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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Defense Logistics Agency **Date:** March 2023

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</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	95.775	12.325	13.663	16.580	-	16.580	16.896	17.179	17.464	17.794	Continuing	Continuing
EMM: <i>Enhancing Analysis, Modeling, and Decision Support (formerly Analytic & Decision Support)</i>	17.338	3.166	-	-	-	-	-	-	0.000	-	Continuing	Continuing
GLTD: <i>Improving Logistics Processes (formerly Logistics Process)</i>	29.061	5.528	-	-	-	-	-	-	0.000	-	Continuing	Continuing
04: <i>Emergent Logistics R&D Requirements (formerly Innovative Products & Services for DLA Customers)</i>	49.376	3.631	-	-	-	-	-	-	0.000	-	Continuing	Continuing
LOI: <i>Logistics Operations Innovation</i>	0.000	0.000	6.088	7.391	-	7.391	7.533	7.659	7.786	7.930	Continuing	Continuing
PAM: <i>Predictive Analytics / Modeling & Simulation</i>	0.000	0.000	3.872	3.914	-	3.914	4.013	4.100	4.187	4.286	Continuing	Continuing
SWM: <i>Smart-Warehouse Modernization</i>	0.000	0.000	3.703	5.275	-	5.275	5.350	5.420	5.491	5.578	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Logistics Agency (DLA) is responsible for providing to the Military Services, other Federal Agencies, as well as combined and allied forces, the full spectrum of logistics, acquisition and technical services. DLA sources and provides virtually 100 percent of the consumable items the military services need to operate – including food, uniforms, fuel and energy, medical supplies, construction and barrier materials, equipment, and more than 85 percent of the military’s spare parts. DLA also provides logistics related services such as logistics information data management, the reutilization of military equipment, as well as documents automation and production services. DLA’s Logistics Research and Development (Log R&D) program helps ensure that advanced logistics concepts and business processes are used to accomplish the agency’s mission with the leanest possible infrastructure. Log R&D identifies the best commercial business practices and tailors them, as necessary, into the most effective business processes for the agency. Log R&D develops and demonstrates high risk, high payoff technology that provides a significantly higher level of support at the lowest possible costs.

Beginning in FY 2023, the DLA Log R&D Program Element shifts from three Strategic Focus Areas to three Lines of Effort (LOEs): Predictive Analytics, Modeling & Simulation (R&D LOE 3), Logistics Operations Innovation (R&D LOE 4), and Smart Warehouse Modernization (R&D LOE 5). These LOEs are closely aligned to

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<p>documented and tracked priorities specified in the most current DLA Strategic Plan, that calls for Digital Business Transformation as one of three critical capabilities to achieve DLA's business goals of enhancing performance, reducing costs, and becoming more predictive and data driven. This critical capability also seeks to transform systems and processes to improve data transparency, reliability, and security for our employees, customers, and suppliers. DLA's initiatives within this critical capability align with the interim National Security Strategy (NSS) by emphasizing the importance of harnessing rapid emerging technologies that will transform how we do business.</p> <ul style="list-style-type: none">- Predictive Analytics, Modeling & Simulation (R&D LOE 3): R&D efforts develop predictive analytic solutions using data and Artificial Intelligence/Machine Learning (AI/ML) to solve high-impact problems, improve business operations, and provide actionable strategies to inform business decisions. Primarily focused on the DLA Strategic Plan Critical Capability C: Digital Business Transformation, these LOE efforts cut across DLA Strategic Plan LOE 1: Warfighter Always, LOE2: Trusted Mission Partner, and LOE 4: Modernized Acquisition and Supply Chain Management, supporting the warfighter through the Logistics Technology Research (LTR), formally Weapon System Sustainment (WSS), portfolio of projects..- Logistics Operations Innovation (R&D LOE 4): R&D efforts to cultivate integration of innovative processes and technology into the DLA supply chains to enhance warfighter readiness and weapons system sustainment. This LOE focuses on supporting the DLA LOE 4: Modernized Acquisition and Supply Chain Management, while also investment in cross-cutting supply chain efforts, to include fuel quality and alternative fuel sources, or emergent needs that impact DLA's ability to effectively support the warfighter through the following portfolios: Energy Readiness Program (ERP), Acquisition Modernization Technology Research (AMTR), and Supply Chain Management (SCM).- Smart Warehouse Modernization (R&D LOE 5): R&D efforts to modernize distribution and disposition operations through infusion of smart-warehousing, interconnected technologies, and automation. This LOE is dedicated to one of the primary focus areas of DLA's Critical Capability for Digital Business Transformation: warehousing modernization through efforts within the Strategic Distribution and Disposition (SDD) portfolio of projects. <p>Until the shift from SFAs to LOEs in FY 2023, DLA LOG R&D remains aligned into three Strategic Focus Areas (SFAs) for FY 2021 and FY 2022: 1) Enhancing Analysis, Modeling, and Decision Support (EAMD), 2) Improving Logistics Processes (ILP), 3) Emergent Logistics R&D Requirements (ELR).</p> <ul style="list-style-type: none">- The EAMD SFA includes efforts to develop decision support tools, such as modeling, simulation, and other analytics to improve operational strategy decision-making, forecasting, and procurement, which support more effective and efficient responses to emerging market and customer requirements.- The ILP SFA includes efforts to develop and implement advanced technology in logistics processes over and above current baseline systems.- The ELR SFA includes efforts to support emergent Logistics R&D requirements that arise out of the budget cycle. These out of cycle requirements always occur. This SFA begins new projects in a timely manner without disrupting ongoing projects by funds reallocation. This SFA scope includes all DLA supply chains and logistics processes.		

