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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	0.000	187.953	1,204.179	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
001: <i>Transport</i>	0.000	0.000	260.481	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
002: <i>Sensing</i>	0.000	0.000	837.112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
003: <i>Integration and Battle Management</i>	0.000	0.000	106.586	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
033: <i>Transport Layer Architecture and Standards</i>	0.000	26.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
034: <i>Space Situational Awareness and Launch</i>	0.000	23.601	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
039: <i>Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration</i>	0.000	31.369	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
196: <i>Space Technology Development</i>	0.000	106.928	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Note

This program and funding continue in FY 2023 and out under Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206410SF. In accordance with the William M. (Mac) Thornberry National Defense Authorization Act (NDAA) for FY 2021, effective on October 1, 2022, the Space Development Agency (SDA) will be an element of the U.S. Space Force (USSF), and report to Assistant Secretary of the Air Force (ASAF) for Space Acquisition and Integration (ASAF/SA&I) with respect to acquisition decisions and directly to the Chief of Space Operations with respect to requirements decisions, personnel decisions, and any other matter not covered by ASAF/SA&I.

A. Mission Description and Budget Item Justification

SDA is responsible for developing and demonstrating the next generation space architecture to enable U.S. military operations to be responsive to emerging multi-domain threats against our national security. To achieve that goal, SDA will help inform the Department of Defense (DoD)'s decision to develop and implement a proliferated architecture enabled by lower-cost, mass-produced spacecraft and routine space access; shift the DoD to a development organization focused on experimentation, prototyping, and accelerated fielding. SDA will manage, direct, and execute the development of the space capabilities for the joint warfighter in accordance with DoD's Space Vision and field space capabilities at speed and scale, with the following goals:

- Bold breakthroughs designed to out-pace our competitors,
- Technology maturation and systems engineering,

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>
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- Lean engineering, manufacturing, and support,
- Industrial base expansion; streamlined development and acquisition process, and
- Increased acquisition cooperation with the National Reconnaissance Office (NRO).

SDA will rapidly deploy critical elements of next-generation space capabilities, initially focusing on these essential capabilities:

- Persistent global surveillance for advanced missile targeting,
- Indications, warnings, targeting, and tracking for defense against advanced missile threats,
- Alternate position, navigation, and timing (PNT) for a navigation warfare (NAVWAR) resilient environment,
- Global and near-real time space situational awareness,
- Responsive, resilient, common ground-based space support infrastructure (e.g., ground stations and launch capability),
- Cross-domain, networked, node-independent battle management command, control, and communications (BMC3), and
- Highly-scaled, low-latency, persistent, artificial intelligence-enabled global surveillance.

The establishment of a data transport layer in Low Earth Orbit (LEO) is essential to developing a new, responsive space architecture, and will be SDA's primary initial focus within the National Defense Space Architecture (NDSA). SDA will develop an initial set of sub-constellations on this Transport Layer to provide additional capabilities, such as advanced missile warning.

This program element funds efforts to develop and demonstrate a prototype proliferated Low Earth Orbit (pLEO) communications and data transport layer and its sub-constellations in support of the DoD Space Vision.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	194.694	636.179	0.000	0.000	0.000
Current President's Budget	187.953	1,204.179	0.000	0.000	0.000
Total Adjustments	-6.741	568.000	0.000	0.000	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	580.000			
• Congressional Directed Transfers	-	-12.000			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-6.741	-			

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

Project: 001: *Transport*

FY 2021	FY 2022

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Congressional Add: <i>Laser Communication Router Demonstration System</i>	-	12.000
Congressional Add Subtotals for Project: 001	-	12.000
Project: 002: Sensing		
Congressional Add: <i>Missile Tracking Demonstration (Tracking Layer)</i>	-	550.000
Congressional Add Subtotals for Project: 002	-	550.000
Project: 003: Integration and Battle Management		
Congressional Add: <i>Space Networking Centers</i>	-	18.000
Congressional Add Subtotals for Project: 003	-	18.000
Congressional Add Totals for all Projects	-	580.000

Change Summary Explanation

FY 2021 funding in the amount of \$6.741 million was transferred to SBIR/STTR PE 0605502SDA.

