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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army **Date:** May 2021

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	35.403	50.394	79.710	-	79.710	-	-	-	-	-	-
312: <i>Army/Joint Experimentation</i>	-	7.407	10.021	43.110	-	43.110	-	-	-	-	-	-
317: <i>Current Force Capability Gaps</i>	-	27.851	40.373	36.600	-	36.600	-	-	-	-	-	-
33B: <i>Soldier-Centered Analyses For Future Force</i>	-	0.145	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Army Concepts Experimentation Program supports current and future concepts and capabilities involving Soldiers and Leaders within live, virtual, and constructive environments by exploring concepts, capability requirements and solutions across Doctrine, Organization, Training, Materiel, Leadership and Education, personnel, and Facilities (DOTMLPF) domains. The purpose of Concepts Experimentation is to clarify and mitigate risk for current and future forces. Experiments and projects inform Army futures concepts and assess high-risk conceptual assumptions in order to focus required capabilities and represent user requirements in the future Army. Army experiments use the combined resources of Army Battle Laboratories, operational units, research labs, materiel developers, industry and academia to collaborate in the development, refinement, and assessment of future force concepts. Simulated Experiments (SIMEX) will integrate and assess Army Concepts and Force Design phases with Army-level issues across the breadth of a campaign that highlights validation and integration of Force 2025 outcomes.

This Program Element (PE) enhances Joint Capabilities Integration and Development System (JCIDS) development in support of Program Executive Offices (PEOs) and Program Managers (PMs) for acquisition milestone decisions. This PE provides for Accelerated Capability Development (ACD) to address current critical operational needs, enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Early Synthetic Prototyping enables a wargaming and experimentation capability that engages soldiers across the Army through early-fidelity game environments to gain their insights and recommendations in the development of future doctrine, organization, and materiel solutions. This PE provides funding for Army Warfighter Assessments (AWA) that physically integrate, assess and evaluate networked capability sets and other adaptive capabilities to accelerate the systems acquisition process of providing DOTMLPF recommendations to the Army. This PE also provides support to the Army Warfighting Challenges (AWFC) used by the Army to frame learning and collaboration.

The Soldier-Centered Analysis For Future Force Project (33B) will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Future Force development. These efforts include design analyses, constructive simulations, and Soldier-in-the loop assessments to ensure that manpower requirements and workload and skill demands are considered, avoiding information and physical task overloads and taking optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	36.922	54.898	59.199	-	59.199
Current President's Budget	35.403	50.394	79.710	-	79.710
Total Adjustments	-1.519	-4.504	20.511	-	20.511
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.519	-2.004			
• Adjustments to Budget Years	-	-	20.511	-	20.511

Change Summary Explanation

Funds are increased for Project Convergence activities to support Multi Domain Operations, Global Defender 22 requirements and increased activities of JWA for FY22.

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Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>				Project (Number/Name) 312 / <i>Army/Joint Experimentation</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
312: <i>Army/Joint Experimentation</i>	-	7.407	10.021	43.110	-	43.110	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The United States Army Joint Modernization Command (JMC) is the Army and Army Futures Command lead for live field experimentation. Army and Joint Experimentation supports current and future concepts and capabilities involving Soldiers and Leaders within live, virtual, and constructive environments by exploring concepts, capability, and formation requirements, and solutions across Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) domains. The purpose of these efforts is to learn and mitigate risk for current and future forces. Experiments and multi-scale assessments inform Army future concepts and assess high-risk conceptual assumptions in order to focus required capabilities, formations and represent user requirements in the future Army. Army experiments use the combined resources of Army Battle Laboratories, operating force units, research laboratories, materiel developers, industry, and academia to collaborate in the development, refinement, and assessment of future force concepts, capabilities and formations at echelon. These experiments are typical in the Joint Warfighting Assessment (JWA), Army Live Prototype Assessments, and the Project Convergence series of events. This project also supports the Army's Simulation-Based Experiments (SIMEX) to integrate and assess near-, mid-, and far-term future force concepts, force designs, and capabilities. In support of the Army Vision and Army Modernization Strategy, experimentation focuses on the latest Multi-Domain Operations Concept, operational and organizational concepts for the Army of 2028 and beyond. To refine the Multi-Domain Operations Concepts, Army experimentation expands linkages to joint and multi-national experiments.