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DLA's focus for this budget cycle highlights advanced capabilities in digital and technical data modernization, management and analytics to transform DLA Business Processes to lower the Agency's material acquisition and operation costs along with improving weapons systems support. This effort spans across both DLA R&D Program Elements and multiple R&D LOEs, impacting across the DOD Joint Defense Manufacturing Technology Panel and DLA Enterprise logistics processes.

B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	12.418	13.663	13.994	-	13.994
Current President's Budget	12.325	13.663	16.580	-	16.580
Total Adjustments	-0.093	0.000	2.586	-	2.586
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.338	-			
• SBIR/STTR Transfer	-0.431	-			
• Internal Reallocation	-	-	2.500	-	2.500
• Labor Inflation	-	-	0.015	-	0.015
• Non-labor Inflation	-	-	0.071	-	0.071

Change Summary Explanation

Internal Reallocation FY 2024: Logistics Operations Innovation (LOI) baseline was increased by \$1.000 million based on internal funding reallocation decision to establish R&D rapid innovation capability and support IT digital modernization priorities. Smart-Warehouse Modernization (SWM) baseline was increased by \$1.500 million based on internal funding reallocation decision to modernize DLA's warehousing and distribution processes by leveraging automation, Big Data, and predictive analytics to make data-driven decisions, improve productivity and cost effectiveness, and realize returns on investment as agency savings.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency										Date: March 2023		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>				Project (Number/Name) EMM / <i>Enhancing Analysis, Modeling, and Decision Support (formerly Analytic & Decision Support)</i>			
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
EMM: <i>Enhancing Analysis, Modeling, and Decision Support (formerly Analytic & Decision Support)</i>	17.338	3.166	-	-	-	-	-	-	0.000	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Strategic Focus Area (SFA) funds developments in advanced analytical tools, modeling, and simulation of logistics and supply chain processes. These tools will improve DLA forecasting and procurement strategy decisions and lead to faster and more flexible responsiveness to emerging market and customer requirements. This SFA consists of two programs:

The Strategic Distribution & Disposition (SDD) Program collaborates with DLA Distribution and Disposition Services to identify legacy capabilities that are inadequate for emerging worldwide distribution and disposition requirements. A key objective of the SDD Program is to anticipate, assess, and meet the current and future Warfighter requirements by leveraging R&D to infuse innovation into solutions. Long-term objectives include mitigating the DOD Supply Chain Management high risk issues identified by the Government Accountability Office (GAO), 2018 (Inventory Management, Material Distribution and Asset Visibility).

*In FY 2023, this SFA, Enhancing Analysis, Modeling, and Decision Support (EMM), closes out. The SDD program shifts to the Smart-Warehouse Modernization (SWM) Line of Effort (see R-2A).

