Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Space Development Agency	Date: February 2020
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 1206310SDA *I Space Science and Technology Research and Development*

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	20.000	72.422	-	72.422	187.638	452.790	677.290	517.290	Continuing	Continuing
032: *Proliferated Low Earth Orbit (pLEO) Sensor Technology*	0.000	0.000	20.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
12: *Space Development Agency R&E*	0.000	0.000	0.000	72.422	0.000	72.422	187.638	452.790	677.290	517.290	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Space Development Agency (SDA) is developing and fielding next generation space capabilities enabled by proliferation and a new acquisition model utilizing rapid spiral development. SDA is developing capabilities to address a wide range of Department space needs, including low-latency tactical communication, beyond line of sight targeting, and advanced missile tracking. Specifically, the SDA will demonstrate and field persistent, resilient capabilities needed to be responsive to emerging multi-domain threats against the U.S. national interest. The SDA will be responsible for overall programmatic policy development and execution for next-generation military space capabilities, except those funded in the Military Intelligence Program (MIP). In coordination with other DoD Space stakeholders, the SDA will drive the development of space capabilities to achieve the DoD space vision and reduce overlap and inefficiency. The SDA will expand the Department's space warfighting capability and foster growth in the U.S. space industrial base, the SDA will incorporate enhanced government-commercial relationships and international collaboration with key allies and partners.

While SDA is not responsible for building and fielding all layers of the National Defense Space Architecture, it is responsible for ensuring capability deliveries. In this construct, SDA is responsible for building and fielding the Transport layer, a proliferated constellation of satellites to provide low latency, high volume data to the warfighter. This transport layer will be compatible with the architecture defined by Fully Networked Command, Control, and Communications Network.

The establishment of a proliferated data transport layer is essential to developing a new and responsive space architecture. The SDA will develop additional sub-constellations on this transport layer to provide additional capabilities, such as advanced missile warning, custody and alternative position, navigation and timing (PNT).

This program element funds efforts to develop and demonstrate a prototype proliferated communications and data transport layer and other capability layers in support of the National Defense Strategy.

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Space Development Agency	Date: February 2020
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 1206310SDA *I Space Science and Technology Research and Development*

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	0.000	20.000	0.000	-	0.000
Current President's Budget	0.000	20.000	72.422	-	72.422
Total Adjustments	0.000	0.000	72.422	-	72.422
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other	0.000	0.000	72.422	-	72.422

Change Summary Explanation

The increase in FY 2021 is to support technology demonstrations.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Space Development Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 1206310SDA / *Space Science and Technology Research and Development*	Project (Number/Name) 032 / *Proliferated Low Earth Orbit (pLEO) Sensor Technology*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
032: *Proliferated Low Earth Orbit (pLEO) Sensor Technology*	0.000	0.000	20.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

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 other capability layers to provide the eight capabilities outlined in the DoD Space Vision. The SDA will rapidly develop and field the next generation space architecture that will enable the US to deploy space capabilities that out-pace adversarial threats. This architecture is underpinned by a data transport layer, which will reside on a proliferated small satellite constellation in Low Earth Orbit (LEO). The Transport Layer will support the transfer of data between the space segment of the next generation space architecture, to include payloads co-hosted with the Transport Layer or other non-collocated space elements, and the ground, to include ground support infrastructure and very large numbers of users/subscribers. The Transport Layer will provide the "connective tissue" for the next generation space architecture.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Proliferated Low Earth Orbit (pLEO) Sensor Technology	-	20.000	0.000	0.000	0.000
Description: Develop and demonstrate a resilient and unified military data transport layer, enabled by a proliferated Low Earth Orbit (pLEO) architecture. This effort will demonstrate capability to provide very low latency (low or high bandwidth) data between any two points on the globe to enable mission-agnostic battle management, command, control, and communications (BMC3). This effort will leverage technologies developed under the DARPA Blackjack program and, wherever feasible, leverage commercial industry approaches to provide broadband internet access from space to form the foundation of the transport layer architecture.					
FY 2020 Plans: - Conduct trade studies and feasibility assessments of different sensor modalities to perform national security space missions. - Conduct Preliminary Design Review (PDR) of selected sensor payload(s).					
FY 2021 Base Plans: N/A					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2021 Space Development Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 1206310SDA / *Space Science and Technology Research and Development*	**Project (Number/Name)** 032 / *Proliferated Low Earth Orbit (pLEO) Sensor Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
There was no planned funding in FY 2021.					
Accomplishments/Planned Programs Subtotals	-	20.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Partners for these activities may include Missile Defense Agency, DARPA, DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, and University Affiliated Research Centers.

Exhibit R-2A, RDT&E Project Justification: PB 2021 Space Development Agency			Date: February 2020
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 1206310SDA / *Space Science and Technology Research and Development*	Project (Number/Name) 12 / *Space Development Agency R&E*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
12: *Space Development Agency R&E*	0.000	0.000	0.000	72.422	0.000	72.422	187.638	452.790	677.290	517.290	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Space Development Agency (SDA) is developing and fielding next generation space capabilities enabled by proliferation and a new acquisition model utilizing rapid spiral development. SDA is developing capabilities to address a wide range of Department space needs, 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 funds the research and development activity to deliver capabilities to US joint warfighting forces in two-year tranches, beginning as early as FY22, including performing trade studies, technical analyses, or modeling and simulation; identifying and maturing enabling technologies; defining and conducting risk reduction demonstrations, prototyping hardware or software systems; and exploring novel concept for future warfighting capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Space Technology Development Agency R&D	0.000	0.000	72.422	0.000	72.422
Description: Research and development activities to support development and fielding of a resilient military sensing and data transport capability via a proliferated space architecture in LEO ***FY 2020 Plans:*** N/A ***FY 2021 Base Plans:*** - Design, develop, and demonstrate space-to-space optical crosslink data exchange in LEO - Design and begin development of wide field-of-view payload for advanced missile tracking experiment - Conduct requirements review for multi-INT data fusion algorithms ***FY 2021 OCO Plans:*** N/A ***FY 2020 to FY 2021 Increase/Decrease Statement:*** The increase in FY 2021 is to support technology demonstrations.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	72.422	0.000	72.422

Exhibit R-2A, RDT&E Project Justification: PB 2021 Space Development Agency		Date: February 2020
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 1206310SDA / *Space Science and Technology Research and Development*	**Project (Number/Name)** 12 / *Space Development Agency R&E*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

Partners for these activities may include DoD research centers, small businesses, large defense contractors, commercial space providers, Federally Funded Research and Development Centers, University Affiliated Research Centers, Missile Defense Agency, SMC, and DARPA.