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

	FY 2020	FY 2021	FY 2022
Title: Experimentation - High-Fidelity Live-Virtual-Constructive Experiments	7.407	10.021	43.110
Description: Experiments address concept and capability developments including integration of capabilities for all Brigade Combat Team (BCT) types; development of future DOTMLPF requirements and solutions; and acceleration and integration of capabilities for current force BCTs and above brigade.			
FY 2021 Plans: Experiments will address concept and capability developments including integration of capabilities for all BCT types; development of future DOTMLPF requirements and solutions; and acceleration and integration of capabilities for current force BCTs and above brigade.			
FY 2022 Plans: Experiments will address concept and capability developments including integration of capabilities for all BCT types; development of future DOTMLPF requirements and solutions; and acceleration and integration of capabilities for current force BCT's and above brigade.			

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Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>	Project (Number/Name) 312 / <i>Army/Joint Experimentation</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>The Joint Warfighting Assessment (JWA) is a capstone event, providing a venue for the Army to demonstrate and assess concepts and capabilities required for a more lethal, expeditionary and agile force. JWA is the only venue to experiment with the Multi-Domain Operations (MDO) concept and a multi-echelon, Joint and Multinational level exercise in the live, virtual, and constructive replicated operational environment with contested domains.</p> <p>Project Convergence ensures the Joint and Multinational force can rapidly and continuously integrate or "converge" effects across all domains through intelligence gathering, data sharing, interoperable systems to decide and act more rapidly against adversaries in competition and conflict.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Increases of \$9.9M for Project Convergence, increase for MDO live and an adjustment to PC22 to meet Global Defender 22 requirements and Army Senior Leader guidance of \$7.5M and \$3.7M adjustment to JWA for FY22.</p>				
Accomplishments/Planned Programs Subtotals		7.407	10.021	43.110
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Army										Date: May 2021		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>				Project (Number/Name) 317 / <i>Current Force Capability Gaps</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
317: <i>Current Force Capability Gaps</i>	-	27.851	40.373	36.600	-	36.600	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project enables Army Futures Command (AFC) Futures and Concepts Center (FCC) Cyber Capability Development and Integration Directorate (CDID) to develop and integrate capability requirements in support of the Army, Network Cross Functional Team (CFT) and Assured-Positioning, Navigation, and Timing CFT. Funding ensures that the FCC acts independently and serves as the voice of the Warfighter, complementing the materiel developer in providing total capability management that integrates all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) considerations. Cyber requirements include Cyberspace, Networks and Services, Electromagnetic Spectrum Operations and Tactical Radios. This project also provides AFC and FCC resources to execute Battle Lab experimentation and Army Live Prototyping Assessments (ALPAs). These experiments and assessments enable live prototyping that engage soldiers across the Army to gain insights and recommendations in the development of future doctrine, organization, and materiel solutions. Funding in this project also enables FCC to maintain the Army Capability-based Architecture Development and Integration Environment (ArCADIE) providing storage, accessibility, production, and certification of authoritative architecture data and supporting systems. ArCADIE enables FCC to develop, verify and validate operational architecture for eight major BCT formations.

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

	FY 2020	FY 2021	FY 2022
Title: CDID/TCM JCIDS Requirements Documentation	19.758	27.365	23.097
<p>Description: The AFC/FCC team facilitates requirements determination in coordination with the Joint Requirements Oversight Council (JROC) and in coordination with the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) which directs and ensures Milestone acquisition decisions are formally staffed and fully integrated across the Future Force Modernization Enterprise. Funding ensures AFC/FCC serves as the voice of the warfighter and compliments the materiel developer in providing total capability management ensuring the integration of all DOTMLPF solutions.</p> <p>FY 2021 Plans: This project enables FCC in support of the AFC Commander to enhance processes to improve the JCIDS. It integrates the PEOs and PMs ensuring a coordinated and integrated acquisition milestone decisions met in a timely manner within the Future Force Modernization Enterprise (FFME). The AFC team facilitates requirements determination in coordination with the Joint Requirements Oversight Council (JROC) and in coordination with the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA (ALT)) which directs and ensures Milestone acquisition decisions are formally staffed and fully integrated across the FFME. Funding ensures AFC/FCC acts independently and serves as the voice of the warfighter, this effort compliments the materiel developer in providing total capability management and ensures the integration of all DOTMLPF consideration. Funding ensures AFC/FCC acts independently and serves as the voice of the warfighter; this effort compliments the materiel</p>			