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

	FY 2022	FY 2023	FY 2024
Title: Enhancing Analysis, Modeling, and Decision Support	3.166	-	-
<p>Description: The Strategic Distribution and Disposition (SDD) program continued to lay the groundwork for DLA's Smart Warehouses. During FY22, SDD met with vendors and potential vendors, and continued research of the technologies required to implement smart warehousing solutions. The SDD program provided applied research, analytical and decision support to DLA Distribution and Disposition Services and provided support to the Distribution Modernization Program (DMP). Additionally, SDD will continue to engage with Industry, Department of Defense (DoD) sponsored Federally Funded Research and Development Centers (FFRDCs) and University-Affiliated Research Center Laboratories (UARCs) leveraging subject-matter expertise in key areas of research such as Blockchain, Artificial Intelligence, Machine Learning, Internet of Things (IoT), Augmented Reality, and Autonomous/Robotics systems. SDD will continue to incorporate Integrate Project Teams (IPT) for project collaboration and Integrated System Engineering concepts (test and evaluation) into Distribution projects.</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>- Completed the Phase I Small Business Innovative Research (SBIR) Autonomous Guided Vehicle (AGV) case study to prove out DLA's acquisition approach for implementing AGV technology in the Warehouse processes at the DLA Distribution Center Hill, and DLA Distribution Center Corpus Christi which lack automated material technology such as AGVs to move material between tunnels and warehouses. Current material process is with forklift and designated driver. This project concluded with no plans to proceed to Phase II due to the vendor's low Technical Readiness Level (TRL) 3. When funding levels are adequate SDD will revisit more Phase I research to provide a proof of concept to ascertain the utility, feasibility, maintainability, and cost-effectiveness of using AGVs to improve inventory efficiency. This project concluded in FY22Q1.</p> <p>- Completed the Phase I Small Business Innovative Research (SBIR) DLA Warehouse Artificial Intelligence (AI) case study to prove out DLA's acquisition approach for implementing AI technology in the Warehouse processes. Currently DLA Distribution is unable to predict when items and material arrives at its Distribution Warehouses and this inability to predict the induction of inventory and material consequently increases lead times, operational costs, and incurs human error. This project concluded with no current plans to proceed to Phase II due to the low Technical Readiness Levels (TRLs) of 1 to 3 for the three vendors who participated in this research pilot. When funding levels are adequate SDD will revisit more Phase I research to provide a proof of concept to ascertain the utility, feasibility, maintainability, and cost-effectiveness of using AI to improve inventory efficiency and predict the induction of inventory and material at the DLA Distribution Centers. This project concluded in FY22Q4.</p> <p>- Completed the Phase II Small Business Innovative Research (SBIR) Augmented Reality (AR) case study to prove out DLA's acquisition approach for implementing AR technology in the Warehouse Picking process. This project continued to develop a prototype augmented reality system in a DLA warehouse environment and will provide a proof of concept to ascertain the utility, feasibility, maintainability, and cost-effectiveness of using AR to improve inventory efficiency. This project concluded in FY22Q2.</p> <p>- Adjusted project funding priorities to FY 2024 for Automated Storage and Retrieval Systems (AS/RS), In-Transit Visibility (ITV), AI imbedded Robotic Arms, and a Systems of Systems Smart Warehouse.</p>			
Accomplishments/Planned Programs Subtotals	3.166	-	-

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks

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D. Acquisition Strategy

The DLA R&D program is executed through Delivery Orders placed on Indefinite Delivery/Indefinite Quantity Contracts that resulted from competitive Broad Agency Announcements and through interagency agreements with the Military Services when it is cost effective and/or provides some technical advantage, e.g. improves the probability of successful transition. DLA also has a continuously open Broad Agency Announcement for Emerging Technologies.

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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
GLTD: <i>Improving Logistics Processes (formerly Logistics Process)</i>	29.061	5.528	-	-	-	-	-	-	0.000	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Improving Logistics Processes (ILP) Strategic Focus Area (SFA) encompasses R&D efforts within the Logistics Technology Research program, formerly Weapon System Sustainment (WSS), and the Acquisition Modernization Technology Research (AMTR) program to support DLA business functional units through applied research and development of advanced technologies to improve business processes and operational methods, leverage the application of leading edge logistics “out-of-the box” concepts using disruptive technology business tools, and support DLA’s technological transformation effort. To qualify for R&D funding, the R&D effort must develop and apply technology and processes over and above current baseline IT systems and continuous improvements efforts.

Although all DLA processes are in scope, the strategic focus for this budget cycle is in Procurement, Planning, Technical Quality and the Major Subordinate Commands.

Innovative process changes and new technologies will be researched in these areas to drive improvements to internal costs, reduce award delays, and improve material availability, supply chain security, demand forecasting and logistical planning. This will be accomplished through the use of Artificial Intelligence/Machine Learning (AI/ML), blockchain technology, and research of emerging commercial best practices and technologies.

*In FY 2023, this SFA, Improving Logistics Processes (GLTD), closes out. The LTR program shifts to the Predictive Analytics / Modeling & Simulation (PAM) Line of Effort (see R-2A) and the AMTR program shifts to the Logistics Operations Innovation (LOI) Line of Effort (see R-2A).

