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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0207701F / <i>Full Combat Mission Training</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	12.064	12.528	7.597	0.000	7.597	7.740	7.925	8.079	8.362	Continuing	Continuing
655012: <i>Full Combat Mission Training</i>	-	12.064	12.528	7.597	0.000	7.597	7.740	7.925	8.079	8.362	Continuing	Continuing

A. Mission Description and Budget Item Justification

Full Combat Mission Training (FCMT) supports Air Force Distributed Mission Operations (DMO), Live-Synthetic Blended and Joint Simulation Environment (JSE) integration. FCMT funding provides research in areas benefiting the DMO/LVC environment and the Air Force JSE enterprise. It also provides research and development to facilitate integration of fielded and newly acquired Air Force owned training devices into DMO/LVC networks and JSE; enhances the quality of training for the systems added to the network; enables aircrews to network with LVC components to form the integrated DMO battlespace; links geographically distributed high-fidelity combat and combat support training devices including Command and Control and Intelligence, Surveillance, and Reconnaissance systems and develops, demonstrates, and inserts Multi-Level Security (MLS) capability. This capability enables warfighters to exercise and train at the operational and strategic levels of war, conduct networked unit-level training at home station and high-end test and training at joint test and training sites.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.0M was expended for civilian pay expenses in this program element. FY23 0.0M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	12.064	3.028	7.597	0.000	7.597
Current President's Budget	12.064	12.528	7.597	0.000	7.597
Total Adjustments	0.000	9.500	0.000	0.000	0.000
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	9.500			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Appropriation/Budget Activity
 3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
 PE 0207701F / *Full Combat Mission Training*

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

Project: 655012: *Full Combat Mission Training*
 Congressional Add: *Airborne Augmented Reality for Pilot Training*

Congressional Add Subtotals for Project: 655012

Congressional Add Totals for all Projects

	FY 2022	FY 2023
	5.000	9.500
Congressional Add Subtotals for Project: 655012	5.000	9.500
Congressional Add Totals for all Projects	5.000	9.500

Change Summary Explanation

FY23 Congressional add of \$9.50M supports visual capabilities for live, virtual and constructive air combat training systems.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force										Date: March 2023		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training				Project (Number/Name) 655012 / Full Combat Mission Training			
COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
655012: Full Combat Mission Training	-	12.064	12.528	7.597	0.000	7.597	7.740	7.925	8.079	8.362	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Full Combat Mission Training (FCMT) supports Air Force Distributed Mission Operations (DMO), Live-Synthetic, Blended, and Joint Simulation Environment (JSE) integration. FCMT funding provides research in areas benefiting the DMO/LVC environment as a whole; provides research and development to facilitate integration of fielded and newly acquired Air Force owned training devices into DMO/LVC networks; enhances the quality of training for the systems added to the network; enables aircrews to network with LVC components to form the integrated DMO battlespace; links geographically distributed high-fidelity combat and combat support training devices including Command and Control and Intelligence, Surveillance, and Reconnaissance systems and develops, demonstrates, and inserts Multi-Level Security (MLS) capability. This capability enables warfighters to exercise and train at the operational and strategic levels of war as well as conduct networked unit-level training at home station.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.0M was expended for civilian pay expenses in this program element. FY23 0.0M is forecasted for civilian pay expenses in this program element.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2022	FY 2023	FY 2024
Title: Cross Domain Solutions (CDS)	1.458	0.980	3.420
Description: Development, demonstration, and insertion of Multi-Level Security (MLS) capability supporting Live Virtual Constructive training for fifth generation platforms.			
FY 2023 Plans: Deliver F-35 Cross Domain Solutions (CDS) to demonstrate/validate/update 4th to 5th gen integrated secure training. Establish relevant Operational Test and Training Infrastructure efforts supporting DMO/JSE/Blended training test and training fifth generation aircraft.			
FY 2024 Plans: Validate the F-35 CDS. Begin the migration of the CDS to other simulation platforms (F-22 and F-16).			
FY 2023 to FY 2024 Increase/Decrease Statement:			