FY 2022 Congressional marks resulted in a net gain of \$568.000 million. Project 001 (Transport) was increased by \$12.000 million to develop a laser communication router demonstration system and decreased by \$12.000 million for the Congressional Directed Transfer to SDA's Procurement PE (1203953SDA - Line Item NSSL01) for Tranche 1 launch. Project 001 also includes a transfer of \$20.000 million from SDA Tranche 1 satellite cost savings to be used for SDA Tranche 1 launch Integration. Project 002 (Sensing) was increased by \$550.000 million to develop a Missile Tracking demonstration (Tracking Layer) in support of USINDOPACOM's needs. Project 003 (Integration and Battle Management) was increased by \$18.000 million for the Space Networking Centers in Redstone Arsenal, AL and Grand Forks, ND.

Starting in FY 2023, the program and funding for PE 1206410SDA has been transferred to Appropriation 3620, RDT&E, Space Force, PE 1206410SF.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 001 / <i>Transport</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
001: <i>Transport</i>	0.000	0.000	260.481	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

In FY 2022, funding was realigned from Project 033 (Transport Layer Architecture and Standards) and Project 196 (Space Technology Development) into this project code (Project 001) to continue the development and fielding of the National Defense Space Architecture (NDSA). This project code was established to better align budget exhibits with the current Space Development Agency (SDA) construct. Funding in FY 2023 and future years has been transferred to Program Element (PE) 1206410SF under the U.S. Space Force (USSF).

A. Mission Description and Budget Item Justification

SDA is developing and demonstrating next generation space capabilities for the joint warfighter enabled by proliferation of satellites in Low Earth Orbit (LEO) and a new acquisition model utilizing rapid spiral development. SDA is developing capabilities to address a wide range of Department of Defense (DoD) space needs as stated in the National Defense Strategy and DoD Space Vision, including low-latency tactical communication enabling beyond line of sight targeting and advanced missile tracking. SDA is orchestrating the rapid development and fielding of the National Defense Space Architecture (NDSA), a resilient military sensing and data transport capability via a proliferated space architecture in LEO. This program element funds the development and demonstration of space technologies to deliver low-latency data transport and alternate position, navigation, and timing capabilities to U.S. joint warfighting forces in bi-annual tranches, beginning in FY 2022.

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

	FY 2021	FY 2022	FY 2023
Title: Transport	0.000	248.481	-
Description: Rapidly develop, deploy and demonstrate prototypes that enable a resilient and unified military data transport layer, sensor capabilities, and alternate position, navigation, and timing (APNT) capabilities enabled by a proliferated Low Earth Orbit (pLEO) architecture. This effort will define, demonstrate, and deliver the architectures and standards necessary to rapidly prototype and field new satellite capabilities in LEO.			
FY 2022 Plans: Tranche 0: - Finalize design and development of Transport warfighter immersion constellation. - Develop, integrate and test 20 Transport Tranche 0 space vehicles. - Complete Tranche 0 interoperability verification testing at Government hardware-in-the-loop (HWIL) test facility. - Ready flight missions for initial tranche operations. - Finalize plans for Tranche 0 capstone demonstrations. - Complete first launch of Tranche 0 satellites.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 001 / <i>Transport</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
- Complete all operations preparations at Naval Research Laboratory Blossom Point Tracking Facility in advance of satellite launch, early operations and full orbital check out. Tranche 1: - Conduct source selection and contract initialization for Transport Tranche 1 satellites. - Conduct source selection and contract initialization for Operations and Integration (constellation, network and mission ground systems) for Transport Tranche 1 capability. - Conduct source selection and contract initialization for Tranche 1 Demonstration and Experimentation System (T1DES). - Mature design of Transport Tranche 1 satellites. - Design Battle Management, Command, Control and Communications (BMC3) Interoperability and Security Layer for Transport Tranche 1 capability. FY 2022 to FY 2023 Increase/Decrease Statement: Funding in FY 2023 and future years has been transferred to a new PE under the USSF, 1206410SF.			
Accomplishments/Planned Programs Subtotals	0.000	248.481	-