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

	FY 2022	FY 2023	FY 2024
Title: Improving Logistics Processes (ILP)	5.528	-	-
<p>Description: The Logistics Technology Research program, formerly Weapon System Sustainment (WSS), conducted research to advance DLA’s predictive analytics capabilities that included:</p> <ul style="list-style-type: none"> - Completed an assessment of quantum computing capabilities in government and industry. The program will continue to monitor this capability and pursue additional research as it progresses. - Continued research into tools and best practices for developing sustainable metadata management processes and supporting organizational structures to harness the power of analytics and artificial intelligence (AI) to improve its operations. - Completed the first phase of supply chain risk management research that provided insight on information available for supply chain illuminations and potential ways to use AI/ML to enhance supply chain risk management capabilities. A second phase started to expand on the AI/ML research. 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>- Initiated environmental testing for transparent armor to provide data to develop and validate testing tools and a mathematical model that will predict transparent armor lifespan and allow for the purchase of best value parts.</p> <p>- Initiated transition of a digital traceability capability to automate manual workflow processes for vendor documentation for the Joint Certification Program (JCP), Enhanced JCP, Counterfeit Detection and Avoidance Program (CDAP) and the Trade Security Control (TSC) Programs. The transition is expected to complete in FY2024.</p> <p>The Acquisition Modernization Technology Research (AMTR) program became fully operational during FY 2022 which began transition in FY 2021 for acquisition modernization efforts that were previously managed and executed under the Logistics Technology Research (LTR) program, formerly Weapons Systems Sustainment (WSS). The program continues earlier efforts to expand market intelligence capabilities (AMIDA) to the remaining DLA supply chains. The transition of the capability to Aviation is well underway, and the Energy pilot will begin in September 2022. Phase II of Contract Quality Control was also initiated, continuing research of commercial best practices for contract quality control (CQC) systems to recommend a state-of-the-art system for all DLA major subordinate commands. AMTR will continue collaboration efforts on the Integrated Manufacturing Readiness Logistics Support (IMRLS) Milestone 2 project which will test the ability of DLA to rapidly make parts by converting 2D tech data to CAD and using a pricing engine to solicit bids from a wide selection of vendors.</p>			
Accomplishments/Planned Programs Subtotals	5.528	-	-

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

N/A

Remarks

D. Acquisition Strategy

The DLA R&D program is executed through Delivery Orders placed on Indefinite Delivery/Indefinite Quantity Contracts that resulted from competitive Broad Agency Announcements and through interagency agreements with the Military Services when it is cost effective and/or provides some technical advantage, e.g. improves the probability of successful transition. DLA also has a continuously open Broad Agency Announcement for Emerging Technologies.

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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
04: <i>Emergent Logistics R&D Requirements (formerly Innovative Products & Services for DLA Customers)</i>	49.376	3.631	-	-	-	-	-	-	0.000	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Emergent Logistics R&D Strategic Focus Area (SFA) includes R&D efforts to develop new products and services for DLA customers in two programs:

The Energy Readiness Program (ERP) roadmap helps to achieve the operational energy strategy goals of increasing sources of supply, developing and implementing alternative fuels under the ERP.

The Supply Chain Management (SCM) program addresses emergent and out of budget cycle requirements and opportunities within DLA's supply chains. A key objective of the SCM Program is to collaborate with customers (DLA J-Codes and Major Subordinate Commands (MSCs)) to identify capability shortfalls that can be addressed through major research efforts. These R&D efforts strive to develop technology mitigation strategies that address current and anticipated problems within DLA's supply chains.

*In FY 2023, this SFA, Emergent Logistics R&D Requirements (04), closes out. The ERP and the SCM programs shift to the Logistics Operations Innovation (LOI) Line of Effort (see R-2A).

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

	FY 2022	FY 2023	FY 2024
Title: Emergent Logistics R&D Requirements	3.631	-	-
<p>Description: The Energy Readiness Program (ERP) continued working with Military Service customers and technical offices to improve specifications and standards for fuel and additive quality, engage in modeling and simulation of the energy supply chain and identifying alternative energy sources for military customers. Accomplishments include:</p> <ul style="list-style-type: none"> - Continued work on the Wood to Jet Fuel Program study with the University of Maine to the development of a biofuels capability able to support commercial and military fuels requirements through forestry feedstock material diverted from decreasing industries through the production of marketable coproducts for alternative/renewable fuel. 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>- Continued work on the Investigation of Waste-Based Feedstocks for Sustainable Aviation Fuel Production project with the University of Hawaii project that supports the production, adoption, and use of sustainable bio-based aviation fuel, a much-needed alternative to petroleum legacy fuels. Initial fuel streams of interest include construction and demolition waste and others of relevance to Defense Production Act projects.</p> <p>- Completed Phase I and began Phase II of the Thermal Stability Heater Tube Evaluation project that investigates the maximum hydraulic fluid contamination level for fuels de-fueled from aircraft and identify the specification requirement(s) that are significantly impacted by fluids currently on the DoD qualified products list.</p> <p>- Completed Phase I and began Phase II Small Business Innovation Research project for a Lubricating Oil Study to develop a screening tool using software technology that monitors lubricating oil conditions as it transits through the acquisition chain. Conditions are tracked from refinery/manufacturer to receipt/storage tanks by “fingerprinting” its physical properties, screening for anomalies, and flagging for borderline specification properties or out-of-tolerance conditions.</p> <p>The Supply Chain Management (SCM) program completed the BEMR Lab prototype demonstration of an Augmented Reality (AR) remote expert capability and continued work on the Advanced Modeling and Optimization of Supply Chains (AMOS) supply chain simulator in support of contingency operations. Additionally, SCM completed a study of available solutions that provide multi-tiered vendor supply chain management options for DLA’s known NSNs with castings, forgings, and specialty metals and initiated efforts to support the “greening” of selected DLA supply chain elements.</p>			
Accomplishments/Planned Programs Subtotals	3.631	-	-