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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Funding increase in FY24 due to budget adjustment in FY23 to better meet expenditure rates. In FY24 the program will scale the CDS technology development to original schedule and deliveries.				
<p>Title: Distributed Mission Operations Development</p> <p>Description: Development, demonstrations, studies and insertions of Live Virtual Constructive related technologies and proficiency based continuation training strategies.</p> <p>FY 2023 Plans: Complete enhanced analytics for local unit and larger distributed events. Demonstrate learning management and scenario capabilities for proficiency-based training with Joint Synthetic Environment/Effects Based Simulation.</p> <p>FY 2024 Plans: Begin evaluation of training tools for implementation in the Joint Simulation Environment (JSE).</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased to begin integration of applications of the tools into JSE.</p>		2.980	0.803	1.899
<p>Title: Development and validation of DMO/JSE and Blended training assessments tools.</p> <p>Description: Studies to assess and validate Live Virtual Constructive (LVC) training and accreditation of portions of this process; studies to develop objective enhancement and measurement tools DMO/JSE and Blended training environments.</p> <p>FY 2023 Plans: Complete validation of training environment assessments for an identified set of ACC blended training environments. Continue readiness metrics and tracking tools refinement to measure training proficiency gained during blended training events. Begin development of secure cloud-based readiness data tracking, storage and retrieval for training.</p> <p>FY 2024 Plans: The FY24 plan is to migrate predictive analytic tools into routine operational training readiness assessment and reporting.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increase is due to broader expansion of operational applications across more operational training environments.</p>		1.525	0.620	1.139
<p>Title: Network Studies</p> <p>Description: Research and development to provide for the integration of fielded and newly introduced, Air Force, Joint and Coalition high-fidelity flight and mission trainers.</p> <p>FY 2023 Plans:</p>		1.101	0.625	1.139

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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Begin integration and evaluation of a proficiency-based learning ecosystem for Combat Air Force (CAF) future training. Begin alignment of CAF proficiency based training capabilities with Air Education and Training Command (AETC) Pilot Training Transformation. Continue development and evaluation of tools to create contested effects in local and distributed training events. Continue creation and evaluation of GOTS/COTS lightweight simulators for deployable training. Complete development and fielding of Augmented Reality Virtual Reality technology and tools repository for maintenance and tactical training.</p> <p>FY 2024 Plans: The FY24 plan is to demonstrate seamless training effectiveness and proficiency tracking from AETC to ACC and into operations.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased in order to fully create the underlying connections and architectures of the data ecosystem that permits the seamless data and tracking to be possible.</p>			
Accomplishments/Planned Programs Subtotals	7.064	3.028	7.597

	FY 2022	FY 2023
Congressional Add: Airborne Augmented Reality for Pilot Training	5.000	9.500
FY 2022 Accomplishments: Develop capability and airborne augmented reality technology for pilot training.		
FY 2023 Plans: Continued funding for visual capabilities for live, virtual and constructair combat training systems.		
Congressional Adds Subtotals	5.000	9.500

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

N/A

Remarks

D. Acquisition Strategy

Air Force Research Laboratory (AFRL) will conduct research/studies to develop/implement Cross Domain Solutions (CDS) supporting integrated DMO/JSE and Live-synthetic blended training. Fielded and projected Air Force flight and mission training systems without blended training capability and will be modified to ensure training compatibility.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0207701F / Full Combat Mission Training				655012 / Full Combat Mission Training							
Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Augmented Reality Development	TBD	Air Force Research Lab : WPAFB, OH	-	5.000	Jan 2022	9.500	Jan 2023	-		-		-	Continuing	Continuing	-
Subtotal			-	5.000		9.500		-		-		-	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Cross Domain Solutions (CDS): Development, Testing and insertion of Multi-Level-Security protocols, Cross Domain rule set development and accreditation	Various	Air Force Research Lab, 711 Human Performance Wing, Human : Dayton, OH	-	1.458	Jan 2022	0.980	Jan 2023	3.420	Jan 2024	-		3.420	Continuing	Continuing	-
Develop DMO/ JSE Blended training capabilities: demonstration, studies and insertion of distributedmission ops related technologies.	Various	Air Force Research Lab, 711 Human Performance Wing : Dayton, OH	-	2.980	Jan 2022	0.803	Jan 2023	1.899	Jan 2024	-		1.899	Continuing	Continuing	-
Validation of warfighter seasoning and development of objective performance enhancements for DMO/ JSE/Blended environment.	Various	Air Force Research Lab, 711 Human Performance Wing : Dayton, OH	-	1.525	Jan 2022	0.620	Jan 2023	1.139	Jan 2024	-		1.139	Continuing	Continuing	-
Other Network Studies: Supporting integration of newly fielded high-fidelity training systems and networks	Various	Air Force Research Lab, 711 Human Performance Wing : Dayton, OH	-	1.101	Jan 2022	0.625	Jan 2023	1.139	Jan 2024	-		1.139	Continuing	Continuing	-
Subtotal			-	7.064		3.028		7.597		-		7.597	Continuing	Continuing	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Joint Simulation Environment phase 1																												
Develop Multi-Level Security testbed and support testing on 5th Gen systems																												
Develop 4th to 5th generation rule sets for coalition integration																												
Develop metrics for routine proficiency evaluations and determine standard format for storing/analyzing proficiency data																												
Create and evaluate alternative data formats for routinely tracking and storing performance and proficiency data																												
Refine learning managed scenario and integrate with blended training events																												
Develop and integrate After Action Review tools for Mission Training Centers																												
Develop metrics and tools to measure training proficiency gained during blended training events/standardized implementation at Distributed training Centers (DTCs)																												
Conduct interoperability studies to evaluate the training value of 5th generation interoperable coalition training on the Combat Air Forces (CAF) DMO network and in JSE																												
Develop joint and coalition data standards and evaluate data management methods to support a full range of blended training																												
Demonstrate persistent performance measurement and readiness assessment in fourth to 5th generation training events																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Joint Simulation Environment phase 1				
Develop Multi-Level Security testbed and support testing on 5th Gen systems	1	2022	2	2022
Develop 4th to 5th generation rule sets for coalition integration	1	2022	2	2022
Develop metrics for routine proficiency evaluations and determine standard format for storing/analyzing proficiency data	1	2022	2	2022
Create and evaluate alternative data formats for routinely tracking and storing performance and proficiency data	1	2022	2	2022
Refine learning managed scenario and integrate with blended training events	1	2022	1	2025
Develop and integrate After Action Review tools for Mission Training Centers	1	2022	2	2025
Develop metrics and tools to measure training proficiency gained during blended training events/standardized implementation at Distributed training Centers (DTCs)	1	2022	4	2023
Conduct interoperability studies to evaluate the training value of 5th generation interoperable coalition training on the Combat Air Forces (CAF) DMO network and in JSE	1	2022	4	2022
Develop joint and coalition data standards and evaluate data management methods to support a full range of blended training	1	2022	3	2023
Demonstrate persistent performance measurement and readiness assessment in fourth to 5th generation training events	1	2022	3	2026
Develop gateways and CDS to integrate high-fidelity trainers with Air Force, joint, and coalition networks	1	2022	1	2024
Evaluate compressed DIS network standards for CDS in DMO/Blended training	1	2022	3	2025
Integrate and evaluate multi-domain operations and kill-chain training strategies for JSE/Blended training	1	2022	2	2024
Evaluate multi-national mission planning and debrief technologies in research training events	1	2022	4	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force **Date:** March 2023