	FY 2021	FY 2022
Congressional Add: Laser Communication Router Demonstration System FY 2022 Plans: Conduct additional development and testing for space to air capabilities required in three areas: noncoherent laser communication development and testing from space vehicle to airborne platform; modem development and design for small Size, Weight, and Power (SWaP) associated with limited real estate associated with airborne vehicles; and the command and control associated with commanding a SV to communicate with a specific airborne platform in a very defined geographic region. Conduct contract initialization of vendors to support these three areas.	-	12.000
Congressional Adds Subtotals	-	12.000

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 04: <i>1206410SF, Space Technology Development and Prototyping, Project: Transport</i>	0.000	0.000	816.442	0.000	816.442	1,448.089	1,317.715	1,484.437	1,517.891	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 001 / <i>Transport</i>

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

Partners for these activities may include Missile Defense Agency (MDA), Space Systems Command (SSC), DoD Combatant Commands, DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, and University Affiliated Research Centers. Tranche 1 has been approved to Middle Tier of Acquisition, enabling rapid prototyping.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 001 / <i>Transport</i>

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

Transport	
Complete the development of Transport Tranche 0 space vehicles.	████████████████████
Launch and early operations of Tranche 0 Transport satellites.	████████████████
Begin design and development of Tranche 1 Transport Layer space vehicle systems.	████████████████████████████████
Begin design and development of Tranche 1 Transport Layer ground systems and operations plans.	████████████████████████████████
Laser Communication Router Demonstration System	
Perform technology evaluations to inform requirements for space to air capabilities and laser communication router demonstration system.	████████████████
Develop laser communication router demonstration system.	████████████████
Test and evaluate developed laser communication router demonstration system.	████████████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 001 / <i>Transport</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Transport</i>				
Complete the development of Transport Tranche 0 space vehicles.	1	2022	4	2022
Launch and early operations of Tranche 0 Transport satellites.	4	2022	2	2023
Begin design and development of Tranche 1 Transport Layer space vehicle systems.	2	2022	4	2023
Begin design and development of Tranche 1 Transport Layer ground systems and operations plans.	3	2022	4	2023
<i>Laser Communication Router Demonstration System</i>				
Perform technology evaluations to inform requirements for space to air capabilities and laser communication router demonstration system.	3	2022	4	2022
Develop laser communication router demonstration system.	2	2023	3	2023
Test and evaluate developed laser communication router demonstration system.	3	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 002 / <i>Sensing</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
002: <i>Sensing</i>	0.000	0.000	837.112	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Funding was realigned from Project 039 (Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration) and Project 196 (Space Technology Development) into this project code (Project 002) in FY 2022 to continue the development and fielding of the National Defense Space Architecture (NDSA). This project code was established to better align budget exhibits with the current Space Development Agency (SDA) construct. Funding in FY 2023 and future years has been transferred to a new Program Element (PE) under the U.S. Space Force (USSF), 1206410SF.

A. Mission Description and Budget Item Justification

SDA is developing and demonstrating next generation space capabilities for the joint warfighter enabled by proliferation of satellites in Low Earth Orbit (LEO) and a new acquisition model utilizing rapid spiral development. SDA is developing capabilities to address a wide range of Department of Defense (DoD) space needs as stated in the National Defense Strategy and DoD Space Vision, including advanced missile tracking and global surveillance enabling beyond-line-of-sight targeting. SDA will orchestrate the rapid development and fielding of the National Defense Space Architecture (NDSA), a resilient military sensing and data transport capability via a proliferated space architecture in LEO. This program element funds the development and demonstration of space technologies to deliver advanced missile tracking, global surveillance, and enhanced space domain awareness and deterrence capabilities to U.S. joint warfighting forces in bi-annual tranches, beginning in FY 2022.