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

N/A

Remarks

D. Acquisition Strategy

The DLA R&D program is executed through Delivery Orders placed on Indefinite Delivery/Indefinite Quantity Contracts that resulted from competitive Broad Agency Announcements and through interagency agreements with the Military Services when it is cost effective and/or provides some technical advantage, e.g. improves the probability of successful transition. DLA also has a continuously open Broad Agency Announcement for Emerging Technologies.

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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
LOI: <i>Logistics Operations Innovation</i>	0.000	0.000	6.088	7.391	-	7.391	7.533	7.659	7.786	7.930	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Logistics Operations Innovation Line of Effort (LOE) seeks to improve DLA supply chain performance and security through the integration of advanced technology and innovative processes within the DLA day-to-day business operations. Research in these areas drive improvements to internal costs, reduce award delays, and improve material availability, supply chain security, and logistical planning. This will be accomplished through the use of artificial intelligence/machine learning, blockchain technology, and research of emerging commercial best practices and technologies. In addition, out of cycle emergent technologies across all DLA supply chains and logistics processes are resourced in a timely manner without disrupting ongoing projects by funds reallocation. The objectives for this LOE include:

1. Secure supply chains: Improvements to the DoD Class III Bulk Fuel Petroleum, Oil and Lubricants supply system
 - New or improved analytical methods to determine product quality of identify anomalies
 - Renewable energy technologies for military and government use
 - Enhanced military adoption and use of fuel products derived from petroleum alternatives

2. Technical Solutions for anti-counterfeiting detection: innovative solutions to prevent counterfeit parts in the logistical supply chain.
 - Reduced supply chain vulnerabilities through low-cost anti-counterfeiting solutions

3. Integrated logistics and acquisition information that yields cost savings and shortens lead times:
 - A "Supply Chain Digital Twin" capability to perform system-wide end-to-end supply chain optimization modeling and simulation
 - Supply chain optimization, scenario evaluation, and risk assessment for contingency operations
 - Supply chain sustainability: increase the use of renewable, reusable, recyclable resources; source materials and products that reduce negative impact on environment, human health, and depletion of non-renewable resources
 - An enterprise market intelligence capability to optimize spending strategies and business outcomes
 - An automated contract quality capability that will result in a higher percentage of contracts executable upon award and subsequently a reduction of Production Lead Time
 - Improved e-commerce and supplier bidding systems

The Logistics Operations Innovation LOE includes R&D efforts to develop new products and services for DLA customers in three programs:

The Energy Readiness Program (ERP) roadmap helps to achieve the operational energy strategy goals of increasing sources of supply, developing and implementing alternative fuels under the ERP.

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The Acquisition Modernization Technology Research (AMTR) program officially established in FY 2022. Many of the current efforts were initiated and funded under the Logistics Tech Research (LTR) Program; however, because of the increasing focus on DLA Acquisition modernization to enhance market intelligence capabilities, improve contract quality, and enable best value acquisitions, these efforts transitioned to a dedicated program. These and similar efforts will be managed by the AMTR program in close coordination with DLA J7 moving forward.

The Supply Chain Management (SCM) program addresses emergent, out of budget cycle requirements and opportunities within DLA's supply chains. A key objective of the SCM Program is to collaborate with customers (DLA J-Codes and Major Subordinate Commands (MSCs)) to identify capability shortfalls that can be addressed through major research efforts. These R&D efforts strive to develop technology mitigation strategies that address current and anticipated problems within DLA's supply chains.