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Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>	Project (Number/Name) 317 / <i>Current Force Capability Gaps</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>developer in providing total capability management and ensures the integration of all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) considerations. This requirement provides AFC and FCC the resources to support any accelerated capability development through use of existing Army Live Prototype Assessment (ALPA) venues. Enable development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the future force of 2028 and beyond. Serves as AFC's central coordinating organization for HQDA staff supporting requirements related to accelerated capabilities developments. Funding integrates ACD activities to ensure unity and priority of effort as well as synchronization and optimization of resources. Integrates accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination. These requirements support critical research, development, test and evaluation for war gaming, and experimentation that engages soldiers across the Army. Enables the AFC/FCC leadership to gain insights and recommendations in the development of the future force in preparation for the CSA's Army of 2028. FCC Integrates accelerated capabilities development activities between Army proponent force, modernization managers, and Joint/Sister Service coordination. AFC/FCC JMC conducts Joint Warfighter Assessments and ALPA events to physically integrate, assess and evaluate the network, capability sets and other adaptive capabilities resulting in the acceleration of the systems acquisition process to providing DOTMLPF informed recommendations to the Army.</p> <p>FY 2022 Plans: Funding ensures requirement determination and integration in Cyber areas including Cyberspace, Networks and Services, Electromagnetic Spectrum Operations and Tactical Radios to support Army's Cyber priorities and CFT efforts. Funding also provides Sustainment CDID the ability to conduct requirements determination for watercraft and maneuver support vessels.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Decrease from \$27.4M to \$23.1M due to absorbing a portion of the decrement to Project 317 identified for "Re-phase to JBCP" of \$6.4M and Project 317 inflation adjustments of \$.5M.</p> <p>Title: Accelerated Capabilities Development</p> <p>Description: Prototyping events are coordinated with CFTs and other Industry and Academic partners and utilizes live, force on force prototype-based experiments to assess the operational relevance of developing technologies, refine initial Operational and Organizational concepts, and conduct early prototyping to retain current advantages over adversaries, accelerate investments on contested future capabilities, and mitigate risk to the force.</p> <p>FY 2021 Plans: Provide for AFC/FCC to serve as the lead Accelerated Capability Development to address current critical operational needs in enabling development and deployment of accelerated capabilities (both materiel and non-materiel) to the current force. Serve as AFC/FCC central coordinating organization for Headquarters Department of the Army HQDA staff support requirements related to accelerated capabilities developments. Integrate JMC activities to ensure unity and priority of effort and synchronization and</p>			
	2.133	3.904	3.925

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>optimization of resources. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint Service coordination.</p> <p>FY 2022 Plans: FCC conducts ALPA experiments to continue identification and assessment of Multi Domain Operations solutions and to refine operational and organizational concepts.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Increase due to economic adjustment.</p>				
<p>Title: Battle Lab Experimentation and Support</p> <p>Description: Funding allows Cyber Battle Lab to support Cyber Quest, the only annual prototyping event focused on Cyber, Signal and Electronic Warfare (EW) DOTMLPF-P solutions coordinated with CFTs and other Industry and Academic partners dedicated to Cyber, Signal, and EW oriented systems. This effort informs concepts, requirements, material solutions, and DOTMLPF-P changes for critical capability gaps facing Cyber, Signal and EW operational forces. Cyber Quest will generate capability enablers that can be integrated into other Army prototyping experiments as solutions mature (i.e. ALPAs and Joint Warfighting Assessments)</p> <p>FY 2022 Plans: Cyber Quest will be conducted via Cyber CDID Battle Lab to experiment with and evaluate potential Cyber, Signal, Intelligence and EW material and DOTMLPF-P solutions. Funding provides staff, 45 military experimental forces, equipment and testing material costs, and travel costs.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Increase due to Project 317 now capturing a separate line for Battle Lab Experimentation and Support resulting from previous approved POM submissions for Cyber RDTE requirements. This entry supports Cyber Quest which is technically an ALPA event; however, it is called out separate from other ALPA events due to the Army's Cyber priority and the fact that Cyber Quest solutions, recommendations and results directly support CFTs, Cyber ACMs, Cyber Battle Lab and all other ALPA events.</p> <p>Update April 2021: This requirement originally captured as \$4M in FY22 but reduced to \$1.5M during April 21 review to absorb a portion of the decrement to Project 317 identified for "Re-phase to JBCP" of \$6.4M and Project 317 inflation adjustments of \$.5M.</p>		-	-	1.473
<p>Title: Army Capability-based Architecture Development and Integration Environment (ArCADIE)</p> <p>Description: ArCADIE is the Army's authoritative source for architecture data and supports the community of practice requirement. ArCADIE provides a robust collaborative and common enterprise environment for architecture-related efforts in support of critical institutional processes throughout the TRADOC Centers of Excellence, AFC CDIDs and Army/Joint/Department</p>		2.922	5.341	6.255