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

	FY 2021	FY 2022	FY 2023
Title: Sensing	0.000	287.112	-
Description: Develop and demonstrate payload prototypes compatible with a proliferated Low Earth Orbit (pLEO) architecture. This effort will focus on developing and demonstrating sensors for beyond-line-of-sight targeting, space-to-space data links, space-to-tactical data links, and advanced missile warning/missile tracking capabilities to enable enhanced space domain awareness. On-orbit demonstrations will be tied to existing mission-specific ground infrastructure, when it exists. Ground infrastructure will be linked or developed to support payload integration and data processing.			
FY 2022 Plans:			
Tranche 0:			
- Develop Tracking Tranche 0 comprised of Wide Field of View (WFOV) Infrared (IR) satellites.			
- Integrate Tracking space vehicles with one another and with Transport space vehicles to enable low-latency transport of advanced missile tracking data.			
- Conduct first launch of Tracking Tranche 0 satellites.			
- Demonstrate the performance of the IR payloads to detect dim targets with stressing background scenes.			
- Demonstrate capability to transfer data from tracking layer to existing Joint OPIR Ground (JOG) in standardized formats.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 002 / <i>Sensing</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
- Develop and conduct ground-based demonstration of multi-intelligence (multi-INT) data fusion algorithms on flight-like systems and in flight-like environments; validate on orbit via Transport Tranche 0 to maximum extent possible.			
Tranche 1: - Begin identifying potential payload mission partners.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding in FY 2023 and future years has been transferred to a new PE under the USSF, 1206410SF.			
Accomplishments/Planned Programs Subtotals	0.000	287.112	-

	FY 2021	FY 2022
Congressional Add: Missile Tracking Demonstration (Tracking Layer)	-	550.000
FY 2022 Plans: Conduct source selection and contract initialization for Tranche 1 (T1) Tracking Other Transaction Authority agreements to multiple vendors. Develop Tranche 1 Tracking satellites with WFOV and possibly Medium Field of View (MFOV) IR. Develop T1 Tracking payload data management and Ground Stations. Integrate Real-time Transfer Service (RTS) into T1 Tracking Layer Ground Stations.		
Congressional Adds Subtotals	-	550.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• RDTE 04: <i>1206410SF, Space Technology Development and Prototyping, Project: Sensing</i>	0.000	0.000	81.308	0.000	81.308	106.224	36.299	0.000	0.000	Continuing	Continuing
• RDTE 05: <i>1206446SF, Resilient Missile Warning Missile Tracking-Low Earth Orbit (LEO)</i>	0.000	0.000	499.840	0.000	499.840	723.621	802.313	827.201	863.350	Continuing	Continuing
• RDTE 05: <i>1206448SF, Missile Warning/Missile Tracking - Ground - LEO</i>	0.000	0.000	225.800	0.000	225.800	231.700	254.037	260.271	249.276	Continuing	Continuing

Remarks

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 002 / <i>Sensing</i>

D. Acquisition Strategy

Partners for these activities may include Missile Defense Agency (MDA), Space Systems Command (SSC), DoD Combatant Commands, DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, and University Affiliated Research Centers.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 002 / <i>Sensing</i>

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

Sensing	
Complete the development of Tracking Tranche 0 space vehicles and integrate with Transport Layer.	████████████████████
Launch and early operations of Tranche 0 Tracking satellites.	██████████
Begin planning activities for follow-on tranche capabilities.	████████████████████
Develop multi-INT data fusion and dissemination algorithms.	████████████████████
Missile Tracking Demonstration (Tracking Layer)	
Develop Tranche 1 Tracking satellites	████████████████████
Develop Tranche 1 Tracking payload data management	████████████████████
Develop Tranche 1 Tracking Ground Stations	████████████████████
Integrate into Real-time Transfer Service (RTS)	████████████████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 002 / <i>Sensing</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Sensing</i>				
Complete the development of Tracking Tranche 0 space vehicles and integrate with Transport Layer.	1	2022	2	2023
Launch and early operations of Tranche 0 Tracking satellites.	4	2022	2	2023
Begin planning activities for follow-on tranche capabilities.	1	2022	4	2023
Develop multi-INT data fusion and dissemination algorithms.	1	2022	4	2023
<i>Missile Tracking Demonstration (Tracking Layer)</i>				
Develop Tranche 1 Tracking satellites	4	2022	4	2023
Develop Tranche 1 Tracking payload data management	4	2022	4	2023
Develop Tranche 1 Tracking Ground Stations	4	2022	4	2023
Integrate into Real-time Transfer Service (RTS)	4	2022	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>				Project (Number/Name) 003 / <i>Integration and Battle Management</i>			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
003: <i>Integration and Battle Management</i>	0.000	0.000	106.586	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Funding was realigned from Project 034 (Space Situational Awareness and Launch) and Project 196 (Space Technology Development) into this project code (Project 003) in FY 2022 to continue the development and fielding of the National Defense Space Architecture (NDSA). This project code was established to better align budget exhibits with the current Space Development Agency (SDA) construct. Funding in FY 2023 and future years has been transferred to a new Program Element (PE) under the U.S. Space Force (USSF), 1206410SF.