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

	FY 2022	FY 2023	FY 2024
Title: Logistics Operations Innovation Line of Effort (R&D LOE 4)	-	6.088	7.391
<p>Description: Funding and efforts for the Logistics Operations Innovation Line of Effort (R&D LOE 4) begins in FY 2023. FY 2022 efforts related to this LOE are outlined in the R-2A for Improving Logistics Processes (GLTD) under the Acquisition Modernization Technology Research (AMTR) program, and the R-2A for Emergent Logistics R&D Requirements (04) under the Energy Readiness Program (ERP) and Supply Chain Management (SCM) program.</p> <p>FY 2023 Plans:</p> <p>The Energy Readiness Program (ERP) program will continue working with the Service customers to improve specifications and standards for fuel quality, engage in modeling and simulation of the energy supply chain and identifying alternative energy sources for Military Customers. ERP will focus on determining R&D solutions for ongoing issues affecting fuel and fuel additive quality and operational requirements (e.g., thermal stability, storage stability, ignition capability) and providing additional alternatives for military unique fuels. With the current administration's increased focus and climate change initiatives and alternatives to petroleum products, the program's efforts to assist the military services in the qualification and certification of alternative fuels to meet military specification requirements are anticipated to increase significantly.</p> <p>The Acquisition Modernization Technology Research (AMTR) program will continue efforts to expand market intelligence capabilities (AMIDA) to DLA supply chains. The transition of the capability to Energy will be completed and the L&M pilot will begin in FY 2023. The IMRLS effort will continue, with plans to incorporate an IMRLS transition plan into the DLA enterprise which will be conducted during the 3rd milestone. Additionally, AMTR will investigate new projects that were addressed during the Acquisition Modernization Program groundwork study, including accelerating e-commerce procurement methods and introducing improved capabilities for the current DIBBS vendor bidding system.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>	Project (Number/Name) LOI / <i>Logistics Operations Innovation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>The Supply Chain Management (SCM) program will continue work on the Advanced Modeling and Optimization of Supply Chains (AMOS) supply chain simulator in support of contingency operations and initiate feasibility studies in multiple areas including asset visibility, dynamic network analysis, information mapping, and disposition technologies.</p> <p>FY 2024 Plans: The Energy Readiness Program (ERP) program will continue working with the Service customers to improve specifications and standards for fuel quality, engage in modeling and simulation of the energy supply chain and identifying alternative energy sources for Military Customers. ERP will focus on determining R&D solutions for ongoing issues affecting fuel and fuel additive quality and operational requirements (e.g., thermal stability, storage stability, ignition capability) and providing additional alternatives for military unique fuels. With the current administration's increased focus and climate change initiatives and alternatives to petroleum products, the program's efforts to assist the military services in the qualification and certification of alternative fuels to meet military specification requirements are anticipated to increase significantly.</p> <p>The Acquisition Modernization Technology Research (AMTR) program will continue to focus on efforts to expand market intelligence capabilities to the DLA supply chains. Transition of the capability to L&M and a pilot and transition at Disposition Services will be completed in FY 2024. Other planned efforts include using Digital Twin / Digital Thread, implementing a mission management tool to better align resources to requirements, and modernizing the cataloging process.</p> <p>The Supply Chain Management (SCM) program will begin transition of the Advanced Modeling and Optimization of Supply Chains (AMOS) supply chain simulator in support of contingency operations and continue research efforts in asset visibility, dynamic network analysis, information mapping, and disposition technologies.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024: Logistics Operations Innovation (LOI) baseline was increased by \$1.000 million based on internal funding reallocation decision to establish R&D rapid innovation capability and support IT digital modernization priorities.</p>			
Accomplishments/Planned Programs Subtotals	-	6.088	7.391

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 2024 Defense Logistics Agency										Date: March 2023		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>				Project (Number/Name) PAM / <i>Predictive Analytics / Modeling & Simulation</i>			
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
PAM: <i>Predictive Analytics / Modeling & Simulation</i>	0.000	0.000	3.872	3.914	-	3.914	4.013	4.100	4.187	4.286	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Predictive Analytics, Modeling & Simulation Line of Effort (PAM) (R&D LOE 3) encompasses R&D efforts within the Logistics Technology Research (LTR) program. The focus of R&D LOE 3 is to develop predictive analytic solutions by applying AI/ML algorithms to data obtained from DLA and external sources which can help solve high-impact problems, improve business operations, and provide actionable strategies for optimized business decisions. Through the development of decision support tools, such as modeling, simulation, and other analytics to improve operational strategy decision-making, forecasting, and procurement, DLA will achieve more effective and efficient responses to emerging market and customer requirements. The objectives for this LOE include:

1. Leverage technological solutions for data analytics and integration for demand projections and supply chain risk management.
2. Data analytics integration for DLA, the military services and industry: allows businesses and vendors to aggregate data, analyze it, and transform it into useful information.
3. Explore emergent technologies in quantum computing and edge computing to enable advanced analytics.