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
of Defense (DOD) partners. Offers a single, federated web-based environment for the development and discovery of integrated architectures across warfighting functions, and organizations throughout the Army Enterprise.				
<p>FY 2021 Plans: Enable FCC to maintain ArCADIE and develop, verify, and validate operational architecture for eight major BCT formations. Provide storage, accessibility, production, and certification of authoritative architecture data and supporting systems in accordance with DoD and DA information Assurance and management standards.</p> <p>FY 2022 Plans: Enable FCC to maintain ArCADIE and develop, verify, and validate operational architecture for eight major BCT formations. Provide storage, accessibility, production, and certification of authoritative architecture data and supporting systems in accordance with DoD and DA information Assurance and management standards.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Increase due to economic adjustment.</p>				
<p>Title: System of Systems Enhanced Small Unit (SESU) Focused Assessments</p> <p>Description: In support of HQDA EXORD 304-17 the SESU initiative will attempt to solve the following problem: how can the Army and DARPA create a SESU unit capable of defeating a heavy division by leveraging current and future capabilities while operating and synchronizing the efforts of DARPA and the Army? The scope of SESU is to create a concept for enhancing a small unit with capabilities to over match a heavy enemy division.</p> <p>FY 2022 Plans: Funding supports Focused Assessments, Models and Simulations, and Capstone Demonstration.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: Addition of System of Systems Enhanced Small Unit (SESU) focused assessments (\$1.8M) is in direct support of HQDA EXORD 304-17. Effort began in FY20, and was first POM'd during POM 21-25. This R form update captures current funding of the SESU initiative for AFC Futures and Concepts Center.</p>		-	-	1.850
<p>Title: Joint Warfighting Assessments</p> <p>FY 2021 Plans: Provide for AFC/FCC to serve as the lead Accelerated Capability Development to address current critical operational needs in enabling development and deployment of accelerated capabilities (both materiel and non-materiel) to the current force. Serve as AFC/FCC central coordinating organization for Headquarters Department of the Army HQDA staff support requirements related to accelerated capabilities developments. Integrate JMC activities to ensure unity and priority of effort and synchronization and</p>		3.038	3.763	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
optimization of resources. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint Service coordination. <i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> Joint Warfighting Assessment requirements were reprogrammed to Project 312 to align all Joint Modernization Command RDTE experimentation requirements under one umbrella (RDTE VAWE 665326312) during POM 22-26 as a part of the TRADOC/AFC Split and subsequent realignment/reprogramming.				
Accomplishments/Planned Programs Subtotals		27.851	40.373	36.600
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				

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Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>	Project (Number/Name) 33B / <i>Soldier-Centered Analyses For Future Force</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
<i>33B: Soldier-Centered Analyses For Future Force</i>	-	0.145	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This Project will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Future Force development. Efforts include design analyses, constructive simulations, and Soldier-in-the-loop assessments to ensure that manpower requirements and workload and skill demands are considered, avoiding information and physical task overloads and taking optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force.

The cited work is consistent with the Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Technology Area Plan (DTAP).

Work in this Project is performed by the United States (U.S.) Army Combat Capabilities Development Command (CCDC) Data and Analysis Center (DAC).

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

	FY 2020	FY 2021	FY 2022
<i>Title:</i> Manpower and Personnel Integration (MANPRINT)	0.145	-	-
<i>Description:</i> Provide dedicated modeling and analysis cell for early and accurate MANPRINT estimates to the U.S. Army Materiel Command (AMC), CCDC and its Centers, the Research and Analysis Center, Schools and Centers of Excellence (CoEs), Army Test and Evaluation Command (ATEC) and other service laboratories.			
Accomplishments/Planned Programs Subtotals	0.145	-	-

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

N/A

Remarks

D. Acquisition Strategy

N/A