A. Mission Description and Budget Item Justification

SDA is developing and demonstrating next generation space capabilities for the joint warfighter enabled by proliferation of satellites in Low Earth Orbit (LEO) and a new acquisition model utilizing rapid spiral development. SDA is developing capabilities to address a wide range of Department of Defense (DoD) space needs as stated in the National Defense Strategy and DoD Space Vision, including space-based battle management and a ground support infrastructure. SDA will orchestrate the rapid development and fielding of the National Defense Space Architecture (NDSA), a resilient military sensing and data transport capability via a proliferated space architecture in LEO. This program element funds the development and demonstration of space technologies to deliver space-based command and control, tasking, mission processing and dissemination capabilities, as well as an integrated, resilient network of ground support capabilities, to U.S. joint warfighting forces in bi-annual tranches, beginning in FY 2022.

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

	FY 2021	FY 2022	FY 2023
Title: Integration and Battle Management	0.000	88.586	-
Description: Deliver capabilities to U.S. joint warfighting forces in two-year enhanced capability tranches, beginning in FY 2022. Products include but are not limited to performing trade studies, technical analyses, or modeling and simulation; identifying and maturing enabling technologies; defining and conducting ground-based and on-orbit risk reduction demonstrations, prototyping hardware or software systems; and exploring novel concepts for future warfighting capabilities augmented by a resilient proliferated Low Earth Orbit (pLEO) satellite architecture.			
FY 2022 Plans:			
Tranche 0:			
- Conduct hardware-in-the-loop operations to validate Battle Management solutions.			
- Prepare Naval Research Laboratory’s Blossom Point ground station for Tranche 0 satellite operations.			
- Complete validation and verification of the Government-owned hardware-in-the-loop testbed capability.			
- Establish initial SDA ground capability and prepare for Tranche 0 satellite operations.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 003 / <i>Integration and Battle Management</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
- Launch Tranche 0 satellites.			
Tranche 1: - Develop plans for follow-on tranche capabilities.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding in FY 2023 and future years has been transferred to a new PE under the USSF, 1206410SF.			
Accomplishments/Planned Programs Subtotals	0.000	88.586	-

	FY 2021	FY 2022
Congressional Add: Space Networking Centers	-	18.000
FY 2022 Plans: Finalize plans for SDA Space Networking Centers and Ground Entry Point with host installations. Modify/reassemble facility space for SDA's networking and operations centers. Assess existing utilities (HVAC, power, water, etc..) for SDA operations and upgrade as required. Upgrade host installation operational/administrative terrestrial networking services. Conduct development and integration/functionality testing for mission readiness. Prepare SDA's Space Networking Centers (North and South) for Tranche 1 network operations. Establish SDA ground capability and prepare for Tranche 1 network operations.		
Congressional Adds Subtotals	-	18.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023	FY 2023	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• RDTE 04: <i>1206410SF, Space Technology Development and Prototyping, Project: Integration and Battle Management</i>	0.000	0.000	89.072	0.000	89.072	126.094	152.605	43.879	36.978	Continuing	Continuing

Remarks

D. Acquisition Strategy
Partners for these activities may include Missile Defense Agency (MDA), Space Systems Command (SSC), DoD Combatant Commands, DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, and University Affiliated Research Centers.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 003 / <i>Integration and Battle Management</i>

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

Integration and Battle Management																											
Complete the development of an initial battle management architecture.																											
Complete the development of Tranche 0 ground support infrastructure.																											
Manage Tranche 0 constellation operations.																											
Begin planning activities for follow-on tranche capabilities.																											
Space Networking Centers																											
Modify/reassemble facility space, and upgrade existing utilities and terrestrial networking services for SDA's networking and operations centers.																											
Prepare Space Networking Centers and establish SDA ground capability for Tranche 1 network operations.																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 003 / <i>Integration and Battle Management</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Integration and Battle Management</i>				
Complete the development of an initial battle management architecture.	1	2022	4	2023
Complete the development of Tranche 0 ground support infrastructure.	1	2022	4	2023
Manage Tranche 0 constellation operations.	1	2022	4	2023
Begin planning activities for follow-on tranche capabilities.	1	2022	4	2023
<i>Space Networking Centers</i>				
Modify/reassemble facility space, and upgrade existing utilities and terrestrial networking services for SDA's networking and operations centers.	3	2022	3	2023
Prepare Space Networking Centers and establish SDA ground capability for Tranche 1 network operations.	4	2022	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 1206410SDA / Space Technology Development and Prototyping				Project (Number/Name) 033 / Transport Layer Architecture and Standards			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
033: Transport Layer Architecture and Standards	0.000	26.055	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding in FY 2022 was transferred to the Transport Project 001.

A. Mission Description and Budget Item Justification

The Space Technology Development and Prototyping effort developed and demonstrated a prototype proliferated Low Earth Orbit (pLEO) data transport layer and its sub-constellations to provide the eight capabilities outlined in the Department of Defense (DoD) Space Vision. The Space Development Agency (SDA) will rapidly develop and field the next generation space architecture that will enable the U.S. to deploy space capabilities that out-pace adversarial threats. This architecture is underpinned by common satellite buses, common interfaces between payloads and buses, and common data interfaces and standards. SDA will develop these standards for high power and lower power buses. SDA will develop standard interfaces across these two classes of satellite buses. SDA, in collaboration with other Space stakeholders, will develop communication standards and a ground architecture including user equipment that supports satellites utilizing these standardized products.

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

	FY 2021	FY 2022	FY 2023
Title: Transport Layer Architecture and Standards	26.055	-	-
Description: Developed and demonstrated prototypes that enabled a resilient and unified military data transport layer and sensor capabilities, enabling a pLEO architecture. This effort defined and delivered the architectures and standards necessary to rapidly prototype and field new satellite capabilities in Low Earth Orbit (LEO). For Tranche 0: performed technology development and in-flight demonstrations to test and demonstrate optical intersatellite link technologies; and designed a space-to-air optical connectivity experiment taking advantage of existing MQ-9 pod in advance of on-orbit optical link deployment.			
Accomplishments/Planned Programs Subtotals	26.055	-	-

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

N/A

Remarks

D. Acquisition Strategy

Partners for these activities included DoD research centers, large defense contractors, and commercial space providers.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 033 / <i>Transport Layer Architecture and Standards</i>
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FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
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

Transport Layer Architecture and Standards	
Enable an initial deployment of the space architecture.	██████████
Develop and perform on-orbit demonstration of optical intersatellite links (OISL).	██████████
Link the early builds of the space based data Transport Layer to ground systems via optical communications.	██████████

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

Transport Layer Architecture and Standards	
Enable an initial deployment of the space architecture.	██
Develop and perform on-orbit demonstration of optical intersatellite links (OISL).	██
Link the early builds of the space based data Transport Layer to ground systems via optical communications.	██

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 033 / <i>Transport Layer Architecture and Standards</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Transport Layer Architecture and Standards</i>				
Enable an initial deployment of the space architecture.	4	2020	2	2023
Develop and perform on-orbit demonstration of optical intersatellite links (OISL).	3	2020	4	2023
Link the early builds of the space based data Transport Layer to ground systems via optical communications.	3	2020	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 034 / <i>Space Situational Awareness and Launch</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>034: Space Situational Awareness and Launch</i>	0.000	23.601	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note
Funding in FY 2022 was transferred to the Integration and Battle Management Project 003.