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

	FY 2022	FY 2023	FY 2024
Title: Predictive Analytics, Modeling & Simulation Line of Effort (R&D LOE 3)	-	3.872	3.914
Description: Funding and efforts for the Predictive Analytics, Modeling & Simulation Line of Effort (R&D LOE 3) begins in FY 2023. FY 2022 efforts related to this LOE are outlined in the R-2A for Improving Logistics Processes (GLTD) under the Logistics Technology Research (LTR) program.			
FY 2023 Plans: The Logistics Technology Research (LTR) program will: conduct additional research into AI/ML enabled demand projection improvements to complement work initiated by the Joint Artificial Intelligence Committee focused on low, infrequent demand items; continue exploration of blockchain technology by identifying high value use cases based on business need and potential return on investment through an internal business process assessment; continue efforts to improve supply chain risk management identified in FY 2022.			
In addition to development of AI/ML models for supply chain disruptions, digital supply chain twins will be explored to identify and mitigate risks. This research is expected to continue into FY2024.			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>	Project (Number/Name) PAM / <i>Predictive Analytics / Modeling & Simulation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Complete research started in prior years and transition as applicable: Research for an enterprise-wide digital vendor on-boarding process to register, analyze, and validate suppliers to reduce duplication, improve timeliness, and the ability to tailor supply chain risk analytics to each program started late in FY22 will continue; develop transparent armor best value models; research metadata management, data quality, and data curation capabilities.</p> <p>FY 2024 Plans: The Logistics Technology Research (LTR) program will continue predictive analytics research through execution of AI/ML research based on high value use cases identified by the agency leadership, and research incorporating edge computing technology into DLA business processes to complement predictive analytics capabilities.</p> <p>LTR will continue supply chain risk management research through exploration of data lakes and other data analytics integration methods to store classified and unclassified data for supply chain risk analysis and AI/ML applications. Additional risk identification and mitigation capabilities will be explored.</p> <p>One or more blockchain pilot studies will be conducted based on use case research completed in FY2023.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: No significant changes from FY 2023 to FY 2024.</p>			
Accomplishments/Planned Programs Subtotals	-	3.872	3.914

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 2024 Defense Logistics Agency										Date: March 2023		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>				Project (Number/Name) SWM / <i>Smart-Warehouse Modernization</i>			
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
SWM: <i>Smart-Warehouse Modernization</i>	0.000	0.000	3.703	5.275	-	5.275	5.350	5.420	5.491	5.578	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Smart Warehouse Modernization Line of Effort (R&D LOE 5) will assess and test cyber-secure smart-warehouse technologies to transform and modernize distribution and disposition operations. The objectives for this LOE include:

1. Increase productivity and efficiency through interconnected technologies and automation such as enhanced inventory management, materiel distribution, and asset visibility
2. Provide enhanced and cyber-secure operations

The Strategic Distribution & Disposition (SDD) Program collaborates with DLA Distribution and Disposition Services to identify legacy capabilities that are inadequate for emerging worldwide distribution and disposition requirements. A key objective of the SDD Program is to anticipate, assess, and meet the current and future Warfighter requirements by leveraging R&D to infuse innovation into solutions. Long-term objectives include mitigating the DOD Supply Chain Management high risk issues identified by the Government Accountability Office (GAO), 2018 (Inventory Management, Material Distribution and Asset Visibility).

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

	FY 2022	FY 2023	FY 2024
Title: Smart Warehouse Modernization Line of Effort (R&D LOE 5)	-	3.703	5.275
Description: Funding and efforts for the Smart Warehouse Modernization Line of Effort (R&D LOE 5) begins in FY 2023. FY 2022 efforts related to this LOE are outlined in the R-2A for Enhancing Analysis, Modeling, and Decision Support (EMM) under the Strategic Distribution and Disposition (SDD) program.			
FY 2023 Plans: The Strategic Distribution and Disposition (SDD) program will continue to provide applied research, analytical and decision support to DLA Distribution and Disposition Services and provide support to the Distribution Modernization Program (DMP). SDD will continue to engage with Industry, DOD sponsored FFRDCs and UARCs leveraging subject-matter expertise in key areas of research such as 5G Networks, Sensor Internet of Things (IoT), Blockchain, Quantum Computing, Artificial Intelligence/ Machine Learning (AI/ML), and leverage the benefits realized from proven research studies and pilot projects in the areas of AR, AS/RS, Performance Management, Automated Inventory, 3D Warehouse Mapping, and Autonomous/Robotics systems (e.g., Autonomous Guided Vehicles (AGVs), Autonomous Mobile Robots (AMRs), etc.). SDD will continue to incorporate IPTs for project collaboration and Integrated System Engineering concepts (test and evaluation) into Distribution projects.			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>	Project (Number/Name) SWM / <i>Smart-Warehouse Modernization</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>During FY 2023 SDD plans focus on upgrading current data architectures to manage and handle the evolution of “Big Data” in the digital revolution through the exploration of the fundamental shifts in network and wireless performance as classified with the 5Vs Concept: Volume – The need for high volume of data; Velocity – The need to generate and process data at high speed; Variety – The types of data (i.e., Policies, photographs, graphs, PDF/MS/Excel files, etc.); Veracity – The need for accuracy and trustworthiness of the data (cybersecurity); and Value – The need to enable smarter and better decision making. Efforts will include:</p> <ul style="list-style-type: none"> - 5G Network technology needed to enhance the connectivity and speed of mobile devices to communicate data for DLA’s inventory management activities, material distribution activities, and asset visibility activities. - Sensor IoT technology applications to enhance DLA’s data collection and implement the nine principal technologies are used to create a smart warehouse where machines, systems, and humans communicate to coordinate and monitor progress on the warehouse floor. IoT supports the opportunity to obtain “Big Results” and to improve services, productivity, lower downtime, and contributes to deep learning. - Blockchain to reduce the complexity of ordinary transactions and ensure data integrity, ensure all parties provide consensus before new transactions are added to the network, eliminate or reduce paper processes, speed up transaction times and increase efficiencies, enhance the ability to more securely track/trace transactions, and use cryptographic algorithms to provide better cybersecurity. - Investigate Quantum Computing to make the evolution of “Big Data” an effective reality by providing the capability to process the ever-increasing amounts of data being collected, stored, and disseminated, and more quickly ingest, compile, and analyze the large sums of data, perform data mining functions, computing operations, and to process “Big Data”. - Artificial Intelligence/Machine Learning (AI/ML) to automate repetitive tasks, reduce or eliminate inefficiencies in supply chain activities, eliminate the high labor costs for repetitive tasks, reduce the long lead time to process repetitive tasks, implement AI/ML to automate tasks based on the integrity of data, and enhance DLA’s business operations by simply reducing the time needed to perform repetitive tasks – i.e., data entry and transactions. <p>Additional FY 2023 plans include:</p> <ul style="list-style-type: none"> - Conduct a Sequential Phase II B Small Business Innovative Research (SBIR) Augmented Reality (AR) case study to prove out DLA’s acquisition approach for implementing AR technology in the Warehouse Picking process. Today’s DLA inventory 			

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Defense Logistics Agency		Date: March 2023
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>	Project (Number/Name) SWM / <i>Smart-Warehouse Modernization</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>management automation system is out of date to meet the increased demand to keep track of current inventory and reduce high inventory adjustments and inventory labor costs. Through the use of improved methods for inventory management, innovative processes are proposed using AR technology. This project will continue to develop a prototype augmented reality system in a DLA warehouse environment and will provide a proof of concept to ascertain the utility, feasibility, maintainability, and cost-effectiveness of using AR to improve inventory efficiency. This project is scheduled for completion in FY24Q2.</p> <p>- Conduct an Outdoor Inventory Management project using RollerBot (AMR) technology to augment the total inventory management of the items stored externally to the Distribution Warehouses which makes it difficult to obtain timely and accurate information such as status of yard inventory. This project is scheduled for completion in FY23Q2.</p> <p>- Collaborate with the Naval Postgraduate School (NPS) in conjunction with the DLA Distribution Center, Norfolk, VA (DDNV) to conduct a Fleet-informed Material Processing Center (MPC) Workload Forecasting project to determine the unpredictable receipting workload for high priority and routine (PRI 1/2/3) Fleet material items at DDNV MPC. The current inability to predict workload creates non-seasonal spikes throughout the year that impact the timely processing of material for delivery to Fleet units at Naval Station Norfolk/Hampton Roads area.</p> <p>FY 2024 Plans: The Strategic Distribution and Disposition (SDD) program will continue to provide applied research, analytical and decision support to DLA Distribution and Disposition Services and provide support to the Distribution Modernization Program (DMP). SDD will continue to engage with Industry, DOD sponsored FFRDCs and UARCs leveraging subject-matter expertise in key areas of research such as 5G Networks, Sensor Internet of Things (IoT), Blockchain, Quantum Computing, Artificial Intelligence/ Machine Learning (AI/ML), and leverage the benefits realized from proven research studies and pilot projects in the areas of AR, AS/RS, Performance Management, Automated Inventory, 3D Warehouse Mapping, and Autonomous/Robotics systems (e.g., Autonomous Guided Vehicles (AGVs), Autonomous Mobile Robots (AMRs), etc.). SDD will continue to incorporate IPTs for project collaboration and Integrated System Engineering concepts (test and evaluation) into Distribution projects.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: FY 2024: Smart-Warehouse Modernization (SWM) baseline was increased by \$1.500 million based on internal funding reallocation decision to modernize DLA's warehousing and distribution processes by leveraging automation, Big Data, and predictive analytics to make data-driven decisions, improve productivity and cost effectiveness, and realize returns on investment as agency savings.</p>			
Accomplishments/Planned Programs Subtotals	-	3.703	5.275

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Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603712S / <i>Logistics Research and Development Technology (Log R&D)</i>	Project (Number/Name) SWM / <i>Smart-Warehouse Modernization</i>

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

N/A

Remarks

D. Acquisition Strategy

N/A