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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>
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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	-	20.250	33.292	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
67A011: <i>Space Analysis and Application Development</i>	-	20.250	33.292	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY 2021, PE 1203174F, Space Innovation, Integration and Rapid Technology Development efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203174SF, Space Innovation, Integration and Rapid Technology Development from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

Located at Peterson AFB, Colorado, the Space Innovation, Integration and Rapid Technology Development (SIIRTD) program develops and modifies modeling and simulation tools that Air Force Space Command's Space Analysis Center uses for operations research, military utility analyses, tradeoff studies, and other evaluations of space mission areas to guide planning, programming, requirements generation, analyses of alternatives, and other activities. Development activities incorporate changes in fielded and projected space operational capabilities, as well as technical improvements, into the group's software tools to ensure their data and technology remain current. Space Training Simulators develop and upgrades space training emulators using Standard Space Trainer (SST) to meet Space Mission Force (SMF) threat-based, advanced training requirements as well as funds connection to Distributed Mission Operations (DMO) training networks. Finally, its innovation, education, and training activities foster solutions to operational deficiencies and enhance the integration of space systems into Air Force operations, thereby enabling service and joint warfighters to realize the full potential of existing and planned space capabilities.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver SIIRTD weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	21.019	43.292	44.761	0.000	44.761
Current President's Budget	20.250	33.292	0.000	0.000	0.000
Total Adjustments	-0.769	-10.000	-44.761	0.000	-44.761
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-10.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.769	0.000			
• Other Adjustments	0.000	0.000	-44.761	0.000	-44.761

Change Summary Explanation

FY 2019: -\$0.769M SBIR transfer

FY 2020: Received Congressional marks that included an decrease for -\$5.0M for under execution. The FY 2020 total in this document is incorrect in the data base. The correct total for FY 2020 should be \$38.292M.

FY 2021: -\$44.764M; funds starting in FY 2021 were transferred from RDT&E, Air Force to RDT&E, Space Force.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
<p>Title: Model/Tool Development and Capability Upgrades</p> <p>Description: Develops, verifies, and validates models for space mission areas and modifies existing models to portray new capabilities that meet the national senior leader intent. Advancing M&S tools to incorporate space effects at the campaign, mission and engagement levels with the goal of enhancing decision support, visualization, exercise and wargaming. Rapidly meet downward-directed guidance implementing the system resiliency and situational awareness necessary to win in a contested space domain. Activities may include, but are not limited to, acquisition, program office support, studies, technical analysis, prototyping, etc. The space M&S is used for military utility analyses, trade studies, and other space program evaluations supporting OSD, Joint Staff, Headquarters Air Force, Headquarters United States Space Force, and the Space and Missile Center.</p> <p>FY 2020 Plans: Continue to modernize space models and tools to meet recent presidential, CDRSTRATCOM, and COMAFSPC guidance. Begin developing a space campaign model to assess force structures in a contested environment to better organize USSPACECOM/ Space Force warfighting needs. Continue transforming FY 2019 activities. Key models include the Advanced Framework for Simulation, Integration, and Modeling (AFSIM). This process harnesses disparate domain capabilities into a simulation environment. Threat, Vulnerability, Timeline (TVT) is a tool underpinning key budget decisions, overlaying force structure on the</p>	7.370	7.796	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>given threat constructs to identify warfighting shortfalls. The Program's mission/campaign modeling suites must be updated to produce technically sound and responsive space analyses for warfighter operations in a highly-contested environment. These tools assess how well we meet national and military needs identified by the Enterprise Space Architecture Office (ESAO) and Joint Space Warfighter Forum (JSWF). The Space Surveillance Network Analysis Model (SSNAM) is a key warfighting tool supporting the JFSCC's operation centers' situational awareness. As a major warfighting domain, it is critical we establish the tool to accurately represent space.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: N/A</p>				
<p>Title: Model Verification</p> <p>Description: Conduct verification of model changes resulting from model development and modification efforts.</p> <p>FY 2020 Plans: Continue to modernize space models and tools to meet recent presidential, CDRSTRATCOM, and COMAFSPC guidance. Begin developing a space campaign model to assess force structures in a contested environment to better organize USSPACECOM/Space Force warfighting needs. Continue transforming FY 2018 activities. Key models include the Advanced Framework for Simulation, Integration, and Modeling (AFSIM). This process harnesses disparate domain capabilities into a simulation environment. Threat, Vulnerability, Timeline (TVT) is a tool underpinning key budget decisions, overlaying force structure on the given threat constructs to identify warfighting shortfalls. Our mission/campaign modeling suites must be updated to produce technically sound and responsive space analyses for warfighter operations in a highly-contested environment. These tools assess how well we meet national and military needs identified by the Enterprise Space Architecture Office (ESAO) and Joint Space Warfighter Forum(JSWF). The Space Surveillance Network Analysis Model (SSNAM) is a key warfighting tool supporting the JFSCC's operation centers' situational awareness. As a major warfighting domain, it is critical we establish the tool to accurately represent space.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: N/A</p>		1.706	1.808	0.000
<p>Title: Model Validation</p>		1.600	1.694	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>Description: Conduct validations of model changes resulting from model development and modification efforts.</p> <p>FY 2020 Plans: Develops, verifies, and validates models for space mission areas and modifies existing models to portray new capabilities that meet the national senior leader intent. Advancing M&S tools to incorporate space effects at the campaign, mission and engagement levels with the goal of enhancing decision support, visualization, exercise and wargaming. Rapidly meet downward-directed guidance implementing the system resiliency and situational awareness necessary to win in a contested space domain. Activities may include, but are not limited to, acquisition, program office support, studies, technical analysis, prototyping, etc. The space M&S is used for military utility analyses, trade studies, and other space program evaluations supporting OSD, Joint Staff, Headquarters Air Force, Headquarters Air Force Space Command, and the Space and Missile Center.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: N/A</p>				
<p>Title: Standardized Space Trainer Simulators</p> <p>Description: Develop/upgrade Standard Space Trainer (SST) simulators to meet Space Mission Force (SMF) threat-based, advanced training requirements as well as build connectivity to Distributed Mission Operations (DMO) training networks. Follows direction set out in USAF Operational Training Infrastructure (OTI) Flight Plan, as well as meets STRATCOM Integrated Priority List (IPL) priorities.</p> <p>FY 2020 Plans: Continue development of Geosynchronous Space Situational Awareness Program (GSSAP) SST, Upgraded Early Warning Radar (UEWR) SST, and Global Positioning System (GPS) training systems as well as begin development of threat-based advanced training capabilities for Military Satellite Communications (MILSATCOM) programs including the Defense Satellite Communications System (DSCS), Milstar-Advanced Extremely High Frequency (AEHF), and Wideband Global SATCOM (WGS) SSTs. Continue Modeling & Simulation development efforts in support of Distributed Operations - Space (DMO-S) advanced training events and enterprise mission requirements.</p> <p>Note: FY 2020 includes an -\$5.0M database error; correct total is \$26.994M</p> <p>FY 2021 Plans:</p>		9.574	21.994	0.000

UNCLASSIFIED

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
N/A			
FY 2020 to FY 2021 Increase/Decrease Statement: N/A			
Accomplishments/Planned Programs Subtotals	20.250	33.292	0.000

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 GNRLT: <i>General IT</i>	1.064	1.350	-	-	-	-	-	-	-	0.000	2.414

Remarks
Funding and content procures equipment for the SIIRTD AFSPC Virtual Analysis Capability (AVAC) system. Supports space and cyber modeling and analysis using a variety of Linux and Windows based hardware and software suites. Also procures Information Technology (IT) hardware & software infrastructure for the Distributed Communications Architecture for ACC.

E. Acquisition Strategy
Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force											Date: February 2020				
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>					Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i>				

Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop/modify models & tools software	C/CPFF	SigmaTek : Colorado Springs, CO	-	0.303	Mar 2019	0.310	Mar 2020	0.000		-		0.000	Continuing	Continuing	-
Develop/modify software tools/models	C/CPFF	Perduco Group : Colorado Springs, CO	-	10.373	Jan 2019	10.988	Jan 2020	0.000		-		0.000	Continuing	Continuing	-
Space Training Simulator Development	C/CPFF	Sonalysts Inc : San Diego, CA	-	9.574	Dec 2018	21.994	Dec 2020	0.000		-		0.000	Continuing	Continuing	-
Subtotal			-	20.250		33.292		0.000		-		0.000	Continuing	Continuing	N/A

Remarks
 Note: FY 2020 includes an -\$5.0M database error; correct total Space Training Simulator Development for FY 2020 is \$26.994M

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	20.250	33.292	0.000	-	0.000	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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

SIIRTD																												
Model development/modification, verification, and validation																												
Space Training Simulators																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
SIIRTD				
Model development/modification, verification, and validation	1	2019	4	2025
Space Training Simulators	1	2019	4	2025