A. Mission Description and Budget Item Justification

The Space Technology Development and Prototyping effort will develop and demonstrate a prototype proliferated Low Earth Orbit (pLEO) data transport layer and its sub-constellations to provide the eight capabilities outlined in the Department of Defense (DoD) Space Vision. Developing and fielding a pLEO space architecture will significantly improve U.S. resilience posture in space. The Space Situational Awareness (SSA) and Launch project will further support this vision of enhanced resilience. Global and near real-time SSA will provide a detailed understanding of the space order of battle and a responsive launch capability needed to enable rapid constitution or replenishment of space capabilities.

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

	FY 2021	FY 2022	FY 2023
Title: Space Situational Awareness and Launch	23.601	-	-
Description: Developed transport layer to provide critical data transfer capabilities, such as dissemination of space situational awareness data. In addition, this effort identified and contracted for launch of small-to-medium size payloads, to demonstrate responsive constitution and replenishment. For Tranche 0: identified launch opportunities for Space Transport Layer demonstration; designed and developed initial pLEO data transport capabilities; improved architecture resilience by developing advanced beyond-line-of-sight communications systems; and developed deep space surveillance plans.			
Accomplishments/Planned Programs Subtotals	23.601	-	-

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

N/A

Remarks

D. Acquisition Strategy

Partners for these activities included commercial space providers, small businesses and Federally Funded Research and Development Centers.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Space Development Agency							Date: April 2022				
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>				Project (Number/Name) 034 / <i>Space Situational Awareness and Launch</i>			

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
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

Space Situational Awareness and Launch	
Develop initial Transport Layer capability, ultimately enabling space situational awareness development and dissemination.	
Extend Transport Layer capabilities with advanced beyond line of sight communications techniques.	

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

Space Situational Awareness and Launch	
Develop initial Transport Layer capability, ultimately enabling space situational awareness development and dissemination.	
Extend Transport Layer capabilities with advanced beyond line of sight communications techniques.	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 034 / <i>Space Situational Awareness and Launch</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Space Situational Awareness and Launch</i>				
Develop initial Transport Layer capability, ultimately enabling space situational awareness development and dissemination.	4	2020	2	2022
Extend Transport Layer capabilities with advanced beyond line of sight communications techniques.	3	2021	2	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / Space Technology Development and Prototyping	Project (Number/Name) 039 / Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
039: Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration	0.000	31.369	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Funding in FY 2022 was transferred to the Sensing Project 002.

A. Mission Description and Budget Item Justification

The proliferated Low Earth Orbit (pLEO) Payload and Ground Integration project enabled a persistent global surveillance capability, enabled by a pLEO data communications transport layer that will provide indications, warnings, targeting, and tracking to support the defeat of advanced missile threats.

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

	FY 2021	FY 2022	FY 2023
Title: pLEO Missile Warning Ground Integration	31.369	-	-
Description: Developed and demonstrated payload prototypes compatible with a pLEO architecture. This effort focused on developing and demonstrating sensors for beyond-line-of-sight targeting, space-to-space data links, space-to-tactical data links, and advanced missile warning capabilities. On-orbit demonstrations addressed key risk elements present in moving missile tracking to LEO from higher orbits. Ground infrastructure linkage to existing capabilities were designed to support payload integration and data processing. For Tranche 0: developed multi-band WFOV infrared (IR) payload to evaluate IR detection and tracking methods from Low Earth Orbit (LEO); integrated payload with ISS resupply vehicle, launched payload, and conducted background measurements in LEO while berthed to station; and developed MFOV IR experiment to reduce technical risk of hybrid WFOV/MFOV missile tracking architecture.			
Accomplishments/Planned Programs Subtotals	31.369	-	-

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

N/A

Remarks

D. Acquisition Strategy

Partners for these activities include Department of Defense (DoD) research centers, large defense contractors, and commercial space providers.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 039 / <i>Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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
Missile Warning Technology																												
Develop and evaluate a multi-band wide field of view experimental IR payload.																												
Develop experimental satellite bus and integrate IR payload.																												
Develop and conduct medium field of view IR experiment.																												
Design and develop Tranche 0 missile tracking satellites informed by tracking experiments.																												

