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

Appropriation/Budget Activity 3620F: <i>Research, Development, Test & Evaluation, Space Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 1201017SF / <i>Global Sensor Integrated on Network (GSIN)</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	-	0.000	0.000	3.708	0.000	3.708	0.000	0.000	0.000	0.000	Continuing	Continuing
675368: <i>GSIN (Global Integrated Sensor Network)</i>	-	0.000	0.000	3.708	0.000	3.708	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 1201017F, Global Sensor Integrated on Network (GSIN) efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1201017SF, Global Sensor Integrated on Network (GSIN), from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

\$1.889M is included in FY 2021 in the request for Appropriation 3600, Research, Development, Test & Evaluation, Air Force, PE 1201017F; these funds should have been requested under Appropriation 3620 Research, Development, Test & Evaluation, Space Force, PE 1201017SF. Justification and plans for these funds are included in RDT&E, AF, PE 1201017F, Global Sensor Integrated on Network (GSIN), R-1 Line #301.

The missions of USSPACECOM and USSTRATCOM include establishing and providing full-spectrum, global strike, coordinated space and information operations capabilities to meet both deterrent and decisive national security objectives and to provide operational space support, integrated missile defense, Global Command Control, Communications, and Computers Intelligence Surveillance and Reconnaissance (C4ISR), and specialized planning expertise to the joint warfighter.

The Nation's strategic C2 sensors, and mission planning programs cannot rapidly exchange information across multiple missions creating ambiguity that delays time critical national C2 decision making processes. GSIN developed and established a unified schema that integrates disparate Missile Warning/Missile Defense (MW/MD) data into a single, exposed data set, providing redundant and unambiguous MW/MD data to national leadership. GSIN also enables existing radars and sensors to provide data in net-centric formats consumable by other authorized systems and mission areas, thus reducing the need to acquire more systems. Activities also include studies and analysis to support current program planning, execution, and future program planning.

GSIN directly supports USSPACECOM, USSTRATCOM and other Combatant Command and MAJCOM mission sets. GSIN meshes together selected systems and sensors (from tactical to strategic), including the Nation's most modern and capable assets, taking advantage of their larger numbers, improved algorithms, mobility, and forward deployment to provide earlier cross-cueing and expanded decision space when every second counts. Repurposing these traditionally stove-piped systems and sensors, GSIN enables the warfighter in several ways. GSIN enables creation of a User Defined Operating Picture (UDOP) to provide a single, unambiguous missile event picture allowing realtime collaboration for nuclear C2 and improved senior leader situational awareness (SA) for effective decision-making. GSIN also improves Space Situational Awareness (SSA) by tapping additional sensor capability and provides this data for the larger space order of battle capabilities. GSIN dramatically improves the ingestion of nontraditional, but readily available, non-US government and commercial data to the United States Space Force (USSF) satellite catalog. GSIN addresses NORTHCOM/STRATCOM's signed Joint Emergent Operational Need (JEON) ST-0010 request for uninterrupted traditional and non-traditional

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sensor data integration and the Global Threat Characterization Assessment (GTCA) Operