. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase due to revised economic assumptions.			
Title: Basic Research in Computing Sciences ***Description:*** This effort provides the backbone for performing complex, multi-system analysis, modeling, and simulation for understanding information systems. Advancements in computer sciences have a direct impact on enhancing the Warfighters' decision-making and situation awareness. ***FY 2025 Plans:*** Will develop machine learning algorithms capable of accurately processing highly uncertain data and mathematically guaranteeing well-calibrated predictions under practical conditions; create robust machine learning models that can analyze and learn relationships across data input components and develop methods for enforcing consistencies when making inferences relating to security, that if successful will significantly harden data models for better cyber resiliency; develop new estimation methodologies and algorithms for learning a model of dynamic decisions with hidden states, that if successful could improve predictions of the state of the environment and the human decision makers, allowing intelligent agents to devise more effective strategies to assist human teammates; develop a unified framework for cooperative lifelong learning theory and practice that if successful will permit adaptable, computation-efficient multimodal information fusion systems. ***FY 2026 Plans:*** Will explore new algorithms to quantify uncertainty in machine learning, employing rigorous theoretical guarantees and complex, realistic datasets to efficiently verify and improve calibration and identify anomalies; examine a novel framework for relational reinforcement learning, which leverages learning by inducing logical relationships from the environment and agent actions,	7.174	7.389	7.401

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA3 / *Single Investigator Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
to better develop human-assisted machine learning without overburdening the human involved in the training; investigate an information-theoretic framework and systematic tools to ensure generalization of learning algorithms for novel data and the robustness of these algorithms to adversarial attacks in a federated learning setting; conduct research to identify theory and algorithms that underlie proactive mechanisms to suppress information leakage from autonomous systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Increase in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: Basic Research In Network Sciences ***Description:*** This effort focuses on gaining an understanding of the fundamental aspects of how networks develop, function, and adapt to the environment and the rate of information flow in man-made and naturally occurring networks. This understanding will have a direct impact on net-centric force operations, such as better communication system design and operations, and more efficient logistics or communications support. ***FY 2025 Plans:*** Will develop new models, based on algorithmic game theory and machine learning, capable of strategic decision making in adversarial environments marked by uncertainty and information asymmetry; identify metrics, tools, and methods to enhance network resilience that accounts for scenarios with different amounts of knowledge and leverages variable actuation and network topologies, that if successful will provide insights into mechanisms for hardening and securing communication networks; design both supervised and unsupervised advanced machine learning algorithms to solve the optimal allocation problem in fragmented mobile networks; examine the combination of fundamental insights and models of team behavior from the social sciences with machine learn and dynamical systems methods to develop a theory of human-artificial intelligence (AI) team coordination in complex cognitive tasks; investigate the integration of deep neural networks with relational, symbolic representations from classical AI to leverage positive attributes of both that if successful will enable more flexible, robust, and adaptive AI; explore deep learning as a tool for the design of novel communication algorithms capable of extended range, increased reliability, and adaptation; investigate a non-Markovian model-based reinforcement learning framework that if successful will permit enhanced safety and reliable control of autonomous systems and cyber-physical systems. ***FY 2026 Plans:*** Will explore artificial intelligence and machine learning techniques to dynamically model social networks and the connections across such networks that if successful will enable predictive models of support and influence; analyze multiple-input multiple-output dynamic metasurface antennas for signal processing algorithms, acquisition, and design to improve ad hoc wireless communications; investigate the mathematical basis of machine learning with neural networks from geometric and algebraic perspectives that will inform the creation of robust and interpretable machine learning systems; explore the concept of controller-attacker games and the development and inclusion of cost models into the mission planner to help autonomous multi agent systems determine which strategies to adopt when an attacker is identified; explore a novel data-efficient learning framework that	9.791	13.132	13.149

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA3 / *Single Investigator Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
leverages robust learning algorithms to fuse sensing, computing, communication and control in a multi-agent network; conduct research on graph generation techniques and temporal relational logic using high-fidelity simulation systems that if successful will enable accurate depictions of real-word scenes with domain-specific properties for future training simulations; investigate novel algorithms based on understudied multi-agent scenarios involving symmetric game agents and teams of game agents that if successful will enable more efficient learning dynamics for multi-agent reinforcement learning. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Increase in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: Basic Research in Mathematical Sciences	7.034	8.229	8.240
Description: This effort fosters the creation of new mathematical tools and methods for performing complex, multi-system analysis and modeling to enhance Soldier and weapon-system performance. More specifically, the focus is on creating mathematical principles and practical algorithms for stochastic analysis and control, analysis and control of biological systems, numerical computation of infinite-dimensional systems, and modeling of irregular geometric and social phenomena. ***FY 2025 Plans:*** Will develop mathematical models to study the information processing capability of coupled guanosine triphosphate hydrolase enzyme (GTPase) switches which will enable critical insights into the biochemical and/or mechanochemical events that enable precision in cellular decision-making; explore the integration of statistical mechanics with physics-informed machine learning to enable learned coarse-grained non-equilibrium macroscale models with enhanced accuracy and extrapolative power; employ ideas and techniques from noncommutative geometry to advance the understanding of quantum transforms, explore new avenues of constructing new periodic and non-periodic systems, and investigate the mathematical structures that underly exotic states of matter which may have important implications for the discovery of new materials; examine origami structures to derive a general theoretical design framework that if successful will inform engineering design capable of scaling across multiple orders of magnitude; investigate complex turbulent systems with pre-determined physics to develop robust nonlinear stochastic forecast and data assimilation models. ***FY 2026 Plans:*** Will investigate the evolution and maintenance of cooperation and collaborative intelligence in natural (i.e., animal) and designed (i.e., robot swarm) systems under dynamic conditions to develop comprehensive mathematical foundations for balancing the trade-offs, where they exist, between optimizing individual and holistic group performance; investigate a spacetime adaptive multi-resolution wavelet method for predictive science, focusing on verified simulations of partial differential equations with multiple spatial and temporal scales that if successful will create precise and predictive modeling frameworks; explore a new paradigm for nonlinear dimensionality reduction and manifold learning by combining a functional manifold hypothesis and optimal transport theory leading to a suite of new nonlinear dimensionality reduction algorithms which are useful in various imaging applications; explore novel mathematical and machine learning approaches to examine the growth dynamics and interactions between			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA3 / *Single Investigator Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
organisms in a community that if successful will inform human-machine partnerships; conduct research that examines variational quantum algorithms as a potential quantum-resource approach to solving electronic structure problems that if successful will inform the development of quantum computing devices. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Increase in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: HBCU/MI Single Investigator ***Description:*** This effort supports extramural basic research to create and exploit new scientific discoveries from Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) that will improve the Army's transformational capabilities. Areas of interest include chemical sciences, computing sciences, electronics and photonics, life sciences, material sciences, mathematical sciences, mechanical sciences, network sciences, and physics. ***FY 2025 Plans:*** Will expand the research base of partner institutions particularly among R2 and HBCU performers, targeting principal investigators new to the Army to provide increased knowledge and understanding in fields related to long-term future force needs; continue supporting faculty immersion program where HBCU/MI faculty are aligned with R1 universities and Army research laboratories in order to grow organic research capabilities at the HBCU/MI institutions and contribute to the long-term Army modernization priority needs; continue to increase infrastructure and research support to establish true partnerships and expand capacity at HBCU/MI institutions. ***FY 2026 Plans:*** Will expand research capabilities at HBCU/MI institutions to enable the study of multi-phase, multi-component flows, that if successful will provide new capabilities ranging from more efficient injection, vaporization, and combustion of liquid fuels to ablative shape change effects for hypersonic vehicles; explore protein conformational structure to enable the study of higher-order assembly processes of fiber formation that is expected to provide the foundation for a new class of tough biomaterials that controllably switch between highly flexible and rigid based on hydration status; enable the Army to engage underrepresented partners in basic scientific research relevant to Army-determined competencies and requirements; provide opportunities for HBCU/MI faculty to build an understanding of Army science and research needs through collaborative research with Army researchers and R1 universities. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Decrease in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.	4.992	3.225	2.953
Title: Energy Sciences ***Description:*** This effort supports studies to enable the design of novel materials for energy storage and generation through development of isomers where manipulations to half-life enables the molecules' energy to be harvested, the creation of multi-fuel	2.731	2.607	1.824

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA3 / *Single Investigator Basic Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
tolerant electrodes for fuel cells and batteries to avoid contaminant poisoning while preventing electrode degradation, and the emergence of multivalent electrode chemistries and their electrolytes to achieve a higher capacity battery without issues related to dendrite formation, electrode degradation, and long life as a recharge asset. ***FY 2025 Plans:*** Will explore the synthesis and characterization of new materials, taking advantage of the multi-pathway conductive nature of rare earth oxides towards novel single-phase oxides suitable for electrode and electrocatalytic applications such as novel batteries and fuel cells; conduct research on reversible non-passivated electrodeposition of highly reducing multi-electron redox couples to enable use of these materials to achieve high-capacity systems; investigate mechanisms to achieve half-life modification of materials that allow for energy release on demand by understanding how to manipulate those materials by electron interactions affecting their energy states. ***FY 2026 Plans:*** Will examine the fundamental mechanisms of two-dimensional high entropy oxides utilizing a multi-disciplinary approach to identify new electrocatalysts that if successful could increase performance and functionality of electrochemical energy conversion devices; explore the mechanisms for the high conductivity observed in double perovskite materials that if successful would provide a framework to identify and tailor mixed ion-electron conducting ceramics applicable to high temperature energy conversion applications; investigate the underlying mechanisms behind ionic storage and pseudocapacitive phenomenon for aqueous zinc ion batteries through a combined experimental and theoretical approach that would inform materials advancement and novel battery design. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Decrease in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: HBCU/MI Early Career Award for Science and Engineering	0.978	1.503	1.261
Description: The HBCU/MI Early Career Award for Science and Engineering (HBCU/MI ECASE) is modeled from the Presidential Early Career Award for Science and Engineering (PECASE) award, which embodies the high priority placed by the government on maintaining the leadership position of the United States in science by producing outstanding scientists and engineers and nurturing their continued development. The HBCU/MI ECASE awards will specifically seek outstanding U.S. citizen scientists and engineers beginning their careers at HBCU/MIs. Each award will provide significant support for students and internships within DEVCOM ARL or at Army-funded academic laboratories. ***FY 2025 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will continue supporting basic research contributing to Army modernization needs conducted by outstanding scientists and engineers beginning their careers at HBCU/MI institutions through HBCU/MI Early Career Awards at a cost of $1.1875M each over a duration of 5 years. ***FY 2026 Plans:*** Will continue supporting basic research contributing to Army modernization needs conducted by outstanding scientists and engineers beginning their careers at HBCU/MI institutions, through HBCU/MI Early Career Awards with a duration of five years. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Decrease in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.			
Title: Minerva Research Initiative (MRI) ***Description:*** The MRI is a university-based social science research program initiated by the Secretary of Defense. It focuses on areas in the social sciences of strategic importance to national security policy. It seeks to increase the Department's intellectual capital in basic social science research to address future challenges by bringing together universities in multidisciplinary approaches to address global social and geopolitical questions. MRI will bring together universities, research institutions, and individual scholars to support multidisciplinary and cross-institutional projects addressing specific topic areas determined by the Department. ***FY 2025 Plans:*** Will support fundamental research to understand and model the cross-level influences ranging from individuals to small groups to large populations on emergence and sustainment of factors predictive of nation-state and non nation-state characteristics (such as stability, interests, and potential for conflict). ***FY 2026 Plans:*** Will explore the benefits of semantic foundations and formal methods for the synthesis and formal analysis of evolutionary system-of-system decision models related to institutional governance and organizational trust; examine the impacts of territorial and maritime expansion to inform theoretical and empirical insights on the dynamics between global actors. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Decrease in FY 2026 funding from the previous PB to the current PB due to revised economic assumptions.	1.956	2.004	1.816
Accomplishments/Planned Programs Subtotals	99.224	108.011	106.422

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA4 / *Training and Human Science Research*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA4: *Training and Human Science Research*	-	20.583	19.865	13.630	-	13.630	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project focuses on research that improves Soldier-system performance in future force environments by looking at key phenomena underlying Soldier integration with intelligent technologies and autonomous agents. This Project researches optimal methods for information exchange between Soldiers and intelligent technologies including 1) human performance in automated, mixed-initiative (human control-machine control) environments; 2) visual scanning and target detection; 3) performance-related Soldier state changes; 4) integration across multiple sensory modalities; and 5) collaborative (team) and independent multi-task, multi-modal, multi-echelon Soldier-system performance - all cast against the influx of emerging intelligent technologies and autonomous systems. Technical solutions are being pursued in the areas of data generation and algorithm development in these emerging environments in order to update and improve our understanding of performance boundaries and requirements. These solutions include multi-disciplinary partnerships, metrics, simulation capabilities, and modeling tools for characterizing Soldier-system performance, and provide a shared conceptual and operational framework for militarily relevant research on critical aspects of human-agent teaming.

In the area of translational neuroscience, research is carried out to examine leading edge methodologies and technologies to improve the measurement and classification of neural states and behavior in operationally-relevant environments; to examine the potential for application of neuroscience theories to autonomous systems to improve Soldier-system interactions; to model the relationship between brain structure and cognitive performance for understanding individual differences and injury; and to assess how neural pathways implicated in functional processing can be enhanced through dynamic system interface technologies for improving in-theatre performance and training.

In the area of cybernetics, which is a scientific discipline that bridges the fields of control theory and communication theory for the study and modeling of behavior in complex systems, research is carried out to examine the complex human-system-environment relationships that define, constrain, and influence the interactions between Soldier and system. Research efforts are pursued to advance theory, models, and methodological approaches that capture the dynamic and multidimensional nature of human behavior, including the temporal dependencies inherent to human behavior, through an integrated program of research efforts focused on: novel cybernetic models of human multisensory integration and human-system communication; neuro-inspired, bio-inspired, and engineering approaches to computational algorithms for multisensory integration and multi-sensor fusion to enable enhanced and augmented Soldier perception in human-system interactions; new methodological approaches for the design of multisensory displays and human-system communications; and multisensory test bed platforms for examining experimental hypotheses driven by model predictions and proof-of-principle applications of identified algorithms and methods.

This Project also investigates innovative theories, models, and methods to improve personnel assessment, training, and leader development, as well as provide a better understanding of individual, unit, and organizational behavior and performance within the context of complex organizational and operational environments. The research within these domains will enable advances in psychometrics to support the development of the next generation of psychological assessments for selection, classification, and assignment. The research also will target how to improve the assessment of difficult-to-measure skills and enable theoretical advances to inform and support the

accelerated development of complex cognitive and social skills. This research lays the foundation for future applications that address the behavioral and organizational dynamics that impact Army flexibility, effectiveness, and resilience.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Army modernization strategy, and the Army People Strategy.

Work is performed by the Army Research Laboratory (ARL), and Army Research Institute for the Behavioral and Social Sciences (ARI).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Translational Neuroscience	4.326	4.329	4.114
Description: This effort integrates neuroscience with traditional approaches to understanding Soldier behavior to enable system designs that maximize Soldier performance. ***FY 2025 Plans:*** Will expand simulation models to generate novel abstract mapping relationships that go beyond what has been observed in mammalian brain activity; expand the capabilities of brain inspired spatial reasoning neuronal networks to include tasks that require flexibility and adaptation; explore the translation of breakthroughs in understanding multi-timescale and time-invariant mathematical relationships in the brain to represent human technology coordination. ***FY 2026 Plans:*** Will expand neuro-inspired neuronal networks to perform better than deep networks on a spatial reasoning; create first of their kind topology informed neuronal networks to understand mixed formation performance; expand algorithms for multi-timescale mathematical relationships to include multiple humans and machines; develop simulations of spatial reasoning brain systems to expanding cognitive representations of spatial knowledge. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Human System Integration	4.158	4.048	-
Description: This effort applies a cybernetic approach (i.e., a theoretical study and comparison of communication and control processes in biological and artificial systems) to human systems integration to achieve tighter control of devices and communications among humans and between machines and humans. Use social, computational, and informational approaches to extend the scope of interaction beyond individual systems to the full network context. ***FY 2025 Plans:*** Will investigate extending single agent human-guided machine learning techniques to multi-agent reinforcement learning settings; explore novel approaches to integrate generative language models and human feedback to speed up learning; create algorithms			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
to incorporate ranking-based feedback from small groups of humans for the adaptation of multi-agent systems; explore ensemble-based techniques to improve uncertainty-based reasoning for human-guided machine learning. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Agile University Tech Collaborative Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Continuous Multi-Faceted Soldier Characterization for Adaptive Technologies ***Description:*** This effort investigates technologies that provide the foundation for future Army systems to adapt to individual Soldier states, behaviors, and intentions in real-time. Enable high fidelity, continuous prediction that can account for continuous changes in Soldier physical, cognitive, and social states, such as stress, fatigue, task difficulty, trust, and situational awareness. ***FY 2025 Plans:*** Will explore initial ideas for the application of theory-driven approaches and methods to the analysis of very large datasets to identify the potential for generalizability of approaches across a wide range of human-centric data sets; assess computational/ statistical models consistent with a theory-driven Big Data framework to establish initial empirical baselines. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Agile University Tech Collaborative Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology and PE 0601102A (Defense Research Sciences) / Project AA9 (Information and Networking) to support Human-Agent Interactions and Trust for Scalable Cross-echelon Command and Control.	3.194	2.062	-
Title: Novel Forms of Joint Human-Intelligent Agent Decision Making ***Description:*** This effort investigates methods for joint human/intelligent agent learning and decision making so that strengths of individual humans and intelligent agents are accentuated and weaknesses are mitigated for improved, emergent group performance. This effort emphasizes deep learning approaches that function under conditions of limited, mismatched, or dynamic data. ***FY 2025 Plans:*** Will investigate distributed forms of information processing where joint human-intelligent agent decision making is performed while aggregating informational elements from many human and non-human sources. ***FY 2026 Plans:***	1.044	1.068	1.063

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Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA4 / *Training and Human Science Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will investigate potential vulnerable vectors in information processing and subsequently decision making in human-intelligent agent collectives, where aggregation of informational elements is fundamental to the decision. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Hybridization of Team Thinking ***Description:*** This effort merges novel advances in human-system sciences with neuroscience and training sciences to reconceive human brain processes and optimize human-machine thinking to allow humans to influence technology enabled decisions previously believed to be outside of human capabilities. The effort aims to optimize how humans could think within complex human-technology ecosystems to maximize human potential to adapt the Army on the battlefield. ***FY 2025 Plans:*** Will investigate large-scale, multi-human, multi-agent complex decisions that require many diverse and complex subtasks; perform experiments that target surveying a large decision space and rapidly settle on creative solutions in a hybrid human-technology complex scenario; investigate avenues of decision correction with rapidly evolving contextual and/or environmental changes across a hybrid human-technology team composed of many humans and intelligent entities. ***FY 2026 Plans:*** Will investigate algorithms that leverage crowd-sourced human feedback to refine and improve multi-agent machine learning systems; investigate approaches to organize hybrid human-machine thinking based on artificial intelligence (AI) inferred human knowledge, skills, and abilities; investigate hybrid human-AI approaches to harness collective insights for dynamic adaptation in rapidly evolving contexts. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase due to revised economic assumptions.	2.865	3.142	3.350
Title: Science of Measurement of Individuals and Collectives ***Description:*** This basic research effort develops advanced psychometric theory and measurement of Soldiers and teams in order to maximize talent management. ***FY 2025 Plans:*** Will conduct research on novel approaches to assess multiple cognitive (e.g., ability to learn new information) and non-cognitive (e.g., personality) constructs; will conduct research to improve prediction of individual and team performance. ***FY 2026 Plans:***	2.041	2.107	2.031

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA4 / *Training and Human Science Research*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will advance psychometric theory and methods to measure more complex types of individual and collective behavior and performance data within dynamic environments. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to planned lifecycle of this effort.			
Title: Understanding Multilevel and Organizational Dynamics ***Description:*** This basic research effort develops advanced methods and models to understand the relationship of human states, traits, and behaviors on individual, group, and organizational dynamics. ***FY 2025 Plans:*** Will conduct research to improve scientific models of organizational functioning (e.g., team and multi-team performance and organizational effectiveness). ***FY 2026 Plans:*** Will conduct research on emerging trends in career decision making and its impact on organizational systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to planned lifecycle of this effort.	1.941	2.079	2.027
Title: Formal and Informal Learning and Development ***Description:*** This basic research effort develops a holistic model to understand and inform individual and group learning across assignments, platforms, and contexts throughout the career span. ***FY 2025 Plans:*** Will conduct research to optimize learning and development across the lifecycle of a Soldier's career. ***FY 2026 Plans:*** Will develop and update theories and models of individual and collective learning to fuel individual, team, and organization learning outcomes. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase due to revised economic assumptions.	1.014	1.030	1.045
Accomplishments/Planned Programs Subtotals	20.583	19.865	13.630

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA4 / *Training and Human Science Research*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA5 / *Biotechnology and Systems Biology*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA5: *Biotechnology and Systems Biology*	-	6.499	8.999	8.867	-	8.867	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project conducts fundamental research of biological systems and materials engineered for transformational Army capabilities. This Project focuses on technical core competencies including: Materials from Biology; Biological/Abiological Interfaces; Systems Biology; Computational Biology; Synthetic Biology, and how those competencies address Army needs to reduce logistics burden, increase situational awareness, and improve protection. Research will advance from manipulation of single microorganisms to designed microbial consortia for conversion of flexible feedstocks (indigenous and waste) into consistent products for energy and agile expedient manufacturing; advancing from the production of individual small molecules to gradient/precision/specialty materials for production of hierarchical and metamaterials for sensing and protection; and advance from laboratory use to ruggedized organisms and materials for field deployment enabling dynamic, responsive materials, advanced sensing, and materiel protection/denial. Further, understanding the state-of-the-art in genetic engineering and control of biological systems in military environments will allow for understanding the pacing synthetic biology threat to the future operating environment.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Engineered Biotechnology	2.768	2.873	2.861
Description: This effort investigates biological materials for devices and sensors that can be used in the future by the Army to improve force protection and reduce logistical burden. Investigates biological construction of novel materials, structures, and processes for future development of biologically derived materials, sensing materials, information processing, and power and energy to transcend critical gaps in adaptability, manufacturability, and stability in Army relevant environments.			
FY 2025 Plans: Will explore the effects of altering communities of environmental microbes to achieve predictable responses and build an understanding of community interactions towards predictive models; continue to investigate sense and respond processes and mechanisms in modulated organisms and identify targeted affects for models; identify novel pathways from natural organisms for modulation of environmental microbial communities.			
FY 2026 Plans: Will explore the temporal and spatial effects of altering communities of altered environmental microbes to understand control of desired behavior towards predictive models; mature sense and respond processes of modulated organisms with a focus to			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA5 / *Biotechnology and Systems Biology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
understand the effect on natural community dynamics; continue to identify and characterize novel pathways, enzymes, and molecules from natural organisms for modulation of microbial communities associated with Army systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Synthetic Biology for Dynamic Materials ***Description:*** This effort researches the concept of responsive materials imparting living functions for operation in Army-relevant environments to enable disruptive capabilities, such as self-healing, adaptation, protection, and situational awareness. Perform research to enable design and synthesis of materials both enabled by and including biological entities to provide these living functions. ***FY 2025 Plans:*** Will use synthetic biology to investigate and tune novel sense and reporter mechanisms to expand range of processes for modulation of organisms; study the effects of control mechanisms on the temporal and spatial control of the new sense and respond mechanisms in organisms across Army environments; study how sense and respond mechanisms affect organisms and their environment over time and distance; continue to investigate synthetic biology tools for in situ modification of microbial communities and study specificity, stability, and control of these tools. ***FY 2026 Plans:*** Will continue to study the dynamic response of genetic control mechanisms in indigenous organisms; inform and validate models of how sense and respond mechanisms affect organisms and their environment over time and distance; study the orthogonal properties of novel sense and reporter mechanisms through comparative characterization across representative indigenous organism families; explore synthetic biology tools for in situ modification of microbial communities with a focus on studying temporal and spatial persistence of the biological products and effects. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	3.731	3.754	3.647
Title: Complex Adaptive Mechanisms ***Description:*** Multi-disciplinary effort to understand and characterize emerging energy field biological effects to address the need to develop a mechanistic understanding, from the molecular/cellular level and beyond, which energy delivery can produce tracible biological effects. Discover transformational mechanisms by which energy fields affect biological function or structure, via experimentation, modeling, and simulation. Create knowledge products and materials towards sensors, Soldier protection, energy scavenging, and other adaptive measures. Integrate physical and biological models with experimentation to understand energy propagation, coupling, and effects on biological materials and systems.	-	2.372	2.359

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA5 / *Biotechnology and Systems Biology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2025 Plans: Will establish laboratory facilities and equipment to investigate biological effects from energy fields; conduct initial laboratory experimentation at the molecular/cellular level to discover the mechanisms by which energy fields at frequencies higher than typically characterized in biological studies affect biological functions such as charge transfer; conduct initial assessment of laboratory data compared to ongoing modeling/simulation. ***FY 2026 Plans:*** Will conduct comprehensive laboratory experiments at the molecular and cellular level to identify mechanisms by which energy fields interact with biological function; investigate additional input waveforms identified by modeling and simulation and examine biological effects from those novel energy fields; conduct initial biological experiments using a multi-omics approach. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Accomplishments/Planned Programs Subtotals	6.499	8.999	8.867

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA6 / *Robotics and Mobile Energy*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA6: *Robotics and Mobile Energy*	-	24.774	13.761	10.772	-	10.772	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project fosters basic research to expand the Army's capabilities in the area of propulsion, platform mechanics, and autonomous air and ground platforms. This includes research to enable the investigation of risk-based design methodologies and control algorithms for enduring operation of rotorcraft and ground vehicles, artificial intelligence, and novel mobility mechanics to enable robotic systems to serve as productive embodied teaming agents. This effort researches propulsion and alternative energy systems to increase the reliability, efficiency, and survivability of air and/or ground platforms.

This Project also conducts research in support of advanced military vehicle technology with emphasis on sophisticated vehicle dynamics and simulation, vehicle-terrain interaction, vehicle control, and advanced track and suspension concepts. Advanced propulsion research will dramatically improve power density, performance, and thermal efficiency for advanced engines, transient heat transfer, high temperature materials, and thermodynamics. This Project also supports state-of-the-art simulation technologies to achieve a more fundamental understanding of advanced mobility concepts. The subject research is directed at unique, state-of-the-art phenomena in specific areas such as: non-linear ground vehicle control algorithms, using off-road terrain characteristics; and unique mobility approaches, using advanced analytical and experimental procedures.

The work in this Project supports Program Element (PE) 0602148A (Future Vertical Lift Technology), PE 0602145A (Next Generation Combat Vehicle Technology), and PE 0601104A (University and Industry Rsch Ctrs).

Work in this Project is performed by the Army Research Laboratory (ARL), Aviation and Missile Center (AvMC), and Ground Vehicle Systems Center (GVSC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Vehicle Propulsion and Power Research ***Description:*** Basic research to investigate concepts and theories to provide enhanced tools, methods, and innovative concepts to enable improvements in propulsion power density, energy efficiency, reliability, and lifecycle costs for increased performance and capabilities in future Army systems.	1.673	-	-
Title: Novel multi-fuel tolerant small vehicle power ***Description:*** Basic research to enable highly efficient, multi-fuel conversion in small engines with reduced sensitivity to fuel property variation and extreme ambient conditions. This includes research to characterize and investigate extreme fuel properties on ignition chemistry, variable spark enabling concepts for robust ignition, and lightweight highly durable materials for reduced heat loss and wear characteristics.	3.101	-	-
Title: Fundamentals for Alternative Energy	0.985	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA6 / *Robotics and Mobile Energy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Description: Explore novel concepts in energy generation and capture in technologies for efficient conversion of ambient energy to electrical energy for use and storage. Design novel structures to include microscale power devices for multimodal harvesting and efficient distributed power conversion. Focus areas include: energy storage and release from atomic nuclei, new electrochemical materials and processes for energy storage and conversion, and new approaches for solar energy harvesting.			
Title: Reconfigurable Platform Mechanics and Propulsion ***Description:*** Basic research in reconfigurable platform mechanics and propulsion science to investigate technologies to enable subsystem configuration concepts for efficient hover and high-speed/range Vertical Take-Off and Landing (VTOL) aircraft.	1.040	-	-
Title: Robotics Autonomy and Human Robotic Interface Research ***Description:*** Basic research focused on enabling robust autonomous mobility for small and human-scale robotic systems, including autonomous teaming behavior with hybrid human-robotic teams. Enablers for robust autonomous mobility include planning, behaviors, energy efficient maneuver, and the interface of manipulation technologies to support manned-unmanned teaming constructs. ***FY 2025 Plans:*** Will validate algorithms that enable autonomous energy distribution between ground and air vehicles for sustained increase in operational duration; investigate algorithms for optimized vehicle route planning for robot teams which factor in energy availability into mission constraints; conduct experiments for alternative power generation methods that will extend autonomous vehicle endurance in uncertain and contested environments; explore methods of whole body manipulation autonomy for improved energy awareness. ***FY 2026 Plans:*** Will study context aware, resource constrained mission planning methodologies that take into consideration electricity availability, battery charge, and fuel-based mobility costs for state estimation in the planning and execution of multi-robot missions; research thermal energy converters that offer electrical power generation from combustible fuel sources in contested environments; investigate reinforcement learning techniques for manipulation behavior development to improve speed and accuracy of dynamic task execution. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase due to revised economic assumptions.	1.841	1.889	1.894
Title: Intelligent Systems ***Description:*** Pursue research in autonomous systems that supports and unburdens Soldiers in a flexible, robust, survivable, and comprehensive manner. This work addresses the cognitive requirements of humans and (non-human) agents, both hardware and	6.522	6.801	2.803

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA6 / *Robotics and Mobile Energy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
software based, operating individually or in collaboration, on the battlefield. Emphasis is placed on perception, reasoning, and collaboration techniques that can apply to and transfer between a broad range of systems (i.e., adaptive communication and data collection networks; crowd-sourcing and information retrieval software agents; and predictive and explanatory decision support systems). ***FY 2025 Plans:*** Will explore new architectures and navigation techniques that are resilient to unexpected operational and environmental conditions; develop algorithms capable of determining salient observations over long duration (hours) of operation; develop methods and techniques for increasing robustness of state estimation with limited sensor inputs; continue to investigate novel metrics for measuring complex autonomous system performance across multiple novel system architectures; study potential applicability of limited human input for real time system adaptation; explore perception and reasoning approaches for legged robotic autonomy and methods for heterogeneous teaming for multi-domain maneuver. ***FY 2026 Plans:*** Will develop algorithms capable of reasoning over partial environmental observations and predicting terrain beyond sensor field of view based on similar data; investigate methods and techniques that allow systems to learn from unconstrained prior experiences and adapt mobility and manipulation capabilities in the presence of unstructured, dynamic environments. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding realigned to support the creation of Resilient Multi-Agent Autonomy for Resilient Autonomous Agents within this Project.			
Title: Structurally-Adaptive Unmanned Air Systems Research ***Description:*** Basic research focused on topics that contribute to the body of knowledge required to create future intelligent, unmanned air systems that can effectively team with manned and unmanned aircraft, ground platforms, and human teammates. Emphasis is placed on topics of control and aeromechanics that expand the operational envelope for unmanned systems and enable maneuverability in complex, interactive, and mission relevant environments. ***FY 2025 Plans:*** Will investigate modeling and simulation software tools to enable structural, aerodynamic, and power and energy analysis of new concepts for small unmanned aerial systems (UAS) that include reconfigurable and resilient structures, super maneuverability, and extreme endurance; conduct basic experimental fluid mechanics studies leveraging dynamic model positioning to allow for the integration of control schemes in an aerodynamic test environment; investigate relevant unsteady fluid dynamics and structural responses to inform basic understanding of dynamic maneuvers like perching or small UAS at extreme range; investigate controls methods for extending small UAS mission life to include landing on a moving vehicle for energy resupply; explore topology	3.184	3.269	2.214

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
optimization tools to design a small UAS wing and/or tail reconfiguration in air to take advantage of environmental conditions to extend the range. ***FY 2026 Plans:*** Will investigate dynamic maneuvers of small unmanned aerial systems (UAS) with a focus on the impact of disturbances, turbulence, gusts, and other environmental uncertainties; study fundamental vehicle dynamics, control, aerodynamic interactions, optimization techniques, and simplified models required for the creation of physics-based simulation and design environments; investigate cutting edge tools like machine learning combined with simple, low-order models to develop a better understanding of vehicle dynamics, UAS operating environments, and methods of mitigating uncertainty and unsteadiness. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Air Mobility ***Description:*** Create robust experimental and computational approaches for understanding, modeling, and predicting the complex fluid flow and aerodynamics of next generation rotorcraft concepts. This research includes innovative numerical methods for capturing the details of steady state and non-steady state aerodynamics and acoustics occurring with multi-rotor, rotor-propeller, and rotor hub configurations; and associated experimental techniques needed to verify modeling results. ***FY 2025 Plans:*** Will execute fundamental research in rotary-wing aeromechanics to lay the foundation for technologies relevant to future vertical lift such as advanced flow diagnostics and control techniques and automation for high-performance computing; conduct experimental measurements of interactional aerodynamics of multi-rotor and rotor-propeller configurations to validate complementary high-fidelity computational fluid dynamics simulations. ***FY 2026 Plans:*** Will continue computational aero-science investigations aimed at developing novel numerical methods for rotary-wing unique flow phenomena leveraging fundamental experiments on vortex wake stability to validate these methods; conduct systematic experimental investigations of multi-rotor configurations, including tandem, side-by-side, and coaxial rotors, to better understand the interactional aerodynamics using pioneering flow measurement techniques. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	2.715	1.802	1.559
Title: Advanced Mathematical Algorithms for Improved Vehicle Efficiency ***Description:*** Research in support of advanced military mobility technologies with emphasis on Terramechanics (vehicle-terrain interaction), and complex vehicle dynamics and simulation. This includes developing the data and underlying models to simulate and predict autonomous vehicle mobility in soft soil and complex organic terrain under a variety of environments. Research is	0.787	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA6 / *Robotics and Mobile Energy*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
directed at understanding advanced mathematical and computational methodologies using state-of-the-art analytical and empirical procedures.			
Title: Foundational Energy for Sustained Operations ***Description:*** Explore novel concepts in safe, domestic, high energy density storage and generation to meet and sustain the increasing energy needs of current and future Army technologies such as realizing electrification for autonomous systems, silent watch, and mounted/dismounted platforms. Conduct basic research on new materials for energy storage and generation through the exploration of isomers, multi-fuel tolerant materials, energy conversion approaches, rechargeable multivalent batteries, and conversion cathode battery chemistries.	2.926	-	-
Title: Resilient Multi-Agent Autonomy for Resilient Autonomous Agents ***Description:*** This effort investigates new techniques in resilient multi-agent autonomy providing system-wide resilience during complex autonomous missions with multiple simultaneous goals in the face of unmodeled adversarial disruptions. This includes system-wide resilient behaviors that can anticipate, adapt, or reorganize in the face of unexpected and unmodeled disturbance, disruptions, or attacks; autonomous behaviors for anticipatory policies for sustained sufficiency, adaptations to recoup performance, and reorganization to recover from loss of functionality; and risk-aware adversarial machine learning to mitigate the risks and vulnerabilities associated with adversarial attacks on machine learning models. ***FY 2026 Plans:*** Will study artificial intelligence/machine learning (AI/ML) algorithms for accomplishing multi-objective mission, that can adopt or reorganize into viable formations; study AI/ML approaches for anticipating adversarial behaviors. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase reflects initiation of Resilient Multi-Agent Autonomy for Resilient Autonomous Agents. Funding realigned from Intelligent Systems within this Project.	-	-	2.302
Accomplishments/Planned Programs Subtotals	24.774	13.761	10.772

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA7 / *Mechanics and Ballistics*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA7: *Mechanics and Ballistics*	-	34.416	34.685	33.957	-	33.957	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project conducts basic research in materials and ballistic science to create higher performing, lighter weight, lower cost materials and processes, discover new ways to store and release chemical energy from novel energetic materials, explore fundamental chemistry and physics controlling the launch and flight of gun-launched projectiles and missiles, and understand the interaction of these weapons with armored targets, including the high deformation rate behavior of materials and the mechanics of threat impact and penetration of armored targets. Research involves the study of new experimental capabilities to measure, characterize, and visualize complex phenomena with high temporal and spatial resolutions as well as the development of state-of-the-art computational models that provide predictive capabilities based on at-scale and cross-scale numerical frameworks that capture the relevant physical phenomena. Research in atmospheric science seeks an in-depth understanding of the complex atmospheric boundary layer associated with high-resolution meteorology, the transport, dispersion, optical properties, and characterization of chemical and biological aerosols, the propagation of full-spectrum electro-magnetic and acoustic energy and physics-based multi-scale models for electronic, optical, mechanical, and chemical materials. Efforts seek to explore methodologies and computational capabilities for the quantification of uncertainty in predictive modeling enabling risk-informed decision analysis multi-scale material models and environmental impacts on complex Army systems (manned and unmanned). This research also conducts research in chemistry and physics controlling ballistic propulsion and launch; creating aerodynamic forces on flight bodies to permit radical maneuver at high speeds, and high altitude glide and flight maneuver for increased range of gun launched projectiles. This research results in knowledge products that lead to new materials for armor and armaments, disruptive explosives and propellants, more accurate and non-lethal (NL)/lethal projectiles and missiles, omnisonic maneuver of projectiles, and advanced armors for increased survivability of Army combat systems. This research also funds efforts in the characterization of chemical and biochemical phenomena occurring at or near solid surfaces and interfaces; the interactions between chemical reactions and transport processes on surfaces; theory and modeling of processes at complex surfaces; and the synthesis and characterization of catalysts that function at the nanoscale. Investment in basic research centered on the surface science disciplines will enable growth of a knowledge base that will result in improved understanding of the interactions of complex materials in real world environments.

Work in this Project supports key Army needs and provides the technical underpinnings for several PEs to include PE 0602145A (Next Generation Combat Vehicle Technology); PE 0602146A (Networks C3I Technology); PE 0602147A (Long Range Precision Fires Technology); PE 0602141A (Lethality Technology), and PE 0602143A (Soldier Lethality Technology).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is completed by the Army Research Laboratory (ARL), Armaments Center (AC), Chemical Biological Center (CBC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Protection Sciences	5.561	5.691	5.034

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Description: This effort seeks to improve fundamental knowledge of mechanisms that can be exploited to ensure the next generation of lightweight and efficient armor technologies. Provides physics-based discovery of novel Soldier protection mechanisms through increased understanding of wave propagation through tissue and the resulting deformation and damage of tissue during ballistic and blast events. ***FY 2025 Plans:*** Will investigate how mechanical, chemical, and electrical forces can be manipulated within structural and biological tissues to optimize stress management and control deformation when different forms of energy are coupled to a target; conduct experimental-computational studies to interrogate critical deformation mechanisms that govern strength and failure under extreme dynamic loading and temperatures; explore improved material properties for ballistic and warhead applications. ***FY 2026 Plans:*** Will develop theory and calculations of macro-scale deformation and damage to liver and heart; investigate processing routes to improve jet formation while minimizing localization and fragmentation; enhance models with the experimental results to accommodate thermal dependencies of the dynamic response of ultra-high molecular weight polyethylene (UHMWPE); validate model with results from an impactor launched toward UHMWPE plates at an oblique angle for next generation kinetic energy protection models. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Microscopic/Nanostructural Materials	3.498	3.582	3.573
Description: This effort explores new materials and creates new computational capabilities based upon fundamental concepts derived from studies of structure, process, and property relationships at the microscopic and nanostructural levels. Research includes synthesis, processing, characterization, and modeling of novel metal alloys and armor ceramics, including control and manipulation of nanostructural features, grain boundaries, texture, and other nano-to-microscale structure. ***FY 2025 Plans:*** Will investigate the addition of synthetic microstructures to inform a robust machine learning model that is generalizable to multiple materials systems; analyze microstructural contributions to property predictions to further fundamental understanding of the composition-process-structure-properties-performance relationships in metal alloys and armor ceramics. ***FY 2026 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will expand and refine a machine learning model to enable descriptions of multi-stage materials processing routes, and to include materials systems with sparse training datasets; establish mechanistic understanding of hydrodynamic flow and defect generation in consolidation and joining of high strength and refractory materials. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: High Deformation Rate Materials ***Description:*** This research addresses Army-unique issues in fundamental materials research involving the performance of advanced materials at high deformation rates for applications including armor and armaments. Fundamental understanding is developed to enable design, processing, and characterization of materials specifically intended for high loading-rate applications, including improved physics based models, methods to characterize materials microstructure, interfaces, and defects and their role on materials response, and the determination of rate-dependent constitutive and failure/fracture behavior of materials. ***FY 2025 Plans:*** Will investigate methods for studying damage progression and interactions between dissimilar materials at microscale for materials under extreme thermal and mechanical loading. ***FY 2026 Plans:*** Will investigate mechanisms, process strategies, and the mesoscale design of ceramic materials with cemented microstructures to enhance ballistic performance. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	2.428	1.682	1.679
Title: Materiel Research and Processing Using High Energy Fields ***Description:*** Explore interactions between materials and intense energy fields (e.g., magnetic, electric, pressure, etc.) to discover new pathways and mechanisms for controlling and altering material structure, enabling the development of new materials with unique property combinations and abilities to respond adaptively to battlefield conditions. ***FY 2025 Plans:*** Will produce bi-material samples for characterization and refinement of convergent manufacturing processes, including combinations of additive and subtractive manufacturing, and energy-field driven processes; investigate non-equilibrium methods for modeling heat transfer in these materials; perform dynamic nano-indentation and modeling to refine constitutive parameters fed into this dynamic macroscale model. ***FY 2026 Plans:***	2.635	2.698	2.691

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will explore novel energy-field driven convergent manufacturing processes to produce bi-material samples; investigate composite assemblies with unique thermal response capabilities and characterize the ability of these assemblies to control heat flow; study combining laser reactive sintering and directed energy deposition to enable production of materials with enhanced thermotolerant and mechanical functionalities. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: One Dimensional (1D) and Two Dimensional (2D) Materials and Processing Research ***Description:*** Discover novel building block materials that provide disruptive protection mechanisms. Research includes synthesis, processing, characterization, and modeling to discover new 1D and 2D building block materials and associated assembly into protective membranes, smart fibers and films, and other molecular composite architectures. ***FY 2025 Plans:*** Will explore the role of temperature and high-pressure in processing of films and develop an understanding of the impact to ballistic performance; develop films that exploit non-linear behavior to tune optical properties; study modeling to design structures and phase compositions for desired ballistic protection and optical properties. ***FY 2026 Plans:*** Will investigate non-linear optical behavior of materials using their interactions with small molecules, optical trapping using topologies controlled through advanced manufacturing, and textures for light scattering to confuse optical detection; validate modeling efforts to design structures and phase compositions for enhanced ballistic protection and optical properties. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	1.776	1.820	1.817
Title: Bio-enabled Precision Materials Synthesis and Assembly ***Description:*** Explore new biology-based methods for controlled synthesis and assembly to create materials with precise chemistries, microstructures, properties, and responsive functionalities through controlled molecular placement, spatial architectures, and interfacial structures. This research utilizes biological platforms that can act as micro-environments to control local thermodynamics and kinetics to govern reactions and molecular assembly, thereby providing completely new pathways for materials discovery. ***FY 2025 Plans:*** Will investigate how synthetic biology enabled modifications of interfaces affect different combinations of composites; explore impacts of bioderived materials on thermal, mechanical, electrical, and other performance parameters to understand consequences of substituting biomanufactured materials for those derived from traditional manufacturing methods; explore	1.908	1.954	1.950

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
high throughput methods for screening materials to investigate synthetic biology techniques as control mechanisms for material properties. ***FY 2026 Plans:*** Will study how using synthetic biology and other bio-based techniques alter the properties of biomaterials (e.g. thermal, mechanical, electrical) either on their own or when biomaterials are integrated with traditional materials; investigate the stabilization of biological molecules in polymer systems to understand how biological function can be maintained under a range of conditions; explore high throughput techniques for the rapid development, assessment, and assembly of bio-derived materials. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Launch and Flight of Gun Launched Projectiles as well as Missiles ***Description:*** Improve the fundamental understanding of the mechanisms controlling the launch and flight of gun-launched projectiles and missiles and understand the interaction of these weapons with armored targets. ***FY 2025 Plans:*** Will explore innovations in the estimation, control, and autonomy of complex, high-speed agents constrained by energy, size, and time; define appropriate models of physics and chemistry associated with reacting high-speed flows and incorporate into credible computational toolsets; conduct experiments to validate flight dynamic models. ***FY 2026 Plans:*** Will explore algorithms, theoretical concepts, and paradigms for feature-deprived perception on highly constrained aerial platforms in conditions of poor abstract information environments; investigate modeling frameworks to perform fully coupled computational fluid dynamic with 6-degrees of freedom and flight control algorithms to simulate extreme maneuvers of projectiles and missiles. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	3.402	3.115	3.109
Title: Energetic Materials Research ***Description:*** Expand and confirm physics based models and validation techniques to enable design of novel insensitive propellants and explosives with tailored energy release for revolutionary future force survivability and weapons effectiveness. ***FY 2025 Plans:*** Will explore novel co-crystal energetic materials, air stabilized metallic fuels, and high power energetic materials and plasticizers for use in explosive and propellant applications; investigate feasibility and transferability of machine learning models of reaction	3.980	3.922	3.910

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
rates for propellants; develop and validate coarse-grained mesoscale models capturing relevant chemistry and physics for explosives. ***FY 2026 Plans:*** Will synthesize novel coated metal-based fuels for explosive and propellant applications and organic energetic materials for survivability in extreme dynamic environments; develop mesoscale models coupling to continuum scale models for application to nonhomogeneous explosives; expand machine learning derived models of reaction rates for propellants. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Theory in Atmospheric Characterization, Sensing, and Modeling ***Description:*** New algorithms and methods are developed to account for a variety of complex-terrain physical processes in microscale models. Novel instrumentation and observational methods are developed to advance the understanding of physical processes in the atmosphere. Employ optical techniques to advance detection methods for chemical/biological agents mixed in with atmospheric constituents. Data from high-resolution instrumentation arrays are used to advance and verify evolving atmospheric characterization theory focused on complex terrain and dense urban areas. ***FY 2025 Plans:*** Will analyze data collected in field experiments to investigate environmental effects on acoustic and electromagnetic signal propagation in urban environments; investigate new machine learning methods enabling informed multi-modal sensor adaptability and operation; investigate new technologies applicable to remote sensing of atmospheric and boundary-layer processes; explore new optical methods and techniques to exploit optical characteristics of aerosols for optical detection and characterization of biological, chemical, and other threat materials; analyze field experimental data and 3-Dimensional cloud monitoring via all sky imagers and machine learning techniques to understand the impact of surface energy budget processes to Directed Energy propagation; study interactions between locally and non-locally generated turbulence and the contribution to momentum, heat, and aerosol transport in the atmospheric boundary layer. ***FY 2026 Plans:*** Will investigate and develop new analysis techniques and methods incorporating analyzed data from field experiments to inform model development of environmental effects on acoustic and electromagnetic signal propagation in urban environments; conduct experiments to further investigate alternative methods and techniques for enabling informed multi-modal sensor adaptability and operation; investigate new remote sensing methods for atmospheric and boundary-layer processes impacting local climate scale; continue to advance new optical methods, models, and techniques to exploit optical characteristics of aerosols for optical detection and characterization of biological, chemical, and other threat materials; continue to study interactions between locally	3.517	4.003	3.992

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
and non-locally generated turbulence and the contribution to momentum, heat, and aerosol transport in the atmospheric boundary layer to determine model parameterization viability. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Environmental Quality ***Description:*** This effort conducts research on innovative environmentally-friendly technologies that support the warfighter focusing on pollution prevention technologies. ***FY 2025 Plans:*** Will conduct research into alternatives to hazardous chemicals and processes in the development of new and existing energetic materials, to include the study of the development of halogen free binders for the replacement of fluorinated polymers, per and poly-fluoroalkyl substances (PFAS); conduct research into alternatives to hazardous chemicals pertaining to environmental, safety, and occupational health issues. ***FY 2026 Plans:*** Will investigate and conduct research into safer materials and processes in the development of new and existing energetic materials in support of initiatives including the Assured Munition program and the DoD fluorinated polymers, perfluoroalkyl and poly-fluoroalkyl substances (PFAS) program; conduct research on the development of environmentally friendly metal coatings to replace hazardous materials including chromium compounds. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	1.183	1.211	1.209
Title: Terminal Ballistic Design and Evaluation for Next Generation Materials ***Description:*** Research will focus on novel terminal ballistic designs utilizing engineered materials to provide lightweight protection and low-energy penetrator solutions for combat-relevant threats. Specific architecture materials will be identified and utilized based on high-throughput material synthesis and characterization, and data-driven physics based modeling approaches. ***FY 2025 Plans:*** Will conduct synthesis and characterization studies to assess use of novel designs in armor systems; perform initial ballistic design and assessment. ***FY 2026 Plans:***	0.820	0.841	0.838

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will investigate performance of terminal ballistic designs, utilizing computational modeling to guide assessments; validate computational modeling approaches against experimental ballistic results. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Additive Manufacturing Sciences ***Description:*** The research in this Project focuses on manufacturing processes to achieve transformational lethality. This involves the development of converging virtual manufacturing using heterogeneous materials in one platform, while implementing additive, subtractive, transformative, and bulk manufacturing. ***FY 2025 Plans:*** Will develop an understanding of the gradient layers among dissimilar materials, utilizing advanced composites and functionally graded materials for the fabrication of high performance and multifunctional structures. ***FY 2026 Plans:*** Will explore the inclusion of latent chemical energy into additively manufactured structures by employing a combination of systems design, materials development, and novel manufacturing. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	1.180	1.511	1.508
Title: Chemical-Biological Advanced Materials and Manufacturing Science (CBAMMS) ***Description:*** Chemical-Biological Advanced Materials and Manufacturing Science (CBAMMS) program activities are related to performing basic research in chemistry, biology, physics, and material science to investigate interactions between materials and surfaces and between materials, catalysis, and energy dispersion/disruption that will advance the knowledge related to chemical and biological sensors, obscurants, and bio-manufacturing. ***FY 2025 Plans:*** Will continue studies in predictive modeling, for advanced materials processes as it relates to chemical-biological materials and sensors, while incorporating research in the areas of physics and engineering principles of biomaterials and additive materials of processing and manufacturing; conduct fundamental studies that will be used in predictive modeling for advanced materials processes as it relates to chemical-biological materials and sensors; expand the body of knowledge related to processing parameters, structure property relationships, surface interactions and performance of materials and sensors with respect to chemical/biological exposure, decontamination, aging and use in extreme temperatures; explore the utilization of novel manufacturing processes such as 3-dimensional bio-printing, integrated heterogeneous materials (i.e. Metal-Organic Frameworks) and in-situ polymerization and/or component integration during processing; advance fundamental scientific understanding	2.528	2.655	2.647

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA7 / *Mechanics and Ballistics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
of particle dispersion for novel utilization of next generation obscurants with novel pyrotechnics in areas such as disrupting command, control, and communications; investigate advanced/multispectral obscurant payload or concealment/camouflage/ deception/false targets resulting in overall signature management or sensor defeat; leverage academic discoveries in new materials and processes along with addressing emerging threats in the topics identified in FY2024. ***FY 2026 Plans:*** Will expand our exploration of advanced materials and processes by incorporating large language modeling (LLM) and supervised machine learning (ML) of existing data sets to improve experimental efficiencies, identify dependencies, and predict material properties to enhance the research related to processing parameters, structure property relationships, surface interactions, and performance of materials and sensors with respect to chemical/biological exposure, decontamination, aging, and use in extreme temperatures; continue work in novel manufacturing processes such as 3-dimensional bio-printing, integrated heterogeneous materials (i.e., Metal-Organic Frameworks) and in-situ polymerization and/or component integration during processing; advance fundamental scientific understanding of particle dispersion for novel utilization of next generation obscurants with novel pyrotechnics by leveraging the LLM and ML infrastructure; study the fundamental properties of per- and polyfluoroalkyl substances (PFAS) with an emphasis on their behavior as chemical barriers, the nature of oil- and water-based penetration of materials to support the development of PFAS alternatives. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Accomplishments/Planned Programs Subtotals	34.416	34.685	33.957

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA8 / *Sensing and Electromagnetics*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA8: *Sensing and Electromagnetics*	-	16.083	26.884	1.342	-	1.342	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project conducts basic research on semiconductor materials, layered structures, and novel devices for optical sources, detectors, integrated optoelectronic circuits, and energy generation and storage devices. Efforts include multiscale modeling, material and structure growth and characterization, and novel device design and fabrication. The research has application to Soldier power, sensors, lower power communications, quantum networks; unattended sensor networks, including distributed sensor fusion; ground vehicle sensors and auxiliary power systems; alternative position, navigation, and timing (PNT) systems for Global Positioning System (GPS)-denied environments; and sensors and power for small unattended ground and air vehicles.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this Project is performed by the Army Research Laboratory (ARL) and Soldier Center (SC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Advanced Materials Research	1.533	1.056	-
Description: This effort conducts research in modeling, fabrication, and characterization of semiconductor materials and structures that leads to revolutionary device functionality in sensing, low power electronics, quantum networks, and power generation. This effort investigates novel complex crystal structures that can lead to devices with performance beyond normal semiconductor transistors, including neuromorphic computing structures and topological insulator based heterostructure with low operating voltage. ***FY 2025 Plans:*** Conduct experimental and theoretical studies of topological materials, two-dimensional materials, and heterostructures for use in low-power sensing concepts; utilize referenced studies to understand interactions between electromagnetic waves and related nascent materials. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Materials Science for Army Power and Communications	1.678	1.711	-
Description: This research includes modeling of advanced battery materials and structures, and modeling of electromagnetic fields interacting with catalytic materials. High bandgap materials including silicon carbide and gallium nitride with modified			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA8 / *Sensing and Electromagnetics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
composition will be used to fabricate diodes for improved performance as optical communication sources, sensors, and high power components. Materials, designs, and fabrication techniques will be studied for the future development of Micro-Electro-Mechanical Systems (MEMS) for radio frequency (RF) devices and sensors. ***FY 2025 Plans:*** Examine models for ensemble level understanding of multiparticle energy/heat transfer interactions involved in photothermal, electrocatalytic, and thermocatalytic processes of photocatalyzed chemical fuels reactions; conduct research to develop and validate molecular scale model for electrolyte reaction with a battery cathode to examine degradation mechanisms; investigate ionic transport in bulk electrolytes through modeling; validate modeling predictions by comparison with experiments; conduct research on low-dimensional, meta-optic materials for low-size, weight, and power (SWaP) free-space optical time and positioning unit. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Fundamentals for Precision Measurement for Contested Environments ***Description:*** This effort explores new materials, novel device architectures, and unique processing techniques to successfully maintain communication and information sharing protocols in GPS-denied, actively jammed, or austere environments. ***FY 2025 Plans:*** Identify and explore a fully integrated, deterministic, injection-locking mechanism to generate and lock a stable, single soliton-based, optical frequency comb; validate characteristics of next-generation epsilon-near-zero, metamaterial-based, environmental insensitive resonators for over-arching, optical clock concepts. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	0.775	0.891	-
Title: Functional Materials ***Description:*** This effort supports basic research in polymer science and textile technology, nano and biotechnology, and multifunctional materials to achieve technologies that support the Soldier of the future through multi-functional materials with clothing/protective equipment functionality that also embody electronic functionality. ***FY 2025 Plans:***	1.308	1.341	1.342

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA8 / *Sensing and Electromagnetics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Investigate foundational understanding for unique multifunctional materials for temperature and electrical response; research infrared and optical properties to thermal response; characterize electrochromic, optical rectification, and thermochromic properties of different plasmonic materials. ***FY 2026 Plans:*** Will investigate emergent quantum materials, bio-inspired materials, and materials that adjust color based upon temperature; study the plasmonic responses of metamaterials with symmetry-broken surfaces; conduct research exploring fundamental sensing mechanisms, sense markers to inform data-driven performance predictions. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase due to revised economic assumptions.			
Title: High Energy Laser (HEL) Materials and Thermal Management ***Description:*** This effort investigates and matures novel laser gain materials and other laser components with advanced thermal, thermo-mechanical, and thermo-optical properties. This effort investigates new materials and methods for controlling thermal transients to reduce the size and weight of thermal management components while increasing the energy magazine of systems operating in burst modes. ***FY 2025 Plans:*** Explore innovative silica fiber designs combining enhanced Raman gain with advanced, intrinsic, spectral filtering for parasitic 2nd Raman suppression; investigate, explore, and assess novel dynamic materials for transient thermal transfer and control; explore composite materials and phase change architectures to maximize heat transfer from Raman gain media. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	1.043	1.063	-
Title: Physics-Informed Machine Learning for Complex Phenomena ***Description:*** Existing machine-learning approaches are not guided by the laws governing physical systems and unable to provide predictions of a physical system response with quantifiable uncertainty. Research will explore and develop modeling techniques incorporating machine-learning approaches to support fundamental studies of physical systems. Resulting models will be used to design and develop novel physical systems, such as diamond for high power RF applications. ***FY 2025 Plans:*** Conduct research into new methods of dimensionality reduction in machine learning when applied to physical systems; investigate new geometrical methods for constraints in machine learning models of physical systems; continue to identify knowledge gaps	3.434	3.498	-

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
in methods for assimilating multiple-fidelity data into machine learning models of physical systems; conduct research into new methods for incorporating uncertainty into machine learning models of physical systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Semiconductor Modeling for Advanced Electronics ***Description:*** 3D numerical modeling basic research activities are scattered and insular, not effectively leveraging the combined capabilities of Government, Academia, and Industry. The problems are diverse and complicated and need a focused and multi-disciplinary approach to gain fundamental understanding. This effort will build an ecosystem for foundational modeling and research in semiconductor materials and devices that leverages the broad combined knowledge base from academia, industry, and government laboratories to develop new and advanced semiconductor materials and devices for sensors, emitters, neuromorphic, and topological device applications. ***FY 2025 Plans:*** Develop models and numerically explore carrier manipulation at ferroelectric/semiconductor nitride interfaces; investigate theory and models of the interaction between electromagnetic waves, from optical to terahertz frequencies, and advanced electronic materials, such as topological, two-dimensional materials, and heterostructures. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	0.680	0.521	-
Title: Foundational Distributed Radar ***Description:*** This research seeks to investigate novel signal processing techniques to develop distributed, Global Positioning System (GPS)-independent, autonomous capabilities. This effort investigates tools and techniques for modeling, simulations, and emulation of distributed radio frequency (RF) sensors and effectors. This research investigates advanced materials-based antennas for low size, weight, power, and cost (SWaP-C), multi-function systems. ***FY 2025 Plans:***	1.225	1.249	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA8 / *Sensing and Electromagnetics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Conduct research into distributed RF sensors for on-the-move advantages that enable detection while linked to various platforms, such as ground vehicles and small unmanned aerial vehicles (sUAVs); identify unique waveforms and investigate reconfigurable hardware for autonomous decision-making, in sub-second timeframes, for decisive military actions. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Foundational Sensing ***Description:*** This effort explores innovative methods to remotely sense and discriminate threat vehicle formations deep in the battlefield. This effort investigates novel mechanical wave sensing physics to enhance signal features in complex and high noise environments as well as investigates fundamental properties of electric field (E-field) and Magnetic (H)- field signals in cluttered environments. ***FY 2025 Plans:*** Analyze high performance modeling and simulation tools for efficient prediction and processing of integrated, multi-modal sensor data; investigate at-the-edge, multi-modal sensing and fusion models supporting robust detection, enhanced by environmental and target knowledge that incorporates multi-modal sensing within a larger relevant validation of the networked sensing pipeline; explore neural machine learning (ML) data processing and network adaptation to scenarios that emulate real-world conditions for model validation. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	1.577	2.365	-
Title: Complex Effects Understanding and Modeling ***Description:*** This effort seeks to develop the fundamental understanding necessary to realize complex effects utilizing multiple geographically distributed sensor-effector nodes. This effort will develop new computational methods to accomplish simulations of complex systems that are intractable with current methods due to required interactions of multiple, dynamic physics formulations. This effort will pursue modelling and simulation to identify robust state spaces for distributed apertures capable of beam-forming, cross modal, and coherent sense and effect. Additionally, this effort will investigate sensitivity to synchronization quality and identify opportunities for cancellation and self-referencing. Focal instances include electronic warfare (EW), laser sense and effect, and kinetic effects. Science of design concepts will be investigated to efficiently pare down complex physical systems into tractable solutions including topology optimization and co-design.	1.486	4.504	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA8 / *Sensing and Electromagnetics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2025 Plans: Investigate multi-use photonic structures capable of performing precision ranging, timing, and data transfer within a single design construct; investigate spatial filtering of acoustic vector and meshed seismic sensing in a streamlined, algorithmic form for ultra-efficient processing; investigate fusion methodologies to support coherent sensing, assuming both current and anticipated future accuracy associated with relative timing and localization; conduct research on how to fuse geometrical methods with classical numerical techniques to simulate multiple, interacting aspects of physics in high dimension; explore manifold discovery techniques for dimensionality reduction in high dimensional models of time-dependent physical systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Compact Non-Linear Elements and Non-Linear Arrays ***Description:*** This effort seeks to identify novel materials, physics, and architectures to achieve highly non-linear and high-density effects when synchronized in distributed arrays. Research will focus on enablers for emerging applications including electromagnetic (EM) windows for operation in hypersonic plasmas, compact, efficient, and multi-field array elements, intelligent-agent schemas for dynamic arrays, and novel materials for alternate EM bands. ***FY 2025 Plans:*** Investigate frequency tunable, ultra-low size, weight, power, and cost (SWaP-C) devices that offer passive voltage amplification and determine the best technology for different frequency ranges; explore methodologies and materials for the creation of convergent electronic/photonic hybrid architectures and advanced photonics circuitry; study non-linear, optical processes in topological materials and reveal physics that enables polarization of signals or other modalities of electromagnetic (EM) signals to be efficiently detected in various bands; investigate highly sensitive radio frequency (RF) detection components conforming to an ultra-low SWaP-C architecture through the study of fundamental loss limits of ferrimagnetic, high-quality-factor, thin film materials; extend computational imaging techniques for application to feature detection in turbulence distorted, thermal images. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	1.344	4.349	-
Title: Novel Materials and Architectures for Emerging Bands and Modalities	-	4.336	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA8 / *Sensing and Electromagnetics*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Description: This effort seeks to identify novel physics, materials, and architectures for extending spectrum use beyond the current state-of-art (e.g., heavy use of radio frequency (RF) and infrared (IR) bands with classical network topologies). This effort will investigate novel energy efficient materials, structures, and storage for powering distributed sensors. ***FY 2025 Plans:*** Develop temperature-stable ferroelectric nitride materials based on silicon carbide templates for enabling high temperature memory operation; explore physical mechanisms and materials exhibiting multicaloric transitions at high temperatures; assess multicaloric architectures for energy storage and conversion under new modalities and environments; investigate novel wave phenomena in low dimensional, meta-optics architectures; investigate novel materials and unique heterostructures and device designs to uncover light-matter interactions in non-traditional electromagnetic (EM) bands, such as ultraviolet (UV) and terahertz (THz). ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A61 (Sensing and Electromagnetics) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Accomplishments/Planned Programs Subtotals	16.083	26.884	1.342

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*				Project (Number/Name) AA9 / *Information and Networking*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AA9: *Information and Networking*	-	42.894	43.808	30.864	-	30.864	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project supports basic research to enable intelligent and survivable command, control, communication, computing, and intelligence (C4I) systems for the future force. As the combat force structure decreases and operates in more dispersed formations, information systems must be more robust, intelligent, interoperable, and survivable if the Army is to retain both information and maneuver dominance. This research addresses the areas of information assurance, signal processing for wireless battlefield communications, information extraction from multi-modal data human-agent naturalistic communication, and intelligent systems for C4I. Research will focus on understanding and solving inherent vulnerabilities associated with using standardized protocols and commercial technologies while addressing survivability in a unique hostile military environment that includes highly mobile nodes and infrastructure, bandwidth-constrained communications at the edge, resource-constrained sensor networks, diverse networks with dynamic topologies, high-level multi-path interference and fading, jamming and multi-access interference, levels of noise in speech signals and document images, and information warfare threats. These C4I technologies must accommodate heterogeneous security infrastructures, multi-service and multi-national interoperability, and information exchange/security mechanisms between multiple levels of security. The intelligent systems for C4I research focus on providing machine learning methods to overcome noisy, sparse, and heterogeneous data with artificial intelligence algorithms that can transfer learning from one domain to another. This foundational research will help identify highly relevant tactical events for mounted or dismounted commanders, leaders and Soldiers; improve the timeliness, quality, and effectiveness of actions; and speed the decision-making process of small teams operating in complex natural or urban terrain.

Work in this Project supports key Army needs and provides the theoretical underpinnings for Program Element (PE) 0602146A (Network C3I Technology), PE 0602143A (Soldier Lethality Technology), and PE 0602145A (Next Generation Combat Vehicle Technology).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this Project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Communications in Complex Dynamic Networks	5.715	5.779	4.873
Description: Perform research to provide communications capability for a fully-mobile, fully-communicating, and situationally-aware force operating in a highly dynamic, wireless, mobile networking environment populated by hundreds to thousands of networked nodes. This research includes techniques that enable predictions of performance and stability of large, complex communications networks. It takes into account the impact of Soldier information needs, modalities of access and use of communication networks in complex adversarial environments, high mobility, and adversarial effects such as jamming or cyber-attacks. Also to be considered are computational modeling approaches that capture dynamics of information that flows through the network and/or is stored within the network, and undergoes continual changes as new information arrives and other information ages or is refuted/superseded by newly arrived information.			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA9 / *Information and Networking*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2025 Plans: Will investigate novel decentralized strategies leveraging learning-based approaches for the control of extremely heterogeneous networks; explore directional networking capabilities within extremely heterogeneous networks through opportunistic beamforming to increase network performance and enhance stealth; explore resource-adaptive analytics techniques in multi-domain environments to account for dynamic environments with constrained network and computing resources; explore novel methods for resilient, dynamic, multilayer network analytics in complex network environments; investigate machine learning-based techniques for efficient and distributed placement and adaptation of complex analytics; analyze performance of the software-defined, network based, large scale emulation experimentation environment to determine scalability limits and performance bottlenecks; explore methods for validating quantum networking simulation results against real-world benchmarks involving multi-node networks, air-to-air links, and alternative protocol implementations. ***FY 2026 Plans:*** Will explore robustness for resource-adaptive analytics that allocate resources while accounting for dynamics in multi-domain environments and constrained network and compute resources; explore novel methods for network understanding and network control in multilayer, dynamic networks; develop and characterize a variable-fidelity network modeling framework incorporating highly dynamic and heterogeneous autonomous agents/nodes to enable the exploration of intelligent protocols that enhance resilience and applicability (in terms of capability set, size, weight, power, mobility, etc.); develop reinforcement-learning-based approaches to enhance the performance of extremely heterogeneous networks for dynamic response, scalability, covertness, and survivability of the network; explore testbed architectures for the large-scale generation of machine-learning training datasets that include metrics collected from wireless network radios, heterogeneous compute resources, and intelligence, surveillance and reconnaissance (ISR) application traffic flows, and analyze the feasibility of leveraging these datasets to train machine learning-based prediction and optimization engines for wireless networks. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Data to Knowledge to Support Decision Making (Information Mediation)	4.535	2.980	-
Description: Research a laboratory-scale common information processing infrastructure, inclusive of cloud computing, for networking processes that aids the transformation of data into actionable intelligence to support decision-making under uncertainty. Perform research to utilize real-time, tactical, Soldier-centric information for improved decision-making and situational awareness. Perform research in support of rapidly enhancing long-duration, complex, dynamic decision-making capabilities of individual Warfighters and units through the integration of cognitive augmentation and course of action recommender technologies. ***FY 2025 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AA9 / *Information and Networking*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will explore eye movement tracking in augmented reality (AR) display for controlling autonomy assets for human-agent teaming; investigate rule-based algorithms and data-driven machine learning methods for knowledge network construction and information extraction approaches applied to natural language interpretation to enable effective automated text generation for information management tasks; conduct fundamental research into computational models of artificial reasoning to enable automated decision making that considers the impact of uncertainty and associated risks, multiple criteria, and mission context. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects completion of this effort. Funding realigned to support the creation of Learning and Reasoning for Domain Specific Windows of Superiority for Resilient Autonomous Agents and Explainable Uncertainty Quantification for Resilient Autonomous Agents within this Project			
Title: Information Protection in Mobile Dynamic Networks ***Description:*** Perform research on protecting information in highly mobile, wireless tactical environments, where networks must operate under severe bandwidth, energy, and processing constraints, and without reliance on centralized security services. ***FY 2025 Plans:*** Will analyze the accuracy and resource requirements of competing approaches for quantum state characterization in networks, including shadow tomography, full-state tomography, and machine learning-based techniques; study various approaches and platforms for performing basic quantum networking tasks, such as quantum frequency conversion and low-loss optical switching; study entanglement distribution over long fiber links, extending to remote physical sites, to assess realistic environmental noise and decoherence impacts; research basic algorithms and methodologies to encapsulate the technical foundations of an autonomous, intelligent cyber-defense agent for traditional networks and non-traditional networks like those found on vehicle platforms and weapon systems. ***FY 2026 Plans:*** Will explore extensions of the classical shadow formalism for quantum state characterization that include prior information about the experimental system under investigation; study the requirements and feasibility of basic light handling operations required for quantum networking using integrated photonic platforms; investigate methods to mitigate realistic environmental noise and decoherence to improve the fidelity of quantum entanglement distribution over deployed fiber links; research algorithms and methodologies to identify and create Cyber Windows of Opportunity to create advantages in tactical operations; investigate the use of advanced machine learning algorithms to improve the performance of Autonomous Intelligent Cyber-defense Agents on vehicle platforms and weapon and robotic systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	5.547	5.512	4.651
Title: Advanced Computing Architectures and Algorithms	4.194	4.241	3.577

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Description: Investigate advanced computing and high performance computing (HPC) networking architectures, memory/ storage architectures, processing algorithms, and visualization techniques to support advanced battle command applications for Command, Control, Communications, Computers, and Intelligence (C4I) systems. ***FY 2025 Plans:*** Will study field programmable neural array (FPNA) to understand performance and computational efficiency on small neural networks; conduct research on analog neurons and use for complex, symbolic processing and inferencing; investigate strategies to characterize and predict analytic performance in resource-constrained, heterogeneous operational regimes; explore methods to identify poor analytic performance due to dynamic or complex information and resolve analytic accuracy with decentralized and distributed model learning; investigate methods to autodetect referenced model architecture, key features, framework, and its attributes in order to prioritize specific model optimizations and partitioning tailored to constrained communication networks and computing domains; identify the best locations in a neural network where it can be split among multiple devices to increase processing speed or stop early when there is high confidence in the result to reduce computational resource usage. ***FY 2026 Plans:*** Will leverage models optimized based on characteristics and environment to realize optimized analytic tasks for heterogeneous devices; investigate online learning of the dynamic interactions between devices, applications, and data as it relates to analytics in resource constrained, tactical environments; explore development of software tools/emulator allowing more rapid assessment of potential field programmable neural array (FPNA) chip design modifications leading to potentially more advanced on-chip applications; investigate techniques to optimize Large Language Models (LLM) for use on resource-constrained devices; investigate techniques to optimize multi-modal AI models to efficiently process diverse types of data inputs and accelerate inference; investigate the impacts of multi-modal data on analytic applications. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Title: Assured Operations in the Physical, Social and Cyber Domain	5.122	4.166	1.131
Description: Conduct research that will enhance the survivability of information by radically dispersing and continuously moving data across a multitude of inter-networked devices. This effort seeks to address the growing demands on information assurance, reliability, and transmission in resource constrained environments. Theories and methods will be investigated for securing information across heterogeneous devices/sources and networks, detecting and creating information obfuscation and deception techniques, managing risk of information quality and trust, and fusing and regenerating needs-relevant information from highly fragmented and dispersed data. ***FY 2025 Plans:***			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will investigate and understand commercial off the shelf (COTS), domain specific processors for perception algorithm inference performance with splicing and partitioning of large neural networks; study methods of real time processing to support autonomous systems; research machine learning techniques for the cyber/electromagnetic domain, robust to adversarial detection and interference; explore machine learning techniques to identify and correct atmospheric distortions to support assured targeting; investigate methods for deep reinforcement learning based on novel information criteria; conduct research on bounded, incremental learning in real-time systems; investigate transfer of machine learning models trained in simulated environments to emulated and real systems for cyber defense. ***FY 2026 Plans:*** Will investigate and develop frameworks to support data ingest and dissemination across command and control information system (C2IS) infrastructure that include intelligent adaptive strategies to optimize network performance and provide accurate information recommendation based on context; investigate improved generalization, robustness, and explainability of machine learning models through the development of physics-motivated data augmentation strategies and datatype-specific layers. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to support the creation of Learning and Reasoning for Domain Specific Windows of Superiority for Resilient Autonomous Agents and Explainable Uncertainty Quantification for Resilient Autonomous Agents within this Project.			
Title: Machine Learning for Intelligent Agent and Human Decision Making	6.265	5.980	2.633
Description: This effort researches methodologies and algorithms for machine learning with incomplete, unstructured, potentially deceptive, and heterogeneous information, enabling joint decision making for Intelligent Agent-Human teams which adapt to unknown environments and missions. Research includes methods for learning and decision making that occur under short time frames and constrained resources (e.g., computation, power, spectrum, and networks). ***FY 2025 Plans:*** Will investigate and conduct research on methods grounded in information theory and/or game theoretic approaches for collaborating multi-agent systems to share information in constrained environments; investigate machine learning (ML) methods for computer vision to enable autonomous systems to detect objects in high dynamic range (HDR) environments; conduct experiments with small teams of multi-agent systems to assess ability to autonomously adapt group behaviors based on partially observed reinforcement learning signals; investigate methods and techniques that allow multi-agent systems to adapt role assignments based on high level, human defined strategies; conduct research on algorithms that allow for shared representations with a small number of observations; investigate distributed data processing methods on heterogeneous size, weight, and power (SWaP) constrained systems for perception algorithms. ***FY 2026 Plans:***			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will investigate computer vision algorithms to enable machines and systems to detect partially occluded objects, detect and track target objects, understand threat environment by multi-modal sensing in scenes, and enable object detection algorithms in High Dynamic Range (HDR) environment; develop methods and techniques that leverage shared representations to transfer knowledge learned during exploration to other agents; develop algorithmic techniques that learn role assignments in multi-agent adversarial teams based on limited observations. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to support the creation of Learning and Reasoning for Domain Specific Windows of Superiority for Resilient Autonomous Agents within this Project.			
Title: Image Analytics and Understanding ***Description:*** This effort investigates new methodologies and techniques for improved scene and situational understanding using multi-modal imaging sensors from heterogeneous air and ground platforms. This work explores novel machine learning approaches for applications in resource constrained environments. ***FY 2025 Plans:*** Will investigate self-supervised, multimodal perception models on size, weight, and power (SWaP)constrained, mobile platforms combined with natural language supervision to address the austere operating conditions, including the data scarcity problem, in rapidly learning, critical battlespace representations in tactical environments; investigate a combined synthetic rendering and perception model that enhances the realism of scene synthesis, while creating large scale, unseen novel view images with high fidelity to significantly enhance perception performance at the edge. ***FY 2026 Plans:*** Will research artificial intelligence/machine learning (AI/ML) multi-agent frameworks capable of hierarchical learning and multi-modal scene understanding to support autonomous maneuver of unmanned aerial and ground vehicles in complex environments; investigate network dissection techniques to understand the characteristics and differences of features learned by neural networks trained on real and synthetic datasets. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to support the creation of Learning and Reasoning for Domain Specific Windows of Superiority for Resilient Autonomous Agents within project.	2.406	1.330	1.039
Title: Fundamentals for Energy Efficient Electronic & Photonic Components ***Description:*** This effort addresses the power draw (demand) of radio frequency (RF) front ends for communication and electronic materials for the digital back-end, as well as efficient materials for delivery of power (supply) for electronics on energy constrained platforms. The work explores new materials with inherently higher energy efficiencies in conjunction with advances in circuits and	2.100	2.123	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
systems to provide improvements in power efficiencies, linearity, and noise at the subsystem level for unique Army requirements for demand and supply electronics. ***FY 2025 Plans:*** Will conduct research into microelectronic design processes and techniques that renders device purpose unclear to frustrate reverse engineering while preserving efficiency and function; explore diamond heterostructure and transistor acceptor layer material properties; identify charge traps, impurities, and interface atomic bonding characteristics in order to improve the efficiency of radio frequency (RF) diamond transistors; examine high electron mobility transistor switch with a ferroelectric nitride to understand improved energy efficiency savings; explore Ultra-Wide Bandgap (UWBG) device designs that maximize lifetime under high energy alpha and beta radiation. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects efforts to foster innovation and accelerate deployment of promising technology in support of alignment with congressional priorities.			
Title: Quantum Information Sciences ***Description:*** This effort investigates interactions between light and quantum systems, including atoms, ions, and solid-state materials, for developing the fundamental building blocks of distributed quantum systems. A particular emphasis is efficient light matter interfaces, including optical cavities, nanophotonics, and high density atomic systems. This effort also explores quantum algorithms for entanglement distribution. ***FY 2025 Plans:*** Will investigate new resonator geometries for field concentration that improves efficiency in light-matter coupling; investigate trade-offs between small mode volume waveguides/resonators and perturbations to material quantum bits from nearby surfaces; explore new geometries for resonant coupling, including 2-Dimensional and 3-Dimensional designs, and characterize the relative quality factors, coupling strengths, repeatability, and scalability; analyze approaches for both vapor-phase atoms and solid-state atom-like color centers and explore these in the context of improving quantum clocks, sensors, and quantum bit processing capabilities. ***FY 2026 Plans:*** Will investigate techniques, such as pulsed interrogation, to advance electric-field sensor sensitivity towards the quantum noise limit; investigate the previously developed coupling and resonator designs for generating quantum states that offer sensor advantage over classical states; explore integrated photonic devices for coupling optical modes to quantum spins; develop solid state quantum magnetic field sensor that operates at better than the thermal noise limit set by its physical temperature; explore the rate of entanglement generation between a trapped spin qubit and a telecom-wavelength photon. ***FY 2025 to FY 2026 Increase/Decrease Statement:***	6.114	6.181	5.213

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2026 funding decrease due to revised economic assumptions.			
Title: Assessing and Mitigating Climate Risk for Decision Making ***Description:*** Lead Army-focused environmental basic research within climatological time frames (multi-year to decades), specifically researching changes and impacts of dynamic processes in the lower atmospheric boundary layer in Multi Domain Operation (MDO) environments (complex terrain and dense-urban) as underpinning science to inform applied research projects in climate impact decision support systems. ***FY 2025 Plans:*** Will analyze Distributed Virtual Proving Ground (DVPG) meteorological array databases to understand the evapotranspiration cycle and flash drought onset; investigate and understand boundary layer process impacts on climatology in complex environments. ***FY 2026 Plans:*** Will characterize climate relationships between teleconnection patterns (causal connections or correlations between meteorological or other environmental phenomena which occur a long distance apart) and the energy state at the surface, specifically surface sensible and latent energy flux (Bowen Ratio). ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.	0.896	0.907	0.766
Title: Battlefield Representation and Intelligent Agents for Scalable Cross-echelon Command and Control ***Description:*** Description: Discover foundational methods and approaches critical to developing intelligent Command and Control (C2) agents and shared representation of the battlefield to humans and intelligent C2-agents for planning and decision support. These foundational research approaches ultimately enable operations across echelons capable of (1) identifying Windows of Superiority (WoS) from data too large and complex for humans, (2) identifying normally missed, critical decision points, and (3) creating multiple plans with metrics that support Commander assessment and confidence in a fraction of the time currently required. ***FY 2025 Plans:*** Will conduct research on architectures and representations for joint object detection, localization, and classification from multiple sensor modalities; research techniques for on-demand generation of synthetic data and model tuning for adapting to changing environments; investigate methods to manage information flow and communicate in a timely, effective, and adaptive manner across domain and echelon; investigate information dynamics and behaviors to develop tactics, techniques, and procedures toward resiliency against adversarial campaign; investigate novel, artificial reasoning techniques for robust, automated decision making; investigate fundamental techniques for natural language interpretation to create shared understanding through	-	3.407	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
situated dialogue and example-based human-agent interaction; explore deep learning language models and generative artificial intelligence methods for automated generation of natural language artifacts for tactical operations. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects efforts to foster innovation and accelerate deployment of promising technology in support of alignment with Army priorities.			
Title: Human-Agent Interactions and Trust for Scalable Cross-echelon Command and Control ***Description:*** This effort investigates novel theoretical and methodological approaches to human-agent interactions that enable trustworthy intelligent and survivable command and control, communication, computing, and intelligence for the future force. The effort focuses on creating theory and methods that scale across different combinations of human-machine teams, formation dispersion, and information systems capabilities. This effort focuses on approaches that allow humans to guide multi-scale command and control with reduced human burden. ***FY 2025 Plans:*** Will conduct research on initial human-guided machine learning approaches using large language models to generate courses of actions at different scales; investigate how human-guided machine learning-based course of action generation influences trust amongst human users with different roles. ***FY 2026 Plans:*** Will validate research on human-guided machine learning approaches using large language models to generate courses of actions at different scales; validate how human-guided machine learning-based course of action generation effects human situational awareness and trust. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase reflects additional validation research on human-guided machine learning.	-	1.202	1.267
Title: Explainable Uncertainty Quantification for Resilient Autonomous Agents ***Description:*** This effort will research characterizing and communicating the uncertainty inherent in machine learning models or artificial intelligence (AI) systems in a transparent and interpretable manner. AI explainability is crucial for actionable AI assessments: providing insights into the confidence or reliability of assessments, predictions, and decisions made by these models, and enabling users to understand and trust the system's outputs. This effort will investigate techniques to provide quantifiable estimates of various forms of uncertainty associated with model predictions, computing end-to-end model uncertainty for distributed AI, and understanding the uncertainty associated with reasoning on unmodeled phenomena. ***FY 2026 Plans:***	-	-	1.353

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will explore fundamental issues in characterizing and communicating the uncertainty within unstructured data, task execution, information sources, and machine learning models that decrease the accuracy and robustness to dynamic environments of autonomous agents and intelligent systems; explore computational models of uncertainty to increase transparency, interpretability, and explainability in AI systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase reflects initiation of Explainable Uncertainty Quantification for Resilient Autonomous Agents. Funding realigned from Data to Knowledge to Support Decision Making and Assured Operations in the Physical Social and Cyber Domain within this Project.			
Title: Learning and Reasoning for Domain Specific Windows of Opportunity for Resilient Autonomous Agents ***Description:*** This effort studies artificial intelligence (AI)-based techniques to understand and reason about fleeting Windows of Opportunity (WoO) rapidly enough to enable them to be exploited. This includes multi-faceted AI approaches that can sense and assess the quality of a domain (e.g. cyber) WoO in space and time while understanding its scope, vulnerabilities, and resilience. Reasoning techniques that can explain and identify vulnerabilities and weaknesses are critical to provide actionable assessments; priority indicators and collection requirements are needed to develop sensing strategies; and computationally efficient inferencing algorithms are required to rapidly assess dynamic and fleeting WoO. ***FY 2026 Plans:*** Will examine merits of computational models of artificial reasoning to identify WoO in specific domains for effective autonomous agent behavior and adaptable automated decision-making; study initial promising methods of natural language understanding, multimodal information extraction, and advanced knowledge representations to enable human-agent interaction and collaboration to predict WoO during mission execution; examine computer vision model for multi-modal sensing to detect threats and adversarial intent in hostile military environments; study efficient communication methodologies for formation controls; investigate reasoning frameworks and hybrid neuro-symbolic machine learning models for improved inferencing about WoO with multi-modal inputs and limited training data. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase reflects initiation of Learning and Reasoning for Domain Specific Windows of Opportunity for Resilient Autonomous Agents. Funding realigned from Data to Knowledge to Support Decision Making, Assured Operations in the Physical Social and Cyber Domain, and Machine Learning for Intelligent Agent and Human Decision Making within this Project.	-	-	4.361
Accomplishments/Planned Programs Subtotals	42.894	43.808	30.864

C. Other Program Funding Summary ($ in Millions)

N/A

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C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

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COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
AB1: *Basic Res in infect Dis, Oper Med and Combat Care*	-	4.397	4.672	2.967	-	2.967	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project builds fundamental scientific knowledge contributing to the sustainment of United States Army scientific and technology information to solving military medical problems related to infectious diseases, operational medicine, and combat care. This Project provides the means to exploit scientific breakthroughs and avoid technological surprises, and fosters innovation in areas where there is little or no commercial investment due to limited markets (e.g., drugs and treatments for tropical diseases) and maintains laboratory capability to perform these functions.

The work is consistent with the Under Secretary of Defense (Research and Engineering) science and technology focus areas and the Army Modernization Strategy.

Work is performed at United States Army Research Institute of Environmental Medicine (USARIEM) and the United States Army Aeromedical Research Laboratory (USAARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Injury Prevention and Reduction	1.759	1.957	0.847
Description: This effort identifies biological patterns of change in Warfighters during states of physical exertion and physiological (human physical and biochemical functions) mechanisms of physical injury and exertion that will predict musculoskeletal (muscle, bone, tendons, and ligaments), sensory (auditory, ocular, and vestibular), and blunt, blast or accelerative injury.			
FY 2025 Plans: Refine mechanistic translational models and provide final recommendations to support the development of injury risk mitigation strategic plans to protect Warfighters in training; will enhance trainee readiness through evidence-based training programs to mitigate injury risk and performance degradation.			
FY 2026 Plans: Determine the modifiable factors that influence the risk for stress fractures by determining how different Non Steroidal Anti Inflammatory Drug doses influence biological risk factors and if adaptive bone formation occurring during training may mitigate stress fracture risk.			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Determine the prevalence of injury and health hazard effects of free-fall parachute operations through a retrospective, epidemiological review of available medical records, injury databases, and coordination with medical providers. Data collection to determine the MSKI effects from repetitive free-fall will occur during training courses. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects the development of recommendations regarding NSAID influences on the risk of stress fractures and the postponed delivery of health hazard assessment (HHA) recommendations to the Defense Public Health Center and the Special Operations.			
Title: Physiological Health ***Description:*** This effort conducts fundamental research on the physiological mechanisms of sleep, fatigue, and nutrition on Soldier health, readiness, and performance. In addition, this effort discovers basic understanding of physiological and genetic processes leading to biomedical performance enhancement in in the physical, cognitive, and psychological domains. ***FY 2025 Plans:*** Conclusion of prebiotic and probiotic modulation of the microbiota-gut-brain axis during acute stress to inform the role of nutrition support for metabolic recovery from military activity. ***FY 2026 Plans:*** Identifying the associations between eating behaviors and metabolic/physiologic adaptations with excess body fat gain and MSKI. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects the focus on reducing injury and illness risk and optimizing operational readiness.	1.407	1.364	1.294
Title: Environmental Health ***Description:*** This effort involves the understanding of physiological (human physical and biochemical functions) mechanisms of exposure to extreme heat, cold, altitude, and other environmental stressors. This effort establishes scientific evidence for specific and sensitive diagnostics of exertional heat illness to optimize Warfighter performance in austere environments. ***FY 2025 Plans:*** Research the development of a next generation thermal strain medical health application for enhanced mission-specific work/rest guidance when operating under dynamic conditions in extreme temperatures. Determine biomarkers specific to exertional heat stroke (EHS) and determine factors that are related to optimal outcomes following a heat casualty (i.e., brief hospitalization and quick return-to-duty). ***FY 2026 Plans:***	1.231	1.351	0.826

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Continuation of investigating digital twins for MSKI risk and fieldable cognitive readiness algorithm to inform mission specific guidance. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects planned progression of biomarker work to 6.2 funded work.			
Accomplishments/Planned Programs Subtotals	4.397	4.672	2.967

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
AB2: *Protection, Maneuver, Geospatial, Natural Sciences*	-	19.109	19.900	15.702	-	15.702	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project advances fundamental science in areas of military engineering, biosciences, geospatial, and data sciences. The Project expands basic understanding of complex biological, chemical, geospatial, and material properties and processes at varying scales and time to support applied research and advanced technology development in the future.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work is performed by the United States (U.S.) Army Engineer Research and Development Center.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Mapping, remote sensing, signature physics and terrain state	4.257	4.369	3.423
Description: Investigates compact mathematical representations of terrain data; explores automated learning of built elemental features unique to location; formulates new techniques for automatically retrieving Earth surface features, properties and patterns; explores sensing phenomenology and surface state as affected by terrain and weather; studies optimizing and adapting decision making based on changing geospatial conditions. The U.S. Army Corps of Engineers, Engineer Research and Development Center executes this research at the organization's laboratories to include the Coastal and Hydraulics Laboratory, Cold Regions Research and Engineering Laboratory, Construction Engineering Research Laboratory, Environmental Laboratory, Geospatial Research Laboratory, Geotechnical and Structures Laboratory, and Information Technology Laboratory			
FY 2025 Plans: Will continue to pursue fundamental research to understand Earth surface attributes and dynamic terrain processes affecting the situational understanding of military multi-domain operations from a geospatial perspective. Will investigate emergent geospatial patterns or behaviors derived from complex emerging, high dimensional, numerical, semantic, or ancillary data. Will perform experiments to identify physical phenomena important to model the acoustic response of very thin ice. Will seek an understanding of how the physical and optical properties of man-made materials relate to light polarization. Will explore the signature physics of non-stationary hydrodynamic processes in ground-based imagery of water flow fields.			
FY 2026 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will extend fundamental understanding of the Earth surface including features, patterns, and dynamic processes. Carry out novel investigations to exploit emerging high-dimensional geospatial, remote sensing, or numerical data. Will explore innovative methods, modalities, and techniques for geospatial data collection over wide areas. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects adjustments to planned milestones and Army reduction.			
Title: Fundamental Adaptive Protection and Projection Research	4.752	5.169	4.159
Description: Conduct fundamental studies on the theory and modeling of future revolutionary geological, structural, and signature reducing materials; and examine, investigate and model complex geophysical, littoral, and other environments that fill critical Army knowledge gaps in adaptive protection and projection. The U.S. Army Corps of Engineers, Engineer Research and Development Center executes this research at the organization's laboratories to include the Coastal and Hydraulics Laboratory, Cold Regions Research and Engineering Laboratory, Construction Engineering Research Laboratory, Environmental Laboratory, Geospatial Research Laboratory, Geotechnical and Structures Laboratory, Information Technology Laboratory. ***FY 2025 Plans:*** Will continue to gain fundamental scientific knowledge of the environmental phenomena that impact engineering system performance. Will investigate multi-scale characterization and modeling of materials. Will pursue the discovery and design properties of engineered materials with enhanced performance, improved function, and reduced weight for future force protection and force projection applications. Will investigate tunability for laser protective materials via a novel class of metallic supramolecular-based materials capable of reverse saturable absorption (RSA), the mechanism responsible for the nonlinear optical (NLO) limiting effect. Will explore structure-property relationships of polyurethane-based aerogels during high thermal and kinetic energy events. Will investigate variability in thermo-hydromechanical properties of arctic soils and how soil property relationships are sustained. Will gain understanding of surf-zone processes during delayed arctic freeze-up. Will investigate near-offset seismic wave propagation in elastic media. Will investigate adaptive acoustics in atmospheric turbulence and design principles of extremely tough and stretchable hydrogels. ***FY 2026 Plans:*** Will gain fundamental knowledge of environmental phenomena that impact engineering system performance. Will investigate multi-scale characterization and modeling of materials. Will pursue the discovery of fundamental compositional properties of engineered materials with enhanced performance, improved function, and reduced weight for future force protection and force projection applications. Will investigate variability in thermo-hydromechanical properties of arctic soils and how cold-region soil property relationships are sustained. Will increase understanding of surf-zone processes during delayed arctic freeze-up. Will continue to investigate adaptive acoustics in atmospheric turbulence and design principles of extremely tough and stretchable hydrogels. Will investigate internal, microstructure, and compression behavior of cementitious materials. Will explore unique			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
microstructures of ceramic/boron nitride and liquid metal composites. Will investigate fundamental energy mechanics of advanced polymers. New start efforts are expected to focus on materials aligned research. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects Army reduction of no new research in the areas of environmental interaction and future transformative technologies.			
Title: Fundamental Infrastructure Sciences ***Description:*** Explores fundamental research informing infrastructure science, robotics, autonomous construction, three-dimensional (3D) printing materials, self-assembly and advanced or innovative material science as related to advancing future military infrastructure, construction, and Engineer operations. The U.S. Army Corps of Engineers, Engineer Research and Development Center executes this research at the organization's laboratories to include the Coastal and Hydraulics Laboratory, Cold Regions Research and Engineering Laboratory, Construction Engineering Research Laboratory, Environmental Laboratory, Geospatial Research Laboratory, Geotechnical and Structures Laboratory, Information Technology Laboratory. ***FY 2025 Plans:*** Will continue to explore fundamental elements of natural or manmade processes and materials, data science, and energy science to inform future advances in Army infrastructure. Will pursue fundamental research to understand the interplay between pH gradients and mineral formation using novel correlated chemical and physical probe techniques. Will pursue fundamental research to computationally and empirically elucidate the effect of extreme temperature on the efficiency of spray-printed photothermal conversion co-crystals, opening a fundamental line of inquiry that may inform future solar heat harvesting. Will investigate ways to use earthen materials to create a medium to transport ionic materials. ***FY 2026 Plans:*** Will conduct fundamental research into understanding of processes of generating artificial photosynthesis of with three dimensional molecules with over ninety percent efficiency. Will gain fundamental scientific knowledge of the environmental phenomena that impact engineering system performance. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects adjustments to planned milestones and Army reduction.	2.003	1.879	1.453
Title: Biological, Chemical and Physical Sciences ***Description:*** Explore novel approaches of innovative data analytics, bio-inspired materials, and chemical experimentation to understand basic principles of biological and chemical mechanisms, organisms, and natural processes of the environment. The U.S. Army Corps of Engineers, Engineer Research and Development Center executes this research at the organization's laboratories to include the Coastal and Hydraulics Laboratory, Cold Regions Research and Engineering Laboratory, Construction	8.097	8.307	6.509

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Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AB2 / *Protection, Maneuver, Geospatial, Natural Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Engineering Research Laboratory, Environmental Laboratory, Geospatial Research Laboratory, Geotechnical and Structures Laboratory, Information Technology Laboratory. ***FY 2025 Plans:*** Will continue to conduct fundamental research into novel biological mechanisms or natural and geological processes. Will pursue basic research in biotechnology to understand biological approaches and mechanisms for future Army technology advancements. Will investigate complex environmental, chemical, and biological processes and features to fill knowledge gaps and inform future Army applications. Will investigate Lanthanide Binding Peptides (LBP) and LBP-derived visible and near infrared (VIS/NIR) materials using high-throughput genetic engineering, scanning antenna molecules for amplification across the VIS/NIR spectra. Will provide fundamental knowledge on the effects of indigenous soil microbial community, soil redox and water saturation on bioreporter volatile organic compound viability/generation/propagation. Will pursue transplant of gut bacterial communities from the waxworm, to the mealworm to inform future opportunities in material degradation. Will build scientific knowledge to mine near-infrared proteins to increase understanding in developing biosensors and explore ways to manipulate plant enzyme as candidate for use in producing biofuel. Will attempt using volatile compounds to detect permafrost thaw and provide critical information for improved interpretation of permafrost degradation by understanding macro-scale electrical conductivity mechanisms to reduce error in soil measurements. Will investigate how cold temperatures alter root secretions and recruitment of root-soil microbes. Will investigate PFAS adsorption and removal based on chemical interactions. ***FY 2026 Plans:*** Will explore how three-dimensional designed polypeptides interact with other polymer composites to promote super radiant behavior. Will examine fundamental understanding of how synthetic biology information processing could inform quantum computing architecture to transform existing computational paradigms. Will understand how arctic rusting is impacting fundamental terrain properties on Army training lands. Will investigate the fundamental structure-property relationships of novel covalent organic framework materials used for water uptake in diverse environments. Will analyze physicochemical properties of covalent organic frameworks and metallic organic frameworks with computational chemistry approaches and experimental investigations to better understand their structural components. Will investigate how the increase in density and variety of sensors in a spider network can track anomalous events as observed from multiple angles using various metrics. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects adjustments to planned milestones and Army reduction.			
Title: Foundational Computational Sciences	-	0.176	0.158
Description: This effort explores the foundational, computational, data, and mathematical scientific underpinnings required to inform accurate and rapid simulations of physical, environmental, and fiduciary components of complex military systems. The effort seeks to provide fundamental discoveries to support digital engineering processes and accelerate the future Army's digital			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** AB2 / *Protection, Maneuver, Geospatial, Natural Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
transformation strategy. The U.S. Army Corps of Engineers, Engineer Research and Development Center executes this research at the organization's laboratories to include the Coastal and Hydraulics Laboratory, Cold Regions Research and Engineering Laboratory, Construction Engineering Research Laboratory, Environmental Laboratory, Geospatial Research Laboratory, Geotechnical and Structures Laboratory, Information Technology Laboratory. ***FY 2025 Plans:*** Will explore foundational computational, data, and mathematical scientific underpinnings to provide new innovations and knowledge to inform complex military systems. Will investigate foundational methods and data analytics to inform future computational modeling of physical, environmental, and military systems. ***FY 2026 Plans:*** Will explore foundational computational, data, and mathematical underpinnings to provide new innovations and knowledge to inform complex military systems. Will investigate foundational data analytic methods to improve assessment and decision-making through computational data modeling of complex physical, environmental, and military systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects adjustments to planned milestones and Army reduction.			
Accomplishments/Planned Programs Subtotals	19.109	19.900	15.702

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*	Project (Number/Name) CH9 / *Advancing Concepts and Technology Forecasting*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
CH9: *Advancing Concepts and Technology Forecasting*	-	3.782	3.903	3.758	-	3.758	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project works across the Army Futures Command Combat Capabilities Development Command, with the Futures and Concepts Center, and the Directorate of Intelligence and Security to identify emerging and disruptive basic scientific research outcomes to translate, integrate, and ingrain research outcomes with Army Warfighting Concepts. Army Warfighting Concepts describe how the Army will fight in the far-term future and the Future Operational Environment contextualizes projected basic research in the deep future. Outcomes describe the projected future operational effects of science in the context of Army Concepts and the Future Operational Environment to enable informed decision making and mitigate risk for future Army capabilities.

Advancing Concepts ensures Army Concepts are grounded by recent and anticipated discoveries in basic scientific research. Army basic research is use-inspired to address the future capability needs identified in the Army Concepts, and learning opportunities are created to advance Army Concepts and operationalize science for transformational overmatch.

Technology Forecasting develops timely, objective, scientifically-grounded projections of scientific advances that hold promise to impact future operational capabilities for the Army. Emerging scientific areas are described and communicated across the Army Modernization Enterprise to inform Science and Technology decisions.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Advancing Concepts and Technology Forecasting	3.782	3.903	3.758
Description: Advancing Concepts identifies emerging and disruptive basic scientific research outcomes to translate, integrate, and ingrain research outcomes with Army Warfighting Concepts to ensure that the Army of tomorrow is achievable. Technology Forecasting provides long-range, scientifically grounded technology forecasts of basic research topics to enable informed decision-making.			
FY 2025 Plans: Will identify mid- and far-term Army learning demands and key insights from Army Concept priorities to inform basic scientific research programs in offensive and defensive fires and platform survivability; explore objective estimates of anticipated			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601102A / *Defense Research Sciences*	**Project (Number/Name)** CH9 / *Advancing Concepts and Technology Forecasting*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
basic scientific research advances of emerging opportunities, including the biosciences, novel position-navigation-and-timing methodologies, and deep sensing approaches, to advise Army decision-makers. ***FY 2026 Plans:*** Will analyze and facilitate the integration of basic research outcomes into learning events that assess and refine the draft Army Warfighting Concept; identify and examine relevant artifacts to inform programmatic decision making; identify mid- and far-term emergent basic research outcomes that are anticipated to influence Army operational concepts into the deep future, including quantum, materials by design paradigms, and extreme electronic materials, to advise Army decision-makers. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding decrease due to revised economic assumptions.			
Accomplishments/Planned Programs Subtotals	3.782	3.903	3.758

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601102A / *Defense Research Sciences*	Project (Number/Name) T14 / *BASIC RESEARCH INITIATIVES - AMC (CA)*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
T14: *BASIC RESEARCH INITIATIVES - AMC (CA)*	-	38.000	-	-	-	-	-	-	-	-	-	-

Note

Congressional Interest Item funding provided for Defense Research Sciences.

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for Defense Research Sciences.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025
Congressional Add: Development of crystalline porous materials ***FY 2024 Accomplishments:*** Congressional Interest Item funding provided for Development of crystalline porous materials	5.000	-
Congressional Add: Joint Research Laboratories ***FY 2024 Accomplishments:*** Congressional Interest Item funding provided for Joint Research Laboratories	18.000	-
Congressional Add: Quantum computing center ***FY 2024 Accomplishments:*** Congressional Interest Item funding provided for Quantum computing center	10.000	-
Congressional Add: Unmanned Aerial Systems Hybrid Propulsion ***FY 2024 Accomplishments:*** Congressional Interest Item funding provided for Unmanned Aerial Systems Hybrid Propulsion	5.000	-
Congressional Adds Subtotals	38.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army												Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601103A / *University Research Initiatives*							
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
Total Program Element	-	72.781	78.166	78.947	-	78.947	-	-	-	-	-	-
AB3: *MURI/PECASE/DURIP*	-	72.781	78.166	78.947	-	78.947	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE) supports the Multidisciplinary University Research Initiative (MURI), the Defense University Research Instrumentation Program (DURIP), and the Presidential Early Career Awards for Scientists and Engineers (PECASE) program. The MURI program funds university based basic research in a wide range of scientific and engineering disciplines pertinent to maintaining land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g., Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers.

Work in this PE provides a foundation for applied research initiatives at the Army laboratories and research, development and engineering centers.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

The FY 2026 request was reduced by $0.307 million for Advisory and Assistance Services to promote efficiencies and advance the policies of the Administration in alignment with Executive Order 14222, "Implementing the President's Department of Government Efficiency Cost Efficiency Initiative."

The FY 2026 request was reduced by $0.411 million for civilian personnel to optimize the workforce in compliance with Executive Order 14210, "Implementing the President's Department of Government Efficiency Workforce Optimization Initiative."

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army					Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*			R-1 Program Element (Number/Name) PE 0601103A / *University Research Initiatives*		
B. Program Change Summary ($ in Millions)	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**
Previous President's Budget	75.672	78.166	79.907	-	79.907
Current President's Budget	72.781	78.166	78.947	-	78.947
Total Adjustments	-2.891	0.000	-0.960	-	-0.960
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.757	-			
• Adjustments to Budget Years	-	-	-0.960	-	-0.960
• FFRDC Transfer	-0.134	-	-	-	-

Change Summary Explanation

Funding decrease reflects realignment of resources to ensure optimal support for evolving priorities and mission requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601103A / *University Research Initiatives*	Project (Number/Name) AB3 / *MURI/PECASE/DURIP*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
AB3: *MURI/PECASE/DURIP*	-	72.781	78.166	78.947	-	78.947	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project supports the Multidisciplinary University Research Initiative (MURI), the Defense University Research Instrumentation Program (DURIP), and the Presidential Early Career Awards for Scientists and Engineers (PECASE) program. The MURI program funds university based basic research in a wide range of scientific and engineering disciplines pertinent to maintaining land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline. For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their research careers.

Work in this Project provides a foundation for applied research initiatives at the Army laboratories and centers.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Multidisciplinary University Research Initiative	59.805	63.955	64.842
Description: The Multidisciplinary University Research Initiative (MURI) program is a tri-service Department of Defense (DoD) program that supports extramural teams whose basic research efforts intersect more than one traditional science and engineering discipline. A multidisciplinary team effort, usually from several collaborating universities, can accelerate research progress in areas particularly suited to this approach by cross fertilization of ideas, hasten the transition of basic research findings to practical applications, and help to train students in science, technology and/or engineering in areas of importance to DoD. MURI programs are typically five years in length at a cost of $1.5 million each per year.			
FY 2025 Plans: Provide continued support for active MURI efforts made in prior years, and award eight to ten FY 2025 MURI efforts at a cost of $1.5 million each per year, with special consideration of basic research topics in support of the Office of the Under Secretary of Defense For Research And Engineering 2022 Strategic Vision and Critical Technology Areas including biotechnology, quantum science, future generation wireless technology, advanced materials, trusted artificial intelligence/machine learning (AI/ML) and			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Initiatives*	**Project (Number/Name)** AB3 / *MURI/PECASE/DURIP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
autonomy, integrated network system-of-systems, microelectronics, space technology, renewable energy generation and storage, advanced computing, and software. ***FY 2026 Plans:*** Will provide continued support for active MURI efforts made in prior years, and award seven to nine new MURI efforts at a cost of $1.5 million each per year, with research focusing on scientific questions posed in the FY 2026 MURI topic funding opportunity announcement to be announced in 2025 and published by the Office of the Under Secretary of Defense for Research and Engineering. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase is an economic adjustment.			
Title: Presidential Early Career Awards for Scientists and Engineers ***Description:*** Supports Presidential Early Career Awards for Scientists and Engineers (PECASE) investigators started in prior years as well as new award recipients. ***FY 2025 Plans:*** Assess and recommend two to four PECASE candidates in FY 2025 in support of the call for proposals to be released from the Office of the Under Secretary of Defense for Research and Engineering and continue support for prior year awardees. ***FY 2026 Plans:*** Will assess and recommend two to four PECASE candidates in FY 2026 in support of the call for nominees from the White House Office of Science and Technology Policy and continue support for prior year awardees. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.	4.876	5.793	5.749
Title: Defense University Research Instrumentation Program ***Description:*** Supports basic research through competitive grants for research instrumentation. ***FY 2025 Plans:*** Assess and award competitive research instrumentation grants to enhance universities' capabilities to conduct world class research and enhance educational capabilities critical to Army transformation and modernization. ***FY 2026 Plans:***	8.100	8.418	8.356

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Initiatives*	**Project (Number/Name)** AB3 / *MURI/PECASE/DURIP*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will assess and award competitive research instrumentation grants to enhance universities' capabilities to conduct world class research in support of Army-relevant scientific questions, and to enhance research capabilities critical to Army transformation and modernization. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.			
Accomplishments/Planned Programs Subtotals	72.781	78.166	78.947

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army												Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601104A *I University and Industry Research Centers*							
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
Total Program Element	-	117.872	113.476	69.391	-	69.391	-	-	-	-	-	-
AB4: *Army Research Centers*	-	24.522	25.699	23.314	-	23.314	-	-	-	-	-	-
AB7: *Army Collaborative Research and Tech Alliances*	-	58.118	57.650	29.659	-	29.659	-	-	-	-	-	-
AB8: *Army Educational Outreach Program*	-	11.889	12.756	12.666	-	12.666	-	-	-	-	-	-
AC6: *International Science and Technology*	-	7.343	7.871	3.752	-	3.752	-	-	-	-	-	-
J13: *UNIVERSITY AND INDUSTRY INITIATIVES (CA)*	-	16.000	9.500	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE) fosters university and industry based research to provide a scientific foundation for enabling technologies for future force capabilities. Broadly, the work in this PE falls into the categories of Collaborative Technology Alliances / Collaborative Research Alliances (CTAs/CRAs), University Centers of Excellence (COE), University Affiliated Research Centers (UARCs), Army-sponsored educational outreach, and Army investments at international academic and industrial partners. The Army formed CTAs to leverage large investments by the commercial sector in basic research areas that are of great interest to the Army. CTAs are industry-led partnerships between industry, academia, and the Army Futures Command to incorporate the practicality of industry, the expansion of the boundaries of knowledge from universities, and Army scientists to shape, mature, and transition technology relevant to the Army mission. CRAs are academia-led partnerships, which leverage the cutting-edge innovation found in the academic environment. The COEs focus on expanding the frontiers of knowledge in research areas where the Army has enduring needs, and couples state-of-the-art research programs at academic institutions with broad-based graduate education programs to increase the supply of scientists and engineers in automotive and rotary wing technology. Also included are Army Educational Outreach Program (AEOP) and activities to stimulate interest in science, math, and technology among middle and high school students. This PE includes support for basic research at three Army UARCs, which have been created to exploit opportunities to advance new capabilities through a sustained long- term multidisciplinary effort. The Institute for Soldier Nanotechnologies focuses on Soldier protection by emphasizing revolutionary materials research for advanced Soldier protection and survivability. The Institute for Collaborative Biotechnologies focuses on enabling network centric-technologies, and broadening the Army's use of biotechnology for the development of bio-inspired materials, sensors, and information processing. The Institute for Creative Technologies is a partnership with academia and the entertainment and gaming industries to leverage innovative research and concepts for training and simulation. Examples of specific research of mutual interest to the entertainment industry and the Army are technologies for realistic immersion in synthetic environments, networked simulation, standards for interoperability, and tools for creating simulated environments. This PE also includes the Historically Black Colleges and Universities and Minority Institutions (HBCU/MI) Centers of Excellence that address critical research areas for Army Transformation.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army	Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*

The FY 2026 request was reduced by $0.091 million for Advisory and Assistance Services to promote efficiencies and advance the policies of the Administration in alignment with Executive Order 14222, "Implementing the President's Department of Government Efficiency Cost Efficiency Initiative."

The FY 2026 request was reduced by $0.257 million for civilian personnel to optimize the workforce in compliance with Executive Order 14210, "Implementing the President's Department of Government Efficiency Workforce Optimization Initiative."

B. Program Change Summary ($ in Millions)	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total
Previous President's Budget	108.946	109.726	118.252	-	118.252
Current President's Budget	117.872	113.476	69.391	-	69.391
Total Adjustments	8.926	3.750	-48.861	-	-48.861
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	16.000	9.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.012	-			
• SBIR/STTR Transfer	-3.917	-			
• Adjustments to Budget Years	-	-5.750	-48.861	-	-48.861
• FFRDC Transfer	-0.145	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2024	FY 2025
Project: J13: *UNIVERSITY AND INDUSTRY INITIATIVES (CA)*		
Congressional Add: *Renewable Energy Technologies*	5.000	-
Congressional Add: *Biotechnology Advancements*	1.000	-
Congressional Add: *Materials In Extreme Dynamic Environments*	5.000	2.500
Congressional Add: *Quantum and photonics research*	5.000	-
Congressional Add: *Connected vehicle cybersecurity center*	-	7.000
Congressional Add Subtotals for Project: J13	16.000	9.500
Congressional Add Totals for all Projects	16.000	9.500

Change Summary Explanation

Funding decrease reflects realignment of funding as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army												Date: June 2025
Appropriation/Budget Activity 2040 / 1					R-1 Program Element (Number/Name) PE 0601104A / *University and Industry Research Centers*				Project (Number/Name) AB4 / *Army Research Centers*			
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
AB4: *Army Research Centers*	-	24.522	25.699	23.314	-	23.314	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This project encompasses three types of Centers. The first is the Historically Black Colleges and Universities/Minority Institutions (HBCU/MI) Research Centers of Excellence which support the Army's research partnerships with HBCUs/MIs. The HBCU/MI Research Centers of Excellence were established as the next phase of what was previously known as the Partnered Research Initiative (PRI) Program that ended in Fiscal Year 2020. The focus of the HBCU/MI Research Centers of Excellence Program is to advance innovative basic research leading to potential technology development in areas of strategic importance to the Army by competitively selecting HBCU and MI research teams for grants or cooperative agreements. Awards have five-year periods of performance, with all supporting the Army's goal of broadening the performer base and diversifying the research ecosystem in the areas of information sciences, engineering, and physical sciences.

The second is the University Affiliated Research Centers (UARCs). Army UARCs have been created to exploit opportunities to advance new capabilities through a sustained long-term multidisciplinary effort. The Institute for Soldier Nanotechnologies focuses on Soldier protection by emphasizing revolutionary materials research for advanced Soldier protection and survivability. The Institute for Collaborative Biotechnologies focuses on enabling network centric-technologies and broadening the Army's use of biotechnology for the development of bio-inspired materials, sensors, and information processing. The Institute for Creative Technologies is a partnership with academia and the entertainment and gaming industries to leverage innovative research and concepts for training and simulation. Examples of specific research of mutual interest to the entertainment industry and the Army are technologies for realistic immersion in synthetic environments, networked simulation, standards for interoperability, and tools for creating simulated environments.

The third is the Army Centers of Excellence (COEs). The COEs focus on expanding the frontiers of knowledge in research areas where the Army has enduring needs and couples state-of-the-art research programs at academic institutions with broad-based graduate education programs to increase the supply of scientists and engineers in automotive and rotary wing technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this project is completed by the Army Research Laboratory (ARL), Aviation and Missile Center (AvMC), and Ground Vehicle Systems Center (GVSC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Centers of Excellence for Battlefield Capability Enhancements (BCE)	1.738	-	-
Description: The focus of the HBCU/MI Research Centers of Excellence Program is to advance innovative basic research leading to potential technology development in areas of strategic importance to the Army by competitively selecting HBCU and MI research teams for grants or cooperative agreements. Awards have five-year periods of performance, with one each awarded in			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AB4 / *Army Research Centers*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
the areas of information, engineering, and physical science in order to support Army goals and broaden the performer base and diversify the research ecosystem.			
Title: Institute for Collaborative Biotechnologies ***Description:*** This effort performs sustained multidisciplinary discovery-based research that combines state-of-the-art methods in synthetic biology with novel techniques for biologically-enabled material synthesis and characterization. This fundamental research program provides a firm foundation of biotechnological knowledge that serves as a robust platform for design and development of biologically-enabled materials and technologies for Army-relevant applications and priorities. ***FY 2025 Plans:*** Investigate the molecular basis of enzyme-substrate reactions in anaerobic fungi that, if successful, enable tunable binding affinity and substrate specificity of synthetic enzyme complexes for environmental sensing; examine the snake infrared (IR) sensing pathway using molecular genetic techniques to inform new designs for efficient, uncooled detectors for IR wavelengths; explore new synthetic routes based on biocatalysis to create functionalized molecular structures with high efficiency and control of stereochemistry to enable cost-effective and sustainable synthesis of military relevant materials for energy storage, remediation, and protection. ***FY 2026 Plans:*** Will identify the specific impacts of the different pathways involved in mosquito taste sensation and the effect of those pathways on behavior, which, if successful, will allow for entirely new methods of protection from insect-borne diseases; investigate the effects of composition, conditions, and nanoscale confinement on the structure and function of trans-membrane proteins in abiotic films to better understand how molecular-level interactions can be leveraged for biologically enabled materials and devices; explore the near- and sub-wavelength photonic structures found in nature to synthesize mesoscale, protein-enabled photonic structures that could enable dynamically-tunable colors, sensors, and energy harvesting. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.	4.870	5.087	4.201
Title: Institute for Creative Technologies ***Description:*** This effort focuses on basic research of Immersive Environments and spans a number of key areas to include virtual humans, three-dimensional (3D) sound and visual media to achieve more efficient and affordable training, modeling, simulation, and application solutions and tools. Research includes: investigation of techniques and methods to address the rapid development of synthetic environments and the study of perception and cognition to help direct the development of new technologies and techniques that evoke more realistic responses from users; auditory aspects of immersion to provide the sound stimulus for increasing the realism for military training and simulation devices; new computational techniques in graphics for	4.941	5.161	4.271

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
achieving real-time photo-realistic rendering of physical and synthetic environments for training and simulations; innovative methods for automatically generating animations and gestures for virtual humans based on what is being communicated; new technologies for scanning real people and rapidly generating virtual humans which look like these people significantly reducing the time, expense, and effort required to develop virtual humans and virtual environments; methods and techniques for creating autonomous virtual human computer-generated characters that look, communicate, and behave like real people, use verbal and non-verbal communication, exhibit emotions, model their own beliefs, desires, and intentions as well as those of others, and reason using advanced artificial intelligence; and methods and techniques for improving the perception, communication, understanding, and responsiveness of virtual humans when interacting with live humans and explore how people relate to virtual humans. ***FY 2025 Plans:*** Investigate neuroscience-based models of attention to develop design aids for virtual reality environments that, if successful, build the foundations of a framework for immersive content creation capable of better engaging individuals in synthetic environments; conduct research with an artificial neural network trained with deep learning to enable more realistic versions of real-world objects for Augmented Reality/Virtual Reality; examine the combination of new optical arrays and deep learning to create hardware capable of real-time measurement and rendering. ***FY 2026 Plans:*** Will explore efficient vector representations of dialogue based on a novel framework architecture to better understand team dialogue between established teams as well as interaction with virtual teammates; study social dynamics in small groups to explore consensus formation that if successful will inform the creation of automated algorithms and performance analyses; identify discriminative behavioral and physiological markers of human functional states and employ those markers to develop a multimodal machine-learning system to recognize these functional states. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.			
Title: Institute for Soldier Nanotechnologies ***Description:*** This effort investigates Nanomaterials and Nanotechnologies for Soldier applications focused on light-weight, multifunctional nanostructured fibers and materials. ***FY 2025 Plans:*** Study the topological physics of electrons and photons in a variety of materials (e.g., Weyl semimetals niobium phosphide and Cobalt monosilicide) that, if successful, may lead to very sensitive detection of far infrared (IR) and terahertz (THz) radiation; examine fundamental process-structure-property relationships of long, crystalline, nanofiber reinforced heterogeneous ceramic	5.545	5.680	4.759

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
matrix materials to inform the development and manufacture of lightweight materials with beyond the state of the art strength and toughness; explore versatile synthesis and processing path to generate different mesoporous materials that if successful enable rationally designed hierarchically organized material properties for use in lithium based energy storage applications. ***FY 2026 Plans:*** Will explore structural hierarchy across multiple length scales (atomic, nanoscale, microstructure, and macroscopic form) to identify characteristics that influence ion diffusion and storage in silicon that if successful will enable synthesis of different mesoporous conductive materials for energy storage applications; examine the physical and chemical properties of complex emulsion droplets that enable nanoscale chemical interactions that can be optically probed on the macro-scale for biochemical sensing, pathogen detection, and imaging devices; investigate the synthesis of properties of polymers that extend covalently in two dimensions in homogeneous solution, that if successful will permit advanced polymer molecular architectures with novel structural and membrane properties. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.			
Title: Vertical Lift Research Center of Excellence (VLRCOE) ***Description:*** VLRCOE agreements with Pennsylvania State University, the University of Maryland, and the Georgia Institute of Technology to supplement a robust experimental and analytic basic research program in rotorcraft technologies including: Aeromechanics, Structures, Flight Dynamics and Control, Rotorcraft Design and Concepts, Vibration and Noise Control, Propulsion, Affordability, Safety and Survivability, and Naval Operations. ***FY 2025 Plans:*** The Centers of Excellence at the Georgia Institute of Technology, Pennsylvania State University, and the University of Maryland will undertake a robust experimental and analytic basic research program in close collaboration with government subject matter experts (SMEs) in areas relevant to future vertical lift such as improved structural performance through microstructure tailored materials, measurements and simulations for high speed rotors, acoustically aware autonomy, proprotor/wing interactional aero/acoustics, and computational fluid dynamics (CFD) trained neural networks and machine learning (ML) for inverse design of rotorcraft components; execute the third annual review of the VLRCOE program at the Centers with a diverse team of SMEs and organizational leaders from the Army, the Navy, and NASA, to provide technical direction; incorporate feedback from the reviews to execute year four of the five-year cooperative agreement to keep the research aligned with the Army's science and technology (S&T) strategic focus. ***FY 2026 Plans:*** Will conduct Future Vertical Lift (FVL) relevant basic research in areas including human/machine interface for aircraft maneuvering in high workload environments, experimental & computational simulation of aerodynamics of advanced configurations under	3.448	3.602	3.577

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
rain/ice, and interactional aerodynamics & acoustics scaling; following the fourth annual review of the program at the Georgia Institute of Technology, Pennsylvania State University, and the University of Maryland, identify Army aviation relevant fundamental research thrust areas for a broad area announcement for new research centers; solicit proposals for a new five-year program to fortify the long-term science & technology base for FVL; coordinate topics and proposal selection with government SMEs, and secure collaborative funding from the Navy and NASA to develop a robust fundamental research program coupled with vertical lift focused education. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.			
Title: Automotive Research Center (ARC) ***Description:*** The ARC is an United States Army Center of Excellence for Modeling and Simulation of ground vehicles. The center relies on the collaboration of researchers from multiple universities and disciplines to bridge fundamental technology gaps in five research thrust areas of strategic importance to the Army: mobility, human factors and man-machine integration, lightweight structure and materials, power and energy, and design integration. A major integrative focus of these five areas is autonomy and manned-unmanned teaming. ***FY 2025 Plans:*** Continue work towards solving the complex, multi-physics, inter-disciplinary, multiscale problems that are required to develop the advanced modeling and simulation tools needed to assess the performance of off-road autonomous mobility systems; research to include off-road autonomy algorithm development, human-machine trust advancement, innovative materials and structures, intelligent power systems, and multisystem coordination; develop the required companion technologies of computation enhancement, verification and validation improvements, and the understanding of uncertainty in unstructured environments. Additional focus on using system data to augment physics-based computation to predict performance and reliability of systems. ***FY 2026 Plans:*** Will continue work towards solving the complex, multi-physics, inter-disciplinary, multiscale problems that are required to develop the advanced modeling and simulation tools needed to assess the performance of off-road autonomous mobility systems. This research will include off-road autonomy algorithm development, human-machine integrated formations and trust advancement, innovative materials and structures, intelligent power systems, and multisystem coordination; develop the required companion technologies of computation enhancement, verification and validation improvements, and the understanding of uncertainty in unstructured environments. Additional focus will be on using system data to augment physics-based computation to predict performance, sustainability and reliability of systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:***	3.980	4.354	4.702

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Funding increase is an economic adjustment.			
Title: Historically Black Colleges and Universities and Minority Serving Institutions (HBCU/MI) Research Centers of Excellence (RCE) Program ***Description:*** The focus of the HBCU/MI RCE Program is to enhance Army-relevant research infrastructure, talent, and ecosystems at institutions that have been underrepresented in the Army research enterprise. The program invests in innovative basic research in areas of strategic importance to the Army identified through the competitive selection of HBCU and MI research teams for grants or cooperative agreements. ***FY 2025 Plans:*** Investigate, synthesize, and characterize new high-energy density materials formed from simple molecular materials, their alloys, and organic precursor molecules; utilize time-resolved experimental techniques to map the reaction kinetics, intermediate products, and energy release of new candidate materials, that, in the long term, are expected to enable new energetic materials for the Army with multiple times the power density of materials in use today, and the development of new materials with adaptive, tailorable responses to external stress. ***FY 2026 Plans:*** Will determine the characteristics of acoustic and seismic background noise in urban areas in frequency bands of interest for acoustic and seismic sensors; investigate how noise changes in different urban locations; explore finite element models for evaluation of wave propagation and topological deformation induced by the vehicle and other vibration sources in the urban environment, that if successful will provide predictive tools to execute Army operations in dense urban environments; explore theory of a Stochastic Neural Network framework described by stochastic differential equations to determine identifiers by which a person in an existing image or video is replaced with someone else's image using artificial neural networks, which if successful will provide new methods to enhance cyber security and data validation. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.	-	1.815	1.804
Accomplishments/Planned Programs Subtotals	24.522	25.699	23.314

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

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COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
AB7: *Army Collaborative Research and Tech Alliances*	-	58.118	57.650	29.659	-	29.659	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This project supports the Army Collaborative Research Alliances (CRAs) and Collaborative Technology Alliances (CTAs). CRAs and CTAs are partnerships between Army laboratories and centers, private industry, and academia that focus on the rapid transition of innovative technologies to the Warfighter to enable the Army's Future Force. The collaboration between industry, academia, and the government is a key element of the alliance concept as each member brings with it a distinctly different approach to research. Academia is known for its cutting-edge innovation; the industrial partners are able to leverage existing research results for transition and to deal with technology bottlenecks; and the Army researchers keep the program oriented toward solving complex Army technology problems. This approach enables an Alliance to bring together world class research and development talent and focus it on Army-specific technology objectives for application to Army needs.

The topics covered by CRAs and CTAs include cyber security (funded in PE 0601121A / Cyber Collaborative Research Alliance), the internet of battlefield things, distributed and collaborative intelligent systems technology, neuroergonomics and neuroscience, advanced materials, exploitation of quantum effects, semiconductor modeling, convergent manufacturing, autonomous maneuver and machine learning and artificial intelligence.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Internet of Battlefield Things CTA (IoBT CTA)	3.050	3.120	-
Description: The IoBT CTA seeks to gain fundamental understanding of Internet of Things (IoT) phenomena and its performance in tactical environments, ranging from sparse, remote settings to complex, dense urban environments. Research will address intelligent resourcing and influence in complex, constrained, and uncertain networks (demand from massive numbers of dynamically connected devices, limited and unpredictable connectivity, shared civilian networks, computation at or near the device), heterogeneous sensing and actuation devices (efficient, smart devices with self-organizing/preservation/directing capabilities), and variable and unreliable provenance and dynamisms of information and device signals. ***FY 2025 Plans:*** Will conduct research to provide distributed intelligent analytics at scale through cooperative data communication, fusion, and processing; continue research and development of algorithms that prioritize and filter information from vast amounts of ubiquitous heterogenous sensors/actuators; investigate novel methods for joint sensing, computation, and communication in resource-constrained networks; explore trust assessment to maintain safety and security assurances when leveraging uncontrolled			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
sensors/processors for analytics composition; examine the use of hybrid, rule-based plus data-based algorithms for tactical edge processing; research real-time adaptive task scheduling algorithms to provide resilience against adversarial disruption. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Distributed Analytics and Information Science International Technology Alliance (ITA) ***Description:*** This research will address the fundamental science underpinning the complex information network issues that are vital to future United States (US) / United Kingdom (UK) coalition military operations and to fully exploit the joint development of emerging technologies necessary to enable coalition operations. These efforts provide enhanced ability to perform adaptive, goal-driven, semantically-aware, distributed analytics for situational understanding in coalition operations. ***FY 2025 Plans:*** Will develop adaptive machine learning models for use in resource-constrained tactical environments to enable distributed analytics; develop improved methods for machine learning model training with limited or unlabeled data; investigate local and global optimization schemes for network and computational resource monitoring, orchestration, and allocation subject to multiple analytical task requests; investigate methodologies for optimizing neural network model development and training for use in a range of Army applications. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	-	3.016	-
Title: Distributed Collaborative Intelligent Systems Technology CTA ***Description:*** Establish the underpinning science to extend the reach, situational awareness, and operational effectiveness of intelligent system and soldier teams against dynamic threats in complex and contested environments and provide technical and operational superiority through fast, intelligent, resilient, and collaborative behaviors. Research efforts will enable distributed systems to engage in complex, time-varying, and contested environments to accomplish Army missions by leveraging a mix of online adaptation and system-wide resilience. ***FY 2025 Plans:*** Will unify joint perception, action, and communication capabilities previously developed to establish the common foundation for learning-based multi-robot collaboration in complex, adversarial environments; expand a new science of deception in autonomous	6.455	6.706	6.794

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
maneuver that links adversarial reasoning, team coordination, autonomous behaviors, learning, and game theory to support operations in complex environments against intelligent and adaptive adversaries; develop formalisms and planning techniques for multi-robot mission specifications that build on natural language reasoning and semantic environment representations and enable adaptive mission execution and scaling to large heterogeneous multi-agent teams; design and conduct experimentation to inform the program capstone and support technology transition. ***FY 2026 Plans:*** Will build towards program capstone by leveraging the common foundation for learning-based multi-robot collaboration to understand scalability and resiliency against simplified Army-relevant scenarios in complex environments; adapt outcomes of research in the science of deception to capstone-inspired problems and environments to understand scalability and performance limitations; develop and refine experimental framework for applying formalisms and planning techniques that utilize advances in artificial intelligence (AI) foundation models for language to bridge multiple program-developed behaviors and AI models into a cohesive mission-planning framework; design and conduct experimentation with large heterogeneous multi-agent teams to inform the program capstone and support technology transition. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase is an economic adjustment.			
Title: Neurosciences CRA ***Description:*** This effort performs multidisciplinary basic research in the area of neuroscience through collaboration with the University of California at Santa Barbara. ***FY 2025 Plans:*** Will investigate and identify brain areas that allow humans to reason and understand new environments to inform artificial intelligence models and deep neural networks to better recognize and respond to dynamic changes in the environment; conduct experiments to understand the cognitive and neurobiological mechanisms of complex decision making; examine how different brain areas interact and network during the transition from novice to expert in complex task completion. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	0.665	0.690	-
Title: Identification and characterization of team-level processes for enhancing performance of heterogeneous Soldier-Agent teams CRA	5.138	4.338	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Description: By developing and validating theoretical principles of human-agent team states and processes, this effort defines methods for exploiting individual dynamics and variability to improve team-level properties and performance. ***FY 2025 Plans:*** Will investigate theory-of-mind approaches to allow for humans and agents to predict each other's capabilities and strategies to improve team performance in tasks that require flexibility and adaptability; identify new methodologies to create agents based on the brain's spatial reasoning and decision making networks and conduct experiments to assess their efficacy in human-machine teams; discover new human-machine team interactions that improve team adaptability in tasks which require super-human capabilities; analyze the impact of new types of machine intelligence such as large language models to enable unprecedented human-technology team interactions; explore ways to enable hybrid intelligence through development of neuro-enhancement and crowd sourcing methodologies. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Army Artificial Intelligence Innovation Institute (A2I2)	7.468	7.762	8.050
Description: This effort coordinates, conducts, and accelerates basic research to address Army-specific challenges, with a focus on advancing artificial intelligence (AI) and machine learning (ML) capabilities for autonomous maneuver in multi-domain operations (MDO). A broad-spectrum of AI capabilities are critical to the integration of operations in the contested environment including human-agent teaming for faster and more informed decisions, multi-domain Command, Control, Communications, and Computers (C4) that is resilient to Cyber Electromagnetic Activities (CEMA), and AI enabled cyber security that is robust to enemy deception. The Army will leverage existing High Performance Computing (HPC) and network infrastructure, along with regional laboratory extensions to enable basic research on AI that is open, with top-tier universities, commercial businesses, and established Department of Defense industrial partners. The A2I2 creates an accessible database of heterogeneous data, a repository of AI and ML algorithms and software tools, and military-relevant challenge problems. ***FY 2025 Plans:*** Will conduct lab experiments to investigate multi-robot coordination algorithms in Military Operations in Urban Terrain (MOUT) environments; create neural networks for Internet of Battlefield Things (IoBT) edge-network resource management; investigate joint understanding and dialogue interface for improved natural language communications between robots and robot operators;			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
create adaptable command-and-control decision support tools to operationalize new scenarios from original training scenarios; investigate robotic ability to learn and create physics abstractions from real-world interactions in the field. ***FY 2026 Plans:*** Will focus on new topic areas, including Large Pre-Trained Models (LPTM) and AI/ML enabled command and control (C2); improve methods for sensor placement, information processing, and semantic models for battlefield information; investigate means of improving communication and collaboration between human and robotic assets in C2 tasks; research challenges of building LPTMs including cognition-inspired world models, use of synthetic data, and programming adherence to ethical guidance; develop LPTM capabilities in processing Army doctrine, knowledge distillation at the edge, holistic experimentation, and establishing practical guardrails. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase is an economic adjustment.			
Title: Army Radio-Frequency (RF) Electronics Center ***FY 2025 Plans:*** Will develop the theoretical understanding and experimental techniques needed to create UWBG devices that exceed state-of-art technology with respect to signal gain, output power density, and power added efficiency; develop an artificial intelligence and machine learning (AI/ML) augmented theoretical framework and experimental validation methodology to enable the design of novel UWBG semiconductor devices intended for millimeter-wave (mm-wave) operation with increased power density. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	4.943	3.385	-
Title: Army Advanced Biological Control Center ***Description:*** The Army Advanced Biological Control Center will develop a fundamental knowledge base for precise, reliable control of engineered biological systems for functional effect during military operations. By exploiting fundamental relationships governing the functions and properties of biological systems, the center will develop advanced control schemes using synthetic biology targeting two key areas: 1) Genetic Control of Material Properties and 2) Biological Control in Competitive Environments. ***FY 2025 Plans:*** Will create a Design-Build-Test-Learn framework comprised of novel computational and high-throughput tools for elucidating sequence-structure-function-property relationships for engineered biological materials; explore the ability of the Design-Build-Test-Learn framework to enable the predictive design of multifunctional biomaterials with differing properties (e.g., electronic, optical,	4.943	5.135	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
sensing); explore the predictive design of engineered cellular systems by identifying microbial consortia amenable to carrying synthetic functions, rendering them receptive to engineering, designing genetic functions to work in never-before-tried species, and then simulating environments to assess engineered microbes in military-relevant environments. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Army Advanced Energetics Center ***Description:*** The Army Advanced Energetics Center will develop a fundamental knowledge base for greater than 5x lethality and range of guns and projectiles through the discovery of disruptive energetic materials and exceeding the strategic objectives of current programs. This research focuses on high through-put synthesis and rapid characterization to accelerate discovery of next generation materials to enable Army domination of the future battlefield. ***FY 2025 Plans:*** Will explore non-traditional synthetic methodologies to enable novel energetic materials; conduct experiments with new diagnostic and modeling techniques to study the role of microstructure and geometry on energetic release; develop a novel technique that enables in-operando fast response and high resolution imaging of the thermal and reaction front of energetic materials; explore a new aluminum shell chemistry that will promote controllable surface reactions and aluminum energy release rates at time scales relevant to a detonation; create a physics-based reactive burn model to study the reaction dynamics of heterogeneous energetic materials in the weak-to-moderate shock regimes; explore time-resolved diffuse back-illuminated extinction imaging (DBEI) as a method for imaging explosively generated reactive particle fields. ***FY 2026 Plans:*** Will explore and validate a physics-based reactive burn model for heterogeneous energetic materials to investigate the effects of microstructure and geometry on energetic release; examine novel metal particle synthesis through tunable design of surface reactions that if successful will create architectures that will enable faster energy release; conduct experiments that couple optical diagnostics and analysis methods to study phase-specific particle transport chemical reaction measurements that will inform multi-scale modeling efforts; study novel mixed organic-inorganic formulations to better understand detonation properties and the interactions of detonations with materials; conduct research on aluminum-graphene-fluoropolymer composites as novel energetic materials that if successful could address challenges associated with insensitive munitions. ***FY 2025 to FY 2026 Increase/Decrease Statement:***	4.942	5.135	5.123

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Funding decrease is an economic adjustment.			
Title: Tactical Behaviors for Autonomous Maneuver ***Description:*** This effort focuses on development of the algorithmic underpinnings of adaptive, resilient, and tactically relevant behaviors for teams of autonomous ground and aerial vehicles, which will enable multi-domain autonomous maneuver. ***FY 2025 Plans:*** Will investigate methods and techniques that allow small teams of agents to mimic human navigation tactics based on limited training samples; conduct fundamental research on strategies to counter anticipated movement through partial unknown environments; continue to investigate theoretical approaches to gaining tactical advantages with respect to increasingly complex and capable adversarial models. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	2.634	2.736	-
Title: Materials Discovery for Extreme Environments ***Description:*** Research will focus on material discovery for next-generation ballistic materials by using accelerated material-by-design approach to include consideration of nonhomogeneous, anisotropic, and hierarchical material systems. A data-driven material design approach will be developed utilizing high-throughput material processing and characterization, multi-scale modeling, and machine intelligence to produce leap-ahead material solutions.	6.208	-	-
Title: Fundamentals for Quantum Technologies ***Description:*** This work supports quantum information science basic research for next generation capabilities in entanglement-enhanced novel sensors and communications for Army dominance on the future battlefield. ***FY 2025 Plans:*** Will investigate approaches to rapidly assess samples of nitrogen-vacancy (NV) centers in diamond and other defect systems for use in quantum sensors and clocks; investigate collective effects in nanofiber over 10x longer ranges; develop stable cryogenic ion traps; discover methods to reduce background noise when generating telecom-compatible photons for long-range entanglement. ***FY 2025 to FY 2026 Increase/Decrease Statement:***	4.884	3.002	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: Convergent Manufacturing for High Performance Material Interfaces ***Description:*** This research will address novel additive deposition, high fidelity subtractive methods, and high resolution directed energy processes to investigate complex, non-discrete, high performance, multi-material interfaces with improved adhesion, gradual coefficient of thermal expansion changes, and gradual wavespeed changes to enable high performance under extreme ballistic and thermal conditions. ***FY 2025 Plans:*** Will investigate non-reactive hybrid additive manufacturing processes to study dissimilar metal-metal and metal-ceramic interfaces using novel embedded design technique; validate working convergent manufacturing (CM) platform by converging two manufacturing processes (additive and subtractive) and two dissimilar materials in one manufacturing platform; develop and assess first generation digital twin for CM. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	1.001	1.040	-
Title: Semi-Conductor Modeling Consortium ***Description:*** As a result of the Army's investment in electronic material modeling and simulation, tools are now available to predict semiconductor material and device performance with high fidelity. Through modeling and simulation, the Center for Semiconductor Modeling of Materials and Devices (CSM) assesses performance, guides improvements, and reduces technology risk for niche Department of Defense (DoD) semiconductor applications before large investment is committed. The intent of the CSM is to simulate real materials and devices in real environments, understand the limits of the technology, understand the parameters that control the performance, eliminate variances to the maximum extent possible, and arrive at a materials and device design which will reproducibly yield the required performance. Doing so at an early stage of innovation will lead to acceleration toward the next disruptive innovation. This acceleration is becoming increasingly important, because the environment is changing rapidly and to stay ahead the Army must innovate faster. ***FY 2025 Plans:***	0.668	0.521	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AB7 / *Army Collaborative Research and Tech Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will examine the performance of Geiger and linear mode avalanche photodiode arrays; identify mitigation strategies for blinking pixels; develop breakdown simulation models for wide band gap/ultrawide band gap devices. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.			
Title: HBCU/MI Research Partnerships ***Description:*** These research partnerships will support basic research focused on partnerships with Historically Black Colleges and Universities and Minority Institutions (HBCUs/MIs). The focus of this effort is to advance innovative basic research in areas of strategic importance to the Army by bringing competitively selected HBCUs and MIs research teams into existing Army Collaborative Research Alliances (CRAs), Collaborative Technology Alliances (CTAs), and centers. The Army CRAs, CTAs, and centers work with Army, industry, and other academic partners to transition research to technology demonstration. These new research partnerships will provide opportunities to recruit, educate, and train outstanding students and post-doctoral researchers in science and technology areas relevant to the Army. ***FY 2025 Plans:*** Will continue to support three to five HBCU/MI research partnerships selected to enhance existing research under an individual Army CRA, CTA, or center, and recruit, educate, and train students and post-doctoral researchers in science and technology areas relevant to the Army. ***FY 2026 Plans:*** Will continue to support three to five HBCU/MI research partnerships each with a duration of five years, selected to recruit, educate, and train students and post-doctoral researchers in science and technology areas relevant to the Army and to enhance existing research under an individual Army CRA, CTA, or center. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase is an economic adjustment.	1.927	2.004	2.500
Title: Army Military Academic CRA ***Description:*** This CRA provides a framework across the Army to establish and sustain efforts to strengthen the incorporation of the United States Military Academy (USMA) and Senior Military Colleges faculty and cadets into the Army Modernization Enterprise (AME) through research collaborations. This CRA seeks to understand the ethical, legal, policy, and operational impacts on emerging technologies, and to build the framework to enhance personnel exchanges between the Army, USMA, and Senior Military Colleges.	1.768	1.761	1.978

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AB7 / *Army Collaborative Research and Tech Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2025 Plans: Will continue to conduct foundational research through annual, competitively awarded seedling efforts in areas such as photonics, autonomy, power and energy, quantum sensing, cyber operations, materials for hypersonic systems, and recommendations for policy and strategy in ethics, operations, business, and legal domains for Army modernization. ***FY 2026 Plans:*** Will continue to conduct foundational research through annual, competitively awarded seedling efforts and develop mechanisms to build capabilities at Senior Military Colleges in areas aligned with Army supported major programs and recommendations for policy and strategy in ethics, operations, business, and legal domains for Army modernization. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase is an economic adjustment.			
Title: Collective Judgement Formation ***Description:*** This effort establishes the underpinning science needed to understand how humans receive, process, and ultimately accept and reject information that leads to the formation of judgments. Individual and social constructs, the role of bias, and other cognitive and environmental factors will be incorporated. Research will address synthetic forms of intelligence, the speed and scale of information sharing, and integrating human and machine intelligence. ***FY 2025 Plans:*** Will refine models in context of a defined domain (such as, inclusion/exclusion criteria) to characterize fundamental mechanisms of how human-technology relationships drive belief formation; explore how coordinated information presentation at extremely high-rates and multiple sources leads to biases, limitations, and misperceptions in the human's innate systems for aggregating information into judgements. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.	1.424	1.305	-
Title: Novel Robotic Controls ***Description:*** This effort establishes the scientific framework and approaches to enable low cognitive reflexive components for robotic platform development to include the interdependencies of actuation, sensing, perception, and low cognition controls for greater resilience, efficiency, and agility. Research will focus on highly adaptive and reflexive platform components with multiple degrees of freedom capable of interacting (trip, fall, impact) with the environment without catastrophic consequences.	-	1.432	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AB7 / *Army Collaborative Research and Tech Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2025 Plans: Will design a reflexive controls architecture coupled with a highly dynamic morphology to optimize the maneuverability of the platform; explore skeletal-musculature for an autonomous agent capable of exceptional maneuverability; develop control responses via perception and actuation within the platform, and design control architectures for actualizing complex maneuvers to include external perception. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology and realignment within this Project.			
Title: High-Throughput Materials Discovery for Extreme Conditions ***Description:*** This effort will rapidly accelerate the discovery of materials for extreme conditions (e.g. high strain rate, high temperatures) through the integration of artificial intelligence (AI), machine learning (ML), data science, and high-throughput processes into the materials development cycle. Research will focus on data-driven materials design, high-throughput synthesis and processing, high-throughput characterization, and development of ML-augmented physics-based models. ***FY 2025 Plans:*** Will identify most promising physics-informed models and investigate validation methodologies; conduct experiments on natural language processing for data-mining of materials literature; investigate high-throughput synthesis of artificial intelligence-predicted materials; investigate utilization of machine learning to expand sparse data sets; conduct high-throughput experiments on surrogate high-strain rate tests; examine automation and autonomous experimentation; assess integration of a data management platform into Army infrastructure. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology and realignment within this Project.	-	4.562	-
Title: Adaptive War Gaming for Advanced Concept Development (AWARE) ***Description:*** Algorithmic Game Theory, as an area of research, has had phenomenal growth since 2005 and has been used successfully in limited areas of protecting resources from adversaries (poaching, harbors, TSA, etc). That said, the exponentially growing state space, that comes from dealing with multi-echelon, multi-domain battlefields of tomorrow, and from modeling	-	-	5.214

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AB7 / *Army Collaborative Research and Tech Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
situations with unknown-unknowns, when used in military contexts will likely demand decision making at the speed of events (possibly in milliseconds) for which there are no known scientific frameworks today. The AWARE program will address the creation of frameworks for building robust set of strategies, called concepts, that can be explored by decision makers (during war-gaming or planning) to ask what-if questions by probing representations of game trees and strategy spaces, allowing for dynamic reconfiguration of decisions based on new knowledge. Finally, the AWARE program will address the gamut of modeling, inferencing, and learning to deal with knowledge of exogenous events and deception by adversaries. ***FY 2026 Plans:*** Will explore equivalence classes to map complex multi-disciplinary concepts and associated capabilities to families of strategies within a mathematical framework; investigate what-if algorithmic assessment over dynamic sets of decision trees to identify optimal conditions that lead to desired outcomes; examine the combination of algorithmic game theory with machine learning to scale decision-making in a way that is computationally feasible and theoretically justifiable; analyze algorithmic complexity to develop strategies that increase the difficulty of adversarial decision making; identify theoretical principles underlying large-scale deception and counter-deception in adversarial games. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase reflects realignment within this Project to support Adaptive War Gaming for Advanced Concept Development (AWARE) in FY2026.			
Accomplishments/Planned Programs Subtotals	58.118	57.650	29.659

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601104A / *University and Industry Research Centers*	Project (Number/Name) AB8 / *Army Educational Outreach Program*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
AB8: *Army Educational Outreach Program*	-	11.889	12.756	12.666	-	12.666	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This project supports science, technology, engineering, and mathematics (STEM) activities that encourage elementary/middle/high school and undergraduate youths to develop an interest in and pursue education in the STEM fields to support the Army, and the nation's growing dependence on STEM skills. These activities are coordinated within the Army Educational Outreach Program (AEOP) that links and networks appropriate components to derive the best synergies to present the Army to a larger pool of technical talent and to provide students with Army-unique practical experiences at Army laboratories, centers, and institutes and expose them to Department of Defense (DoD) careers. AEOP increases interest and involvement of students and teachers across the nation in STEM, including military affiliated communities, through exposure to Army sponsored research, education, competitions, internships, and practical experiences. This project utilizes Army STEM assets to contribute to a STEM literate citizenry as well as enhances the national pool of science and engineering personnel that in turn supports defense industry and Army laboratory and research, development, and engineering center needs.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: AEOP Coop Agreement	11.889	12.756	12.666
Description: The Army Educational Outreach Program (AEOP) Cooperative Agreement encompasses a cohesive and coordinated portfolio of STEM education experiences to develop, enhance, and reward students in pursuit of STEM education. This activity supports a strong partnership with government, academia and industry to leverage assets and provide a broader and deeper STEM experience for students and teachers to address the Department's, and the nation's, challenge of acquiring clearable STEM literate talent in positions throughout the workforce and in the industrial base. These activities include Army-sponsored research, education, competitions, apprenticeships, internships, and practical experiences designed to engage and guide students and teachers in Army sponsored STEM programs. AEOP has targeted efforts to reach and engage military affiliated communities in STEM initiatives to build the pool of diverse STEM competitive talent. The West Point Cadet Research Program provides West Point Cadets an opportunity to work on Army research projects alongside Army and industry scientists and engineers during the summer.			
FY 2025 Plans: Continue Army sponsorship of students and STEM education opportunities; provide incentives in STEM competitions that include scholarships, experiences and mentorships, as well as expose students to DoD career opportunities; streamline processes, leverage funding and build educational partnerships, and perform annual comprehensive reviews and educational assessments to support future decisions and best practices; continue career development opportunities that support agile human capital needs			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AB8 / *Army Educational Outreach Program*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
within laboratories with a concentration on continued STEM education development; increase partnerships with like-minded organizations in an effort to increase participation to build the pool of diverse STEM competitive talent; conduct West Point cadet research internship program to enhance cadet training through field experience in Army research labs and engineering centers. ***FY 2026 Plans:*** Will continue Army sponsorship of students and STEM education opportunities; provide incentives in STEM competitions that include scholarships, experiences and mentorships, as well as expose students to DoD career opportunities; streamline processes, leverage funding and build educational partnerships, and perform annual comprehensive reviews and educational assessments to support future decisions and best practices; continue career development opportunities such as high-level internships and fellowships that support agile human capital needs within laboratories with a concentration on continued STEM education development; increase partnerships with like-minded organizations in an effort to increase participation to build the pool of diverse STEM competitive talent; continue to strengthen partnerships with West Point to enhance STEM education and outreach efforts and cadet training through field experience in Army research labs and engineering centers. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.			
Accomplishments/Planned Programs Subtotals	11.889	12.756	12.666

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601104A / *University and Industry Research Centers*	Project (Number/Name) AC6 / *International Science and Technology*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
AC6: *International Science and Technology*	-	7.343	7.871	3.752	-	3.752	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This project funds: 1) the Army Combat Capabilities Development Command (DEVCOM) International Technology Centers (ITCs), and 2) the Foreign Technology (and Science) Assessment Support (FTAS) program. The ITCs seek to discover highly promising basic research from the universities of foreign partners and awards seed funding to discoveries that support the United States Army's Science and Technology (S&T) strategy. The ten ITCs located in North America, South America, Asia, and Europe support the Army's goals of providing the best technology in the world to our Warfighters by leveraging the international S&T investments of international partners, thereby increasing our ability to use limited S&T funds on promising research opportunities. The ITCs will identify and assess international technology programs, 'technology finds', to assess their potential impact on the Army's S&T investment strategy and modernization priorities. These 'technology finds' are submitted to various Army S&T organizations for assessment and consideration to determine their suitability for investment. Highly promising research will be awarded seed funding through a grant, contract, or cooperative agreement. The FTAS program also builds upon the 'technology finds' submitted by the ITCs. In some cases, the find is truly unique and may well meet an Army requirement or potentially support ongoing Army S&T investments or modernization priorities. In such cases, the FTAS program can provide initial resources (seed money) to determine the appropriateness of these technology areas identified as having potential relevance to the Army. These efforts will provide information useful in making early assessments of the technology's potential contributions to the Army's S&T strategy and modernization priorities

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this project is performed by the U.S. Army Combat Capabilities Development Command (DEVCOM) Headquarters Forward Elements.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: International Technology Centers	4.786	5.119	3.752
Description: The ten International Technology Centers (ITCs) located in North America, South America, Asia, and Europe support the Army's goals of providing the best technology in the world to our Warfighters by leveraging the research investments in Science and Technology (S&T) of our international partners. The ITCs perform identification and assessment of international technology programs to assess their potential impact on the Army's S&T investment strategy and modernization priorities. ITC 'technology finds' are submitted to various Army S&T organizations for assessment and consideration to determine their suitability for investment through avenues such as the basic and applied research program or the Foreign Technology (and Science) Assessment Support (FTAS) Program. Highly promising research is awarded seed funding by the ITC through a grant, contract, or cooperative agreement - typically to a foreign researcher.			
FY 2025 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AC6 / *International Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Continue to scout for foreign S&T within geographic areas of responsibility on behalf of Army labs and centers to identify early emerging technologies of interest to the Army's research and development efforts in support of the Army's Modernization Priorities. In accordance with the Army S&T Strategy and Army Modernization Priorities, seek and connect foreign technology developers with Army science and technology enterprise. The ITCs will fund promising technologies and relevant research through grants, contracts, cooperative agreements, or other existing award mechanisms (e.g., Coalition Warfare Program, Foreign Technology and Science Assessment Support, Foreign Comparative Testing, etc.); continue to enhance and refine technology search capabilities using customer feedback to focus on mid- and long-term capabilities for the Army enterprise. ***FY 2026 Plans:*** Will continue to scout for foreign S&T within geographic areas of responsibility on behalf of Army labs and centers to identify early emerging technologies of interest to the Army's research and development efforts in support of the Army's Modernization Priorities. In accordance with the Army S&T Strategy and Army Modernization Priorities, seek and connect foreign technology developers with Army science and technology enterprise. The ITCs will fund promising technologies and relevant research through grants, contracts, cooperative agreements, or other existing award mechanisms (e.g., Coalition Warfare Program, Foreign Technology and Science Assessment Support, Foreign Comparative Testing, etc.); continue to enhance and refine technology search capabilities using customer feedback to focus on mid- and long-term capabilities for the Army enterprise. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects reduction in technologies and relevant research through grants, contracts, cooperative agreements or other existing award mechanisms.			
Title: Foreign Technology (& Science) Assessment Support ***Description:*** The FTAS program serves as a catalyst for the Army to assess potentially game-changing technologies discovered in friendly foreign nations by the Army ITCs, which may meet future Army needs. The technology finds can often times be truly unique and may well meet an Army requirement or potentially support ongoing Army S&T investments. These efforts could fund international challenges/searches, international extramural research, and non-traditional international researchers to provide information useful in making early assessments of a technology's potential contributions to the Army's S&T strategy. ***FY 2025 Plans:*** Continue to solicit proposals, assess scientific quality/alignment to Army priorities of candidate proposals, and fund highly relevant and rigorous projects for potential contribution to the Army's S&T programs. Funds will be used to support research grants, innovation challenges, procurement of foreign technology, partnering with international allies and partners to include non-traditional entities, and enabling efforts for international research and technology collaboration with the Army Modernization	2.557	2.752	-

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** AC6 / *International Science and Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Enterprise; provide funding for approved proposals to support development and/or assessment of foreign technologies by U.S. Army laboratories and foreign partners in topical areas supporting Army priorities. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects realignment to Program Element (PE) 0601275A (Electronic Warfare Basic Research) / Project A62 (Army Collaborative Research and Tech Alliances) as a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology and realignment within this Project.			
Accomplishments/Planned Programs Subtotals	7.343	7.871	3.752

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601104A / *University and Industry Research Centers*	Project (Number/Name) J13 / *UNIVERSITY AND INDUSTRY INITIATIVES (CA)*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
J13: *UNIVERSITY AND INDUSTRY INITIATIVES (CA)*	-	16.000	9.500	-	-	-	-	-	-	-	-	-

Note

Congressional Increase

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for University and Industry Initiatives.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025
Congressional Add: Renewable Energy Technologies	5.000	-
FY 2024 Accomplishments: Congressional Interest Item funding provided for Renewable Energy Technologies		
Congressional Add: Biotechnology Advancements	1.000	-
FY 2024 Accomplishments: Congressional Interest Item funding provided for Biotechnology Advancements		
Congressional Add: Materials In Extreme Dynamic Environments	5.000	2.500
FY 2024 Accomplishments: Congressional Interest Item funding provided for Materials In Extreme Dynamic Environments		
FY 2025 Plans: Congressional Interest Item funding provided for Materials In Extreme Dynamic Environments		
Congressional Add: Quantum and photonics research	5.000	-
FY 2024 Accomplishments: Congressional Interest Item funding provided for Quantum and photonics research		
Congressional Add: Connected vehicle cybersecurity center	-	7.000
FY 2025 Plans: Congressional Interest Item funding provided for Connected vehicle cybersecurity center		
Congressional Adds Subtotals	16.000	9.500

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601104A / *University and Industry Research Centers*	**Project (Number/Name)** J13 / *UNIVERSITY AND INDUSTRY INITIATIVES (CA)*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army												Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601121A / *Cyber Collaborative Research Alliance*							
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
Total Program Element	-	5.459	5.525	5.463	-	5.463	-	-	-	-	-	-
CB5: *Cyber Collaborative Research Alliance*	-	5.459	5.525	5.463	-	5.463	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE) fosters research performed through the Cyber Security Collaborative Research Alliance (CSEC CRA), a competitively selected consortium, formed to advance the theoretical foundations of cyber science in the context of Army networks. This CRA consists of academia, industry and government researchers working jointly with the objective of developing a fundamental understanding of cyber phenomena so that fundamental laws, theories, and theoretically grounded and empirically validated models can be applied to a broad range of Army domains, applications, and environments. This research focuses on three interrelated aspects of cyber security and is conducted using a trans-disciplinary approach that takes into account the human element of the network. The three aspects of cyber that are addressed are: 1) vulnerabilities and risks of cyber networks to malicious activities, 2) anticipating, detecting, and analyzing malicious activities, and 3) agile cyber maneuver to thwart and defeat malicious activities. Overarching goals of cyber security are to significantly decrease the adversary's return on investment when considering cyber attack on Army networks, and minimizing the impact on Army network performance related to implementing cyber security. The CRA research creates a framework that effectively integrates the knowledge of cyber assets and potential adversary capabilities and approaches, and provides defense mechanisms that dynamically adjust to changes related to mission, assets, vulnerability state, and defense mechanisms.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

The FY 2026 request was reduced by $0.054 million for Advisory and Assistance Services to promote efficiencies and advance the policies of the Administration in alignment with Executive Order 14222, "Implementing the President's Department of Government Efficiency Cost Efficiency Initiative."

B. Program Change Summary ($ in Millions)	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total
Previous President's Budget	5.459	5.525	5.532	-	5.532
Current President's Budget	5.459	5.525	5.463	-	5.463
Total Adjustments	0.000	0.000	-0.069	-	-0.069
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-0.069	-	-0.069

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army	Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601121A / *Cyber Collaborative Research Alliance*

Change Summary Explanation

Funding decrease from the previous PB is due to an economic adjustment.

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601121A / *Cyber Collaborative Research Alliance*	Project (Number/Name) CB5 / *Cyber Collaborative Research Alliance*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
CB5: *Cyber Collaborative Research Alliance*	-	5.459	5.525	5.463	-	5.463	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project fosters cyber research, performed by a competitively selected consortium, formed to advance the theoretical foundations of cyber science in the context of Army networks. This work consists of academia, industry, and government researchers working jointly to develop a fundamental understanding of cyber phenomena so that fundamental laws, theories, and theoretically grounded and empirically validated models can be applied to a broad range of Army domains, applications, and environments. This research focuses on three interrelated cyber aspects and is conducted using a trans-disciplinary approach that takes into account the human element of the network. The three aspects of cyber that are addressed are: 1) adaptive reasoning for deception, 2) anticipating, detecting, and analyzing malicious activities, and 3) agile cyber maneuver to thwart and defeat malicious activities. The overarching goals are to significantly decrease the adversary's return on investment when considering cyber-attack on Army networks and minimizing the impact on Army network performance. This research creates a framework that effectively integrates the knowledge of cyber assets and potential adversary capabilities and approaches and provides defense mechanisms that dynamically adjust to changes related to mission, assets, vulnerability state, and defense mechanisms.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Adversarial-resilient Cyber Effects for Decision Dominance	5.459	5.525	5.463
Description: Conduct foundational research to create innovative theories, models, and methods to understand, create, predict, and exploit Windows of Superiority (WoS) across the cyberspace-network to achieve operational advantage for Multi-Domain Operations (MDO) synchronization and convergence across domains. This effort seeks to identify, formalize, and measure the key attributes/features in the cyber domain that can identify and predict WoS. This effort will develop theories and methods to identify and predict emerging WoS and techniques to shape the cyber domain to achieve WoS, including cyber resilience and deception to mitigate adversarial deception, intrusions, and adversarial machine learning (AML) attacks.			
FY 2025 Plans: Will conduct research into methodologies to identify, predict, reason, create, and exploit cyber security Windows of Superiority; explore techniques to enable multidomain cyber deception in contested environments; explore techniques to counter adversarial			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601121A / *Cyber Collaborative Research Alliance*	**Project (Number/Name)** CB5 / *Cyber Collaborative Research Alliance*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
attacks and manipulation of machine learning based algorithms utilized for network defenses; examine impact of uncertainties and incomplete information in machine learning algorithms for cyber deception and network intrusion detection. ***FY 2026 Plans:*** Will investigate the theoretical foundation of multidomain deception in complex systems and adversarial environments for tactical applications; develop measures of trustworthiness and robustness for complex systems; research innovative machine learning techniques which minimize the need for continual retraining and are resilient against adversarial attacks; investigate innovative approaches to support classifier training in simulated environments that will effectively and efficiently transfer to the deployed environment with minimal labeled data from captured network packets in the target environment. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease is an economic adjustment.			
Accomplishments/Planned Programs Subtotals	5.459	5.525	5.463

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army											Date: June 2025	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601275A / *Electronic Warfare Basic Research*							
COST ($ in Millions)	**Prior Years**	**FY 2024**	**FY 2025**	**FY 2026 Base**	**FY 2026 OOC**	**FY 2026 Total**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**Cost To Complete**	**Total Cost**
Total Program Element	-	-	-	88.053	-	88.053	-	-	-	-	-	-
A61: *Sensing and Electromagnetics for Army Environments*	-	-	-	30.161	-	30.161	-	-	-	-	-	-
A62: *Army Agile University Tech Collaborative Alliances*	-	-	-	57.892	-	57.892	-	-	-	-	-	-

Note

This is not a new start. Electronic Warfare Basic Research is a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology.

This funding is not a new start and is a realignment from:
(1) Program Element (PE) 0601102A (Defense Research Sciences) / Project AA4 (Training and Human Science Research)
(2) PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics)
(3) PE 0601102A (Defense Research Sciences) / Project AA9 (Information and Networking)
(4) PE 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances)

A. Mission Description and Budget Item Justification

This Program Element (PE) builds fundamental scientific knowledge contributing to the sustainment of United States (US) Army scientific and technological superiority in electronic warfare, electromagnetic spectrum sciences, and associated enabling and supporting technologies. This PE investigates new concepts and technologies for the Army's future force and provides the means to exploit scientific breakthroughs and avoid technological surprises. The research focuses on understanding and exploiting the electromagnetic spectrum to ensure dominance in contested environments. As modern warfare increasingly relies on electronic systems for communication, navigation, and targeting, maintaining superiority in the electromagnetic domain is crucial for mission success. The in-house portion of the program capitalizes on the Army's scientific talent and specialized facilities to transition knowledge and technology into appropriate developmental activities. The extramural program leverages the research efforts of other government agencies, academia, and industry. Work in this PE fosters university and industry-based research to provide a scientific foundation for enabling technologies for future force capabilities by supporting Collaborative Technology Alliances / Collaborative Research Alliances (CTAs/ CRAs). The Army formed CTAs to leverage large investments by universities and by the commercial sector in basic research areas that are of great interest to the Army. CTAs are industry-led partnerships between industry, academia, and the Army to incorporate the practicality of industry, the expansion of the boundaries of knowledge from universities, and Army scientists to shape, mature, and transition technology relevant to the Army mission. CRAs are academia-led partnerships, which leverage the cutting-edge innovation found in the academic environment.

Work in the PE complements work in PEs 0602275A (Electronic Warfare Applied Research) and 0603275A (Electronic Warfare Advanced Technology).

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army	Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

B. Program Change Summary ($ in Millions)	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	88.053	-	88.053
Total Adjustments	0.000	0.000	88.053	-	88.053
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	88.053	-	88.053

Change Summary Explanation

This is not a new start. Electronic Warfare Basic Research is a part of the Department of Defense Capability Based (Agile) Funding pilot, which provides enhanced capabilities by fostering innovation and accelerated deployment of promising technology. Funding increase in FY 2026 reflects realignment from Program Element (PE) 0601102A (Defense Research Sciences) / Project AA4 (Training and Human Science Research), Project AA8 (Sensing and Electromagnetics), Project AA9 (Information and Networking) and PE 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601275A / *Electronic Warfare Basic Research*	Project (Number/Name) A61 / *Sensing and Electromagnetics for Army Environments*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
A61: *Sensing and Electromagnetics for Army Environments*	-	-	-	30.161	-	30.161	-	-	-	-	-	-

Note

This is not a new start and is a realignment from Program Element (PE) 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics).

A. Mission Description and Budget Item Justification

This project conducts readily adaptable basic research on novel materials, radar, sensing, precision measurements and novel devices to address a range of scientific problems for Electronic Warfare (EW) applications. Efforts include novel materials research, modeling and simulation of integrated multi-modal sensing, novel designs of operational energy and scalable power for EW applications. The research has applications to operational energy, sensors, distributed sensor fusion, distributed radar, alternative position, navigation, and timing (PNT) systems for Global Positioning System (GPS)-denied environments, High Energy Laser (HEL) technologies and applications in the EW domain.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Beyond Novel Materials	-	-	1.053
Description: This effort conducts research in modeling, fabrication, and characterization of semiconductor materials and structures that leads to revolutionary device functionality in sensing, low power electronics, quantum networks, and power generation. This effort investigates novel complex crystal structures that can lead to devices with performance beyond normal semiconductor transistors, including neuromorphic computing structures and topological insulator based heterostructure with low operating voltage.			
FY 2026 Plans: Will conduct select experimental and theoretical studies of topological materials, two-dimensional materials, novel magnetic materials, and heterostructures to reveal novel phenomena for concepts in low-power sensing and information processing.			
FY 2025 to FY 2026 Increase/Decrease Statement: This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics).			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A61 / *Sensing and Electromagnetics for Army Environments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2026 funding decrease reflects realignment to support the creation of Ultra-Short Pulse Laser within this project.			
Title: Physics Research for Army Innovation ***Description:*** This research includes modeling of advanced battery materials and structures, and modeling of electromagnetic fields interacting with catalytic materials. High bandgap materials including silicon carbide and gallium nitride with modified composition will be used to fabricate diodes for improved performance as optical communication sources, sensors, and high power components. Materials, designs, and fabrication techniques will be studied for the future development of Micro-Electro-Mechanical Systems (MEMS) for radio frequency (RF) devices and sensors. ***FY 2026 Plans:*** Will conduct experiments to refine and validate models for photocatalyzed chemical fuels reactions; conduct research on transferability of machine learned force fields for modeling ion solvation and transport in battery electrolytes and application therein. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding increase reflects additional research in electrolytes degradation pathways.	-	-	2.121
Title: Fundamentals for Precision Measurement for Contested Environments ***Description:*** This effort explores new materials, novel device architectures, and unique processing techniques to successfully maintain communication and information sharing protocols in GPS-denied, actively jammed, or austere environments. ***FY 2026 Plans:*** Will conduct experiments on long-term stability of optical frequency comb resonators linked to environmentally insensitive resonators for over-arching, optical clock concepts. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding increase due to revised economic assumptions.	-	-	0.891
Title: High Energy Laser (HEL) Materials and Thermal Management ***Description:*** This effort investigates and matures novel laser gain materials and other laser components with advanced thermal, thermo-mechanical, and thermo-optical properties. This effort investigates new materials and methods for controlling thermal	-	-	1.062

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A61 / *Sensing and Electromagnetics for Army Environments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
transients to reduce the size and weight of thermal management components while increasing the energy magazine of systems operating in burst modes. ***FY 2026 Plans:*** Will explore novel nanostructure control of thermal properties in phase change architectures. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding remains at prior level.			
Title: Physics-Informed Machine Learning for Complex Phenomena ***Description:*** Existing machine-learning approaches are not guided by the laws governing physical systems and unable to provide predictions of a physical system response with quantifiable uncertainty. Research will explore and develop modeling techniques incorporating machine-learning approaches to support fundamental studies of physical systems. Resulting models will be used to design and develop novel physical systems, such as diamond for high power RF applications. ***FY 2026 Plans:*** Will investigate incorporating constraints in machine learning models of complex physical systems; investigate new multi-fidelity assimilation methods for machine learning of physical systems, based on previous identification of knowledge gaps in multi-fidelity machine learning; explore feasibility of employing machine-learning models with uncertainty to construct stochastic surrogate models of physical systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding decrease reflects realignment to support the creation of Ultra-Short Pulse Laser within this project.	-	-	3.494
Title: Semiconductor Modeling for Advanced Electronics ***Description:*** 3D numerical modeling basic research activities are scattered and insular, not effectively leveraging the combined capabilities of Government, Academia, and Industry. The problems are diverse and complicated and need a focused and multi-disciplinary approach to gain fundamental understanding. This effort will build an ecosystem for foundational modeling and research in semiconductor materials and devices that leverages the broad combined knowledge base from academia, industry, and government laboratories to develop new and advanced semiconductor materials and devices for sensors, emitters, neuromorphic, and topological device applications.	-	-	1.195

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A61 / *Sensing and Electromagnetics for Army Environments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
FY 2026 Plans: Will apply high fidelity modeling codes to explore effects of compositional inhomogeneities in compound semiconductors on carrier transport in heterostructures relevant to high sensitivity sensing and imaging across the electromagnetic spectrum. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding increase reflects additional research in effects of compositional inhomogeneities in compound semiconductors.			
Title: Foundational Distributed Radar ***Description:*** This research seeks to investigate novel signal processing techniques to develop distributed, Global Positioning System (GPS)-independent, autonomous capabilities. This effort investigates tools and techniques for modeling, simulations, and emulation of distributed radio frequency (RF) sensors and effectors. This research investigates advanced materials-based antennas for low size, weight, power, and cost (SWaP-C), multi-function systems. ***FY 2026 Plans:*** Will investigate new and unique coherent versus incoherent aperture techniques through the use of distributed radar approaches for the detection of air projectiles; identify specialized waveforms and algorithms for fusing distributed radar nodes to achieve detection with emphasis on synchronization aspects of the nodes. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding decrease reflects realignment to support the creation of Ultra-Short Pulse Laser within this project.	-	-	1.247
Title: Foundational Sensing ***Description:*** This effort explores innovative methods to remotely sense and discriminate threat vehicle formations deep in the battlefield. This effort investigates novel mechanical wave sensing physics to enhance signal features in complex and high noise environments as well as investigates fundamental properties of electric field (E-field) and Magnetic (H)- field signals in cluttered environments. ***FY 2026 Plans:***	-	-	1.950

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A61 / *Sensing and Electromagnetics for Army Environments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will explore multi-state processing to increase algorithmic density for enhanced target knowledge and environmental considerations; explore high-performance modeling and simulation of integrated multi-modal sensor data for multi-modal, context aware inference at the edge discriminating similar targets such as decoy versus real. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding decrease reflects reduction in research on neural machine learning data processing and network adaptation.			
Title: Complex Effects Understanding and Modeling ***Description:*** This effort seeks to develop the fundamental understanding necessary to realize complex effects utilizing multiple geographically distributed sensor-effector nodes. This effort will develop new computational methods to accomplish simulations of complex systems that are intractable with current methods due to required interactions of multiple, dynamic physics formulations. This effort will pursue modelling and simulation to identify robust state spaces for distributed apertures capable of beam-forming, cross modal, and coherent sense and effect. Additionally, this effort will investigate sensitivity to synchronization quality and identify opportunities for cancellation and self-referencing. Focal instances include electronic warfare (EW), laser sense and effect, and kinetic effects. Science of design concepts will be investigated to efficiently pare down complex physical systems into tractable solutions including topology optimization and co-design. ***FY 2026 Plans:*** Will analyze possible multi-use photonic architectures capable of combined performance of ranging, timing, and data transfer to identify critical photonic components for further research; explore three "tiers" of multi-agent complex sensing, to include cooperative, collaborative, and coherent sensing (in order from most loosely coupled to most tightly coupled synchronization); identify temporal and spatial attributes for understanding complex environmental inputs to radio frequency (RF) modeling for effects associated with multiple sensor inputs; investigate spectral waveforms needed to invoke temporal and spatial attributes for fusion methodologies for coherent or incoherent sensing techniques; further research manifold discovery techniques for dimensionality reduction to enable construction of surrogate models of time-dependent physical systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding increase reflects additional research in spectral waveforms needed to invoke temporal and spatial attributes.	-	-	6.012
Title: Compact Non-Linear Elements and Non-Linear Arrays	-	-	6.039

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A61 / *Sensing and Electromagnetics for Army Environments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Description: This effort seeks to identify novel materials, physics, and architectures to achieve highly non-linear and high-density effects when synchronized in distributed arrays. Research will focus on enablers for emerging applications including electromagnetic (EM) windows for operation in hypersonic plasmas, compact, efficient, and multi-field array elements, intelligent-agent schemas for dynamic arrays, and novel materials for alternate EM bands. ***FY 2026 Plans:*** Will investigate electromechanical designs and feedback mechanisms that mitigate noise processes in electrostatic gaps informing the limits of capacitive detection for numerous sensing applications; conduct research on initially merged electronic/photonic architectures and materials identified to establish the state of the art baseline; advance theoretical modeling and experimental verification of non-linear processes in topological materials to understand the physics of polarization detection of signals or other modalities of electromagnetic (EM) signals across the spectrum; investigate the ability of passive non-linear dielectric surfaces to eliminate the need for resonant elements and enable extremely wide bandwidth EM skins; conduct experiments on non-linear surfaces to validate functions such as radio frequency (RF) absorption, control of scattered fields, and antenna pattern emulation; investigate engineered dielectric anisotropy and validate benefits to size, weight, power, and cost (SWaP-C), wide bandwidth, and multi-functional antenna elements for compact array apertures. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding increase reflects additional research in merged electronic/photonic architectures.			
Title: Novel Materials and Architectures for Emerging Bands and Modalities	-	-	4.598
Description: This effort seeks to identify novel physics, materials, and architectures for extending spectrum use beyond the current state-of-art (e.g., heavy use of radio frequency (RF) and infrared (IR) bands with classical network topologies). This effort will investigate novel energy efficient materials, structures, and storage for powering distributed sensors. ***FY 2026 Plans:*** Will validate temperature stability within a high temperature memory device architecture using ferroelectric nitride materials based on silicon carbide templates; explore non-Hermitian meta-optics structures for control and manipulation of infrared radiation from multiple sources; investigate compatibility of potassium tantalate niobate (KTN) as an electro-optic material for photonic integrated circuits; further exploration of novel materials, heterostructures, and device designs for excitonic, plasmonic, and other light-matter interactions in non-traditional electromagnetic (EM) bands ranging from ultraviolet (UV) to terahertz (THz); investigate aluminum gallium nitride (AlGaN) alloys with high mole fraction of aluminum nitride (AlN) for efficient optoelectronics. ***FY 2025 to FY 2026 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A61 / *Sensing and Electromagnetics for Army Environments*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
This is not a new start. FY 2026 funding transferred from PE 0601102A (Defense Research Sciences) / Project AA8 (Sensing and Electromagnetics). FY 2026 funding increase reflects additional research in non-Hermitian meta-optics structures.			
Title: Ultra-Short Pulse Laser Research ***Description:*** This effort investigates novel materials and architectures towards tunable short pulse and ultrashort pulse lasers beyond the current state-of-art; study the unique physics and effects of high intensity ultrashort laser pulses on matter, both in the optical and radio frequency (RF) spectrum; and investigate nonlinear materials and material systems that change their properties when exposed to short and ultrashort pulses. ***FY 2026 Plans:*** Will experimentally and theoretically investigate ultrashort pulsed laser effects in relevant optical materials. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** FY 2026 funding increase reflects initiation of Ultra-Short Pulse Laser Research.	-	-	0.499
Accomplishments/Planned Programs Subtotals	-	-	30.161

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601275A / *Electronic Warfare Basic Research*	Project (Number/Name) A62 / *Army Agile University Tech Collaborative Alliances*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
A62: *Army Agile University Tech Collaborative Alliances*	-	-	-	57.892	-	57.892	-	-	-	-	-	-

Note

This is not a new start and is a realignment from:
(1) Program Element (PE) 0601102A (Defense Research Sciences) / Project AA4 (Training and Human Science Research)
(2) PE 0601102A (Defense Research Sciences) / Project AA9 (Information and Networking)
(3) PE 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances)

A. Mission Description and Budget Item Justification

This project supports collaborative basic research to advance science and technology in support of Electronic Warfare (EW). This collaborative work between Army laboratories and centers, private industry, and academia focus on specific Army scientific challenges and enable rapid transition of innovative EW technologies to the Warfighter to enable the Army's Future Force. The collaboration between industry, academia, and the government combines the talents and expertise each member brings with a distinctly different approach to research. Industry partners leverage data and results from commercial applications and an agile, flexible workforce to deal with technology bottlenecks; Academia brings cutting-edge innovation and deep technical expertise; the Army researchers bring insights, concepts, and focus toward solving complex Army EW technology problems. This collaborative approach brings together world class research and develops talent to drive innovation in scientific objectives to enable Army EW applications.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army modernization strategy.

Work in this project is performed by the Army Research Laboratory (ARL).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Tactical Edge Cognitive Computing (TECC)	-	-	5.919
Description: This effort will leverage industry and academic collaboration to research milliwatt and sub-milliwatt tactical edge hardware and software for ultra-efficient artificial intelligence microelectronic accelerators with unparalleled compute power for counter-Command, Control, Communications, Computers, and Cyber (C5). Research will investigate the utilization of multimodal (imaging, event-based sensing, radio frequency (RF) and acoustic) sensing and EW under Denied, Disrupted, Intermittent, and Limited (DDIL) environments, maximizing mission length and minimizing sense-to-action timing.			
FY 2026 Plans: Will research foundational integrated circuit physical design methods for new design tools; research digital integrated circuit design; explore materials suitable for ferroelectric field-effect transistor (FeFET) circuits; study appropriate algorithms to integrate			

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A62 / *Army Agile University Tech Collaborative Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
with circuits for computation; research circuits for edge inferencing for seismic, acoustic, and electronic warfare (EW) signals; explore non-von Neumann compute architecture for Army edge inferencing. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from PE 0601102A (Defense Research Sciences) / Project AA4 (Training and Human Science Research) and PE 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).			
Title: Cyber Electromagnetic Convergence ***Description:*** Cyberspace and the Electromagnetic Spectrum (EMS) have historically been studied as disparate fields. However, the domains associated with the two entities are not independent, but instead closely intertwined and interdependent. This research will explore the integration and interdependence of the cyber domain and the electromagnetic spectrum (EMS) to discover the foundational knowledge required for future Army electromagnetic warfare applications. ***FY 2026 Plans:*** Will explore the signaling pathway from EMS activity to information processing and decision-making in complex EM-cyber systems; investigate new concepts of EMS payloads that could efficiently induce cyber effects with limited information; examine the generation of complex broadband waveforms within non-conventional EM; analyze new game theoretic insights for the interactions between multiple EMS-cyber agents. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).	-	-	4.500
Title: Internet of Battlefield Things CTA ***Description:*** This effort will characterize the Internet of Things (IoT) phenomena and its capacity to extend the spatial area for sensing, communicating, and delivering technical effects through gray resource exploitation. The effort will investigate the performance of IoT for situational awareness in tactical environments, allowing for indistinguishable or deceptive planning timelines that will delay and disrupt adversary decision making. The ubiquity of gray devices and their networked connections are exploited to support rapid diffusion of information with deceptive routing and provide additional resource support to deploy or provide protection from adversarial electromagnetic attacks. ***FY 2026 Plans:*** Will conduct research to safely exploit vast amounts of data from uncontrolled assets to reduce information uncertainty; explore intelligent network partitioning to support cooperative data communication, fusion, and processing in a distributed manner;	-	-	2.500

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A62 / *Army Agile University Tech Collaborative Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
conduct experiments with increased complexity of inference tasks to provide more robust solutions to occlusion, adversarial disruption, and degraded environments. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).			
Title: Adaptive Wavefront Control ***Description:*** Laser propagation in low altitude, near-ground propagation regimes is challenging due to greater atmospheric turbulence closer to the ground. This research will enable greater wavefront control beyond the capabilities of current conventional deformable mirror-based systems. The effort will advance adaptive wavefront control through coherent beam combination via mode superposition and turbulence characterization. ***FY 2026 Plans:*** Will study mode superposition and turbulence effects on coherent beam combination; explore novel reflectometry techniques for object classification in controlled and ambient conditions; investigate artificial intelligence/machine learning identified concepts for high-speed inverse design of optics systems. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).	-	-	3.700
Title: Thorium-229 for Precision Timing Nuclear Clocks ***Description:*** Nuclear isomers offer unique properties capable of laying the foundation for multiple new applications/capabilities, including portable clocks for position, navigation, and timing (PNT) and a more stable quantum bit for quantum computing, sensing, and metrology. The Thorium-229 (Th-229) isomer offers a low energy nuclear transition that occurs outside of a vacuum and does not require cryogenics. This research will explore Th-229 materials design, synthesis, characterization towards more sensitive and robust future PNT and sensing applications. ***FY 2026 Plans:*** Will examine the relationship between the Th-229 nuclear transition and host material phonon and optical behaviors; investigate computational methods to identify electronic structure coupling within the Th-229 materials; conduct experiments to characterize the effects of the external conditions on the nuclear transition. ***FY 2025 to FY 2026 Increase/Decrease Statement:***	-	-	3.500

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A62 / *Army Agile University Tech Collaborative Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).			
Title: Full Spectrum Structural Color ***Description:*** Research at the intersection of materials science, nanophotonics, and nanofabrication can create structural color throughout and beyond the visible spectrum (ultraviolet (UV), visible, infrared (IR)). This effort will pursue bottom-up (self-assembly), top-down (direct-write 3D printing), and hybrid approaches to creating and engineering structural color materials. Work in this task will lead to the first structural color materials with light-matter interactions in the UV and IR, amenable to conformal/ flexible coatings to provide signature management functionality beyond current paint/coating formulations. ***FY 2026 Plans:*** Will study coupled photonic phenomena to examine light-matter interactions in the UV and IR; investigate structure-function relationships of different material geometries; conduct experiments to analyze the tunability of advanced three-dimensional structures for multi-functional behaviors; explore novel synthesis and fabrication techniques to coat, paint, pattern, and print structural color features onto surfaces. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).	-	-	4.300
Title: Long-lived, Low C-SWaP, RF Spectrum Sensing and Geolocation (LL-RFSS) ***Description:*** This effort will research novel radio frequency (RF) architectures (novel mixer-less, swept-frequency, and spectrum sensor for enabling tunable, long life electronic sensing (ES) components) and enabling components for adaptation to multiple electronic attack (EA) bands (state of the art tunable RF filters and RF power detectors) to reduce sensor cost, size, weight, and power (C-SWaP) by several orders of magnitude. ***FY 2026 Plans:*** Will explore widely tunable RF filters providing passive voltage amplification for electronic warfare (EW) spectrum sensing, including the reduction and limits of coupled modes and high electromechanical coupling factor resonators; study the acoustic modulation of dielectric breakdown in sub-micron features and the generated frequency content associated with capacitor discharge through the resulting ionized gas for EA relevant circuits; investigate phase and modulation detection architectures and ultra-low power draw, low-noise amplifiers that are compatible with high RF circuit impedances; investigate feed-forward and other noise mitigation techniques in nanoscale gap structures applicable to Micro Electro-Mechanical Systems (MEMS) RF power	-	-	5.000

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
detection; research highly tunable, ultra-low power, RF varactors, including fundamental issues associated with long-term biased stability, such as dielectric charging and time dependent surface affects. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).			
Title: Ultrawide Bandgap RF Center ***Description:*** The Army Radio Frequency (RF) Electronics Center will develop ultra-wide bandgap (UWBG) materials and device concepts designed to enable next generation RF semiconductor technology for the Army. This research will enable advanced, robust, high-power RF electronics for radars, comms, directed energy, and electronic warfare (EW). The resulting robust high-power operation will provide longer ranges for sensing and effect-on-target under adverse conditions and improved sized, weight, and power (SWaP) will give small systems (Unmanned Aerial Vehicles, countermeasures, etc.) new capabilities. ***FY 2026 Plans:*** Will investigate UWBG material performance under high power and temperature operation; explore novel design architectures to enhance UWBG material properties; validate the use of physics informed artificial intelligence/machine learning to guide discovery and design of materials and device assemblies; conduct research integrating theory, modeling, and experimentation to identify novel material properties that permit function at high power, high frequency, and high temperature in tandem. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).	-	-	4.500
Title: Semiconductor Consortium ***Description:*** The Center for Semiconductor Modeling of Materials and Devices (CSM) investigates the development of new electronic materials for electronic warfare, sensing, radar, and communication. Modeling tools enable high fidelity semiconductor material and device simulation to reduce the number of developmental fabrication runs. The intent of the CSM is to simulate real materials and devices in realistic environments, understand the limits and parameters of the technology and its performance, and arrive at designs which will reproducibly deliver to requirements. Coupled with experimental validation, the CSM will employ these models to accelerate the development of ultrawide bandgap microelectronics component technologies to accelerate the development of electronic warfare (EW) component technologies for disruptive EW applications including distributed radar, near-field comms, and low-SWAP antennas. ***FY 2026 Plans:***	-	-	2.300

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Will investigate full three-dimensional device simulation capability for ultrawide band gap devices, including electrical/thermal transport physics; utilize model to develop preliminary designs for ultrawide band gap power devices. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).			
Title: Interfacial Chemo-Mechanics ***Description:*** Understanding the interplay between electrochemical reactions and mechanical stress/strain is critical for designing next-generation energy storage materials that resist degradation at high voltages and high charge/discharge rates. By uncovering how chemically-induced cracks, delamination, and interfacial degradation initiate and propagate at the microscopic level, researchers could develop novel electrode and electrolyte chemistries and interfaces that respond dynamically to prevent failure. ***FY 2026 Plans:*** Will identify in situ characterization methods to understand fundamental electro-mechanical microscopic degradation mechanisms for ceramic and polymeric electrolytes; investigate regenerative electrode/electrolyte materials science and mechanisms enabling self-healing solid-state interfaces; explore ceramic/conducting oxide processing and synthesis to produce stable thin-film interfaces. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).	-	-	3.450
Title: Curving THz Wireless Data Links Around Obstacles ***Description:*** A key challenge in millimeter-wave and terahertz wireless networks is blockage of the line-of-sight path between a base station and a user. This effort investigates self-accelerating electromagnetic waves which can realize a data link capable of curving around obstacles. Research may enable new communications and sensing capabilities utilizing large bandwidth in the terahertz range. ***FY 2026 Plans:*** Will investigate the theory behind self-accelerating beams (SABs) that impart their unique properties and propagation behaviors; conduct experiments to characterize the behavior of SABs and explore their generation, transport and detection; identify network assemblies that leverage SABs for multi-node communication array. ***FY 2025 to FY 2026 Increase/Decrease Statement:***	-	-	3.425

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).			
Title: Intelligent Sensing Nodes ***Description:*** Revolutionizing autonomous systems for army applications necessitates a paradigm shift in computing, merging intelligence with self-powered, cloud-free, environment-adaptive, sensor-fused, and ultra-compact architectures. This effort explores an intelligent sensing neuromorphic framework that operates independently of the cloud, achieving self-sufficiency in sensing, computing, and power supply by integrating near-sensor and in-memory computing with on-chip energy harvesting and storage. ***FY 2026 Plans:*** Will explore novel multi-dimensional materials and architectures capable of seamless integration of sensors and processors within a single device for high performance sensing and computing; investigate three-dimensional adaptive structures capable of dynamic reconfiguration based on real-time stimuli input; conduct experiments to identify and leverage computational models to decode neurological decision-making to inform the design of neuromorphic circuits. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).	-	-	3.613
Title: Shared World Models for Enhanced Formation Dominance ***Description:*** Effective human teams thrive not solely due to individual intelligence, but rather through effective communication, shared situational awareness, and complementary skill sets that facilitate the attainment of common objectives. To integrate autonomous agents (decision-aids or robots) as valuable team members, a shared understanding of the operational communications environment with respect to constraints, protocols, roles, responsibilities, actions, consequences, and potential threats is crucial. This effort will investigate methods for establishing and propagating shared world models, including threat assessments, within human-agent teams; explore strategies for disparate agents and humans to develop mutual understanding of strengths, weaknesses, and capabilities of adversarial communications capabilities towards the identification of opportunities to deploy offensive EW to disrupt these communications; and develop a layered security approach for resilient communications across human-autonomous agent teams. ***FY 2026 Plans:*** Will investigate methods for establishing and propagating shared world models, including threat assessments, within human-agent teams; examine strategies for disparate agents and humans to develop mutual understanding of strengths, weaknesses, and capabilities of adversarial communications capabilities towards the identification of opportunities to deploy electronic warfare	-	-	5.300

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army		Date: June 2025
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601275A / *Electronic Warfare Basic Research*	**Project (Number/Name)** A62 / *Army Agile University Tech Collaborative Alliances*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
payloads to disrupt communications; explore a layered security approach for resilient communications across human-autonomous agent teams for electronic protection; conduct research to develop frameworks for effective learning from collective experience based on data gathering and analysis of electromagnetic signals; study communications paradigms that facilitate effective information exchange within human-agent teams. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).			
Title: Foundational Quantum Sensing ***Description:*** This work supports quantum science basic research for next generation capabilities in novel field sensors and communications for Army dominance on the future battlefield, including quantum radio frequency (RF) sensing for electromagnetic warfare and advanced timing capabilities. ***FY 2026 Plans:*** Will investigate methods for and fundamental limits of measuring angle of arrival of RF signals using quantum sensors; investigate methods to improve signal-to-noise for small size, high-spatial-resolution electromagnetic sensors; investigate methods for rapid quantum material characterization for improved quantum sensor; investigate methods using low-size, weight, and power (SWaP) resonators for ultrahigh sensitivity magnetometry; investigate fast, high-fidelity control and read out of atomic and superconducting systems for sensing and quantum information processing. These discoveries address critical Army needs, including C-C5ISRT priorities through capabilities in secure communication, navigation, advanced timing, full-spectrum electromagnetic operation and situational awareness, and signal concealment. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** This is not a new start. Funding increase reflects realignment from Program Element (PE) 0601104A (University and Industry Research Centers) / Project AB7 (Army Collaborative Research and Tech Alliances).	-	-	5.885
Accomplishments/Planned Programs Subtotals	-	-	57.892

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2026 Army	Date: June 2025
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601601A *I Artificial Intelligence and Machine Learning Basic Research*

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
Total Program Element	-	10.206	10.309	7.012	-	7.012	-	-	-	-	-	-
CL3: *AI/ML Basic Research Hub*	-	10.206	10.309	7.012	-	7.012	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE) executes intramural and extramural basic research in artificial intelligence (AI) and machine learning (ML) to support an AI-enabled Multi-Domain Operations (MDO) Force. The PE includes projects that perform basic research in AI/ML with the potential to impact areas such as: Target Detection using Multiple Cooperative Autonomous Sensors (MCAS); more effective and quicker leader decision-making through use of AI-enhanced Common Operating Procedure (COP); replication of tactical behaviors to enable autonomous capabilities for maneuver; predictive maintenance; Intel support for Operations (specifically in support of long range precision fires); AI-enabled network/cybersecurity; intelligent business and process automation; and medical support. The Army's Artificial Intelligence Integration Center (AI2C) will provide strategic guidance and coordination of these basic research efforts in AI/ML across the Army Modernization enterprise.

Work in this PE contributes to the Army Science and Technology (S&T) portfolio and is fully coordinated with efforts in PE 0602180A Artificial Intelligence Technologies and PE 0603040A Artificial Intelligence Advanced Technologies.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering S&T focus areas, the Army Modernization Strategy and the Chief Digital and Artificial Intelligence Office.

B. Program Change Summary ($ in Millions)	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total
Previous President's Budget	10.708	10.309	12.397	-	12.397
Current President's Budget	10.206	10.309	7.012	-	7.012
Total Adjustments	-0.502	0.000	-5.385	-	-5.385
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.387	-			
• Adjustments to Budget Years	-	-	-5.385	-	-5.385
• FFRDC Transfer	-0.115	-	-	-	-

Change Summary Explanation

Funding decrease from the previous PB is due to the reduction in autonomy research for robotics systems.

Exhibit R-2A, RDT&E Project Justification: PB 2026 Army			Date: June 2025
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601601A / *Artificial Intelligence and Machine Learning Basic Research*	Project (Number/Name) CL3 / *AI/ML Basic Research Hub*	

COST ($ in Millions)	Prior Years	FY 2024	FY 2025	FY 2026 Base	FY 2026 OOC	FY 2026 Total	FY 2027	FY 2028	FY 2029	FY 2030	Cost To Complete	Total Cost
CL3: *AI/ML Basic Research Hub*	-	10.206	10.309	7.012	-	7.012	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Artificial Intelligence / Machine Learning (AI/ML) Basic Research Hub is a consortium of industry, government, and academia focused on AI basic research originating from world leaders in academic research pertaining to AI/ML breakthrough technologies for future application to Army-relevant areas such as object recognition using Multiple Cooperative Autonomous Sensors, leader decision-making, replication of tactical behaviors to enable autonomous capabilities for maneuver, predictive maintenance, Intel support for Operations, network and cybersecurity, AI-enhanced common operating picture, intelligent business and process automation, and medical support. Collaboration between academia, industry, and government is a key element of the Hub concept as each member brings with it a distinctly different approach to research. Academia is known for its cutting-edge innovation; the industrial partners are able to leverage existing research results for transition and to deal with technology bottlenecks; and Army AI researchers keep the program oriented toward solving complex Army technology problems.

Work in this project compliments Program Element (PE) 0602180A (Artificial Intelligence Technologies) and PE 0603040A (Artificial Intelligence Advanced Technologies).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering S&T focus areas and the Army modernization strategy.

Work in this project is performed by the Artificial Intelligence Integration Center (AI2C).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Title: Intelligence support to Operations	1.525	-	-
Description: Research AI / ML methodologies to perform object detection on imagery to augment operations. Investigate meeting the challenge of recognition of surrogate targets in S&T test ranges that are not absolute visual representations, using AI capabilities trained on real operational objects. Perform basic research in the area of intelligence support for operations in support of long range precision fires.			
Title: Artificial Intelligence Hub	5.482	-	-
Description: The AI Hub is located at Carnegie Mellon University as a consortium of industry, government, and academia focused on building and optimizing the Army's AI and ML initiatives with the goal of accelerating the fielding of capability. The AI Hub will utilize the Army Artificial Intelligence Innovation Institute (A2I2) data and AI/ML algorithms and software tools to investigate AI and ML capabilities to address the Army's unique problems. The AI Hub will focus on research into AI technologies for future application to Army-relevant areas such as, but not limited to, replication of tactical behaviors to enable autonomous capabilities for maneuver, robotics, predictive maintenance, multi-domain Command, Control, Communications, and			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
Computers(C4), network resiliency and cybersecurity, AI-enhanced common operating picture (CoP), intelligent business and process automation, decision support, AI-enabled collaborative data infrastructure platform, medical support and force protection. Will conduct research in distributed AI fabric, algorithms, and human-computer interaction enables operations in multiple Joint Capability Areas (JCA), including command and control, force application, and logistics. The current centralized AI model can be improved with a distributed AI architecture that will: autonomously search for and discover heterogenous data sources; optimize AI processing across dynamic and opportunistic resources; fuse AI capabilities between the enterprise, the edge, and AI-enabled sensors and systems embedded on platform; model the availability and reliability of critical network and computational resources to autonomously adapt and optimize algorithmic processing; and use efficiently distributed learning without the need to move data across the network. No distributed AI solutions currently exist to comprehensively mitigate the identified vulnerabilities. AI2C will conduct foundational research in the ability of distributed AI to address these vulnerabilities to set the conditions for use in Army systems and downstream advanced AI-applications.			
Title: ATR-MCAS ***Description:*** Combat Formations require the ability to autonomously maneuver to identify threats and enable friendly forces to disintegrate and exploit enemy forces in the close and deep maneuver areas. This effort researches AI-based, multi-system approaches to aided threat recognition (ATR) using a combination of autonomous air and ground sensors to build a more accurate operating picture when given zone recon missions. ATR and situational awareness is improved through the direct cooperation and autonomous mobility of the sensors.	3.199	-	-
Title: Foundation Models ***Description:*** Foundation models are the bedrock of modern machine learning development. These machine learning models train on vast amounts of data and capture patterns that generalize beyond their training set. This enables the quick development of accurate models across a wide range of tasks and domains through techniques such as few-shot learning and transfer learning. This research seeks to further develop foundation models of various modalities such as language, vision, and segmentation to provide tools and capabilities that extend to solve many problems, including ones that have not yet been identified. These models will include but are not limited to generative methods. Additionally, this research extends to advanced techniques for more effectively adapting existing foundation models (such as those for language, vision, and segmentation) to other domains applicable to the Army. This unlocks more capabilities in both internally developed models as well as the growing set of public and proprietary foundation models developed elsewhere. ***FY 2025 Plans:*** Research techniques to efficiently and accurately transfer foundation models to improve automated threat recognition. Expand on current research to improve methods for making robust predictions in domains with limited observations and labels. Develop new	-	3.162	3.708

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
methods to synthesize multi-modal data for use-cases such as querying the data through natural language, question-answering, semantic segmentation, and product generation. ***FY 2026 Plans:*** Will research techniques to extend foundational models (such as those for language, vision, and segmentation) across multiple modalities; expand new methods to synthesize multi-modal data for use-cases such as querying the data through natural language, question-answering, semantic segmentation, and product generation. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase reflects the planned milestones for research efforts in foundational models.			
Title: Distributed AI ***Description:*** Effectively leveraging modern artificial intelligence (AI) and machine learning (ML) techniques for both enterprise and tactical applications requires robust distributed AI capabilities. This research improves these capabilities with a focus on quickly and efficiently training and deploying models across enterprise and tactical systems, federated learning implementations, deploying state-of-the-art AI and ML algorithms onto ruggedized edge hardware and small form-factor devices with computing capabilities, improving robotic autonomous systems and models deployed on robotic platforms, and governing a large portfolio of distributed ML models. As the distributed network of data and AI/ML models grows and becomes more integrated into warfighting functions, it becomes a bigger attack vector for adversaries. In order to keep ongoing AI and ML developments secure, this research also investigates techniques to attack and compromise AI and ML systems as well as to defend them from attacks. ***FY 2025 Plans:*** Research improvements to AI-enabling computing infrastructure, devices, and algorithms for both enterprise and tactical computing environments. Research autonomy for robotic systems and methods for training, deploying, retraining, and governing machine learning models hosted on robotic platforms and edge devices. Conduct foundation research into methods for attacking and compromising machine learning and artificial intelligence systems as well as for defending against similar attacks. ***FY 2026 Plans:*** Will research methods for rapid training, retraining, deploying, governing, and interacting with machine learning models hosted on robotic platforms and edge devices; develop new methods for communicating with and between machine learning models and edge devices; expand research into deploying state-of-the-art models, including but not limited to models generally considered to be large or compute intensive, onto rugged edge hardware and small form factor devices; conduct foundation research into methods for attacking and compromising machine learning and artificial intelligence systems as well as for defending against	-	5.764	1.574

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2024	FY 2025	FY 2026
similar attacks; expand research to AI-enabling computing infrastructure, devices, data management, and algorithms for both enterprise and tactical computing environments. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding decrease reflects reduction in autonomy research for robotics systems.			
Title: Human AI Interactions ***Description:*** The modern operational environment is complex with vast amounts of available data, but current processes can be improved to more effectively leverage data to generate better decisions and reduce uncertainty. Artificial intelligence (AI) and machine learning (ML) tools have the potential to find useful information in these data, but they need to be able to effectively communicate this to human decision makers, staffs, and operators. This research focuses on the interaction of human and AI systems, especially in high-stakes environments with complex tasks and high uncertainty. As components of this, the research investigates how to make AI more understandable to humans, how to evaluate the outputs of AI and ML, the safety of interactions between humans and robotic or AI systems, how AI and ML impact decision-making, how to effectively integrate AI into current Army processes, how to train users at various technical skill-levels to interact more effectively with AI and ML, how to use AI and ML to process and summarize large amounts of data for human consumption, and how to ethically apply AI to decision making. ***FY 2025 Plans:*** Research human and non-human behavior and interactions in various online social settings. Extend current research on effective occupational training in artificial intelligence and machine learning for an audience with diverse technical skills to improve the Army's capability to deploy and use AI/ML products. Research methods for making machine learning output more interpretable for human consumption and the effects these techniques have on human decision making. ***FY 2026 Plans:*** Will extend research on human and non-human behavior and interactions in various online social settings; research effective occupational training in artificial intelligence and machine learning for an audience with diverse technical skills to improve the Army's capability to deploy and use AI/ML products; expand research methods for making machine learning output more interpretable for human consumption and the effects these techniques have on human decision making; research the use of quantitative metrics in measuring the ethical compliance of AI systems; expand research in novel algorithms for improving human decision-making. ***FY 2025 to FY 2026 Increase/Decrease Statement:*** Funding increase reflects the planned milestones for research efforts in human artificial intelligence interactions.	-	1.383	1.730
Accomplishments/Planned Programs Subtotals	10.206	10.309	7.012

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C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A