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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
Missile Warning Technology																												
Develop and evaluate a multi-band wide field of view experimental IR payload.																												
Develop experimental satellite bus and integrate IR payload.																												
Develop and conduct medium field of view IR experiment.																												
Design and develop Tranche 0 missile tracking satellites informed by tracking experiments.																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 039 / <i>Proliferated Low Earth Orbit (pLEO) Missile Warning Ground Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Missile Warning Technology</i>				
Develop and evaluate a multi-band wide field of view experimental IR payload.	3	2020	2	2022
Develop experimental satellite bus and integrate IR payload.	4	2020	4	2023
Develop and conduct medium field of view IR experiment.	3	2020	3	2021
Design and develop Tranche 0 missile tracking satellites informed by tracking experiments.	1	2021	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 196 / <i>Space Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>196: Space Technology Development</i>	0.000	106.928	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Funding in FY 2022 was transferred to the Transport, Sensing, and Integration and Battle Management Project codes.

A. Mission Description and Budget Item Justification

The Space Development Agency (SDA) is developing and demonstrating next generation space capabilities for the joint warfighter enabled by proliferation of satellites in Low Earth Orbit (LEO) and a new acquisition model utilizing rapid spiral development. The SDA is developing capabilities to address a wide range of Department space needs as stated in the National Defense Strategy and Department of Defense (DoD) Space Vision, including low-latency tactical communication, beyond-line-of-sight targeting, and advanced missile tracking. SDA will orchestrate the rapid development and fielding of the National Defense Space Architecture (NDSA), a resilient military sensing and data transport capability via a proliferated space architecture in low-earth orbit.

This program element funded the space technology development and prototyping activity to deliver a resilient military sensing and data transport capability via a proliferated space architecture to U.S. joint warfighting forces in two-year tranches, beginning as early as FY 2022. These capabilities included a low-latency mesh network data transport layer; advanced missile tracking layer; global surveillance and surface moving target custody layer; low-latency sensor tasking, command and control, and data dissemination layer; alternate position, navigation, and timing layer; enhanced space situational awareness and deterrence layer; and common ground segment and launch services layer.

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

	FY 2021	FY 2022	FY 2023
Title: Space Technology Development	106.928	-	-
Description: Space technology development and prototyping of a resilient military sensing and data transport capability via a proliferated space architecture in Low Earth Orbit (LEO). For Tranche 0: designed and began development of Transport Layer Tranche 0 capability; designed and began development of wide field-of-view infrared payload with sensitivity sufficient to detect advance missile threats; designed and began development of ground support infrastructure and integration with space constellation to support Tranche 0 mission operations; and designed, developed, and tested hardware-in-the-loop facility to support architecture interoperability testing and validation.			
Accomplishments/Planned Programs Subtotals	106.928	-	-

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 196 / <i>Space Technology Development</i>

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

Remarks

D. Acquisition Strategy

Partners for these activities included Missile Defense Agency (MDA), Space Systems Command (SSC), DoD Combatant Commands, DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, and University Affiliated Research Centers.

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 196 / <i>Space Technology Development</i>

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
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

<i>Space Technology Development</i>	
Develop Tranche 0 data transport capabilities.	████████████████████
Develop hardware in the loop test facility supporting Tranche 0 capability development.	████████████████████
Develop and integrate Tranche 0 ground support infrastructure.	████████████████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Space Development Agency		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 1206410SDA / <i>Space Technology Development and Prototyping</i>	Project (Number/Name) 196 / <i>Space Technology Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Space Technology Development</i>				
Develop Tranche 0 data transport capabilities.	1	2021	4	2022
Develop hardware in the loop test facility supporting Tranche 0 capability development.	1	2021	4	2022
Develop and integrate Tranche 0 ground support infrastructure.	1	2021	4	2022