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Implement, evaluate, and field technologies aligned with future training strategies for LVC	1	2022	2	2025
Develop specifications for live data harvesting using encrypted systems and tools	2	2023	4	2026
Update Five Eyes (FVEY) rule sets for full 4th, 5th and autonomous tactical employment training	4	2024	4	2026
Create Secure LVC testbed environment for kill chain and JADC2 ops training via DMO/JSE	3	2022	2	2026
Joint Simulation Environment Phase 2				
Release Request For Proposal (RFP)	3	2022	3	2022
Award Development Contract	2	2023	2	2023
Begin initial design and development efforts	2	2023	2	2024
Joint simulation environment Phase 3				
Develop Multi-Level Security testbed and support testing on 5th Gen systems	1	2022	2	2022
Develop 4th and 5th Generation rule sets for coalition integration	1	2022	2	2022
Develop metrics for routine proficiency evaluations and determine standard format for storing /analyzing proficiency data	1	2022	2	2022
Create and evaluate alternative data formats for routinely tracking and storing performance and proficiency data	1	2022	1	2025
Refine learning managed scenario and integrate with DMO/JSE/Blended training events	1	2022	2	2025
Develop and integrate After Action Review tools for Mission Training Centers	1	2022	4	2023
Develop metrics and tools to measure training proficiency gained during blended training events /standardize implementation at Distributed Training Centers (DTCs)	1	2022	4	2022
Conduct interoperability studies to evaluate the training value of 5th Gen interoperable coalition training on the Combat Air Forces (CAF) DMO network and in JSE events	1	2022	3	2023
Develop joint and coalition data standards and evaluate data management methods to support blended training events	1	2022	3	2026

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force			Date: March 2023	
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training		
	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
Demonstrate persistent performance measurement and readiness assessment in fourth and 5th Gen JSE and blended training events	1	2022	1	2024
Develop gateways and CDS to integrate high-fidelity trainers with Air Force, joint and coalition networks	1	2022	3	2025
Evaluate compressed DIS network standards for CDS in DMO; evaluate JSE alternatives	1	2022	2	2024
Integrate and evaluate multi-domain operations and kill-chain training scenarios for contested environments	1	2022	4	2024
Evaluate multi-national mission planning and debrief technologies in research training events	1	2022	4	2024
Implement, evaluate and field technologies aligned with future training strategies for LVC	1	2022	2	2025
Develop specifications for live data harvesting using encrypted systems and tools	2	2023	4	2026
Update Five Eyes (FVEY) rule sets for full 4th, 5th and collaborative combat aircraft tactical employment training	4	2024	4	2026
Create Secure testbed environment for kill chain and JADC2 ops training via DMO/JSE and blended training	3	2022	2	2026
Joint Simulation Environment Phase 4				
Release Request For Proposal (RFP)	2	2022	3	2022
Award Development Contract	2	2023	2	2023
Begin initial Design and Development efforts	2	2023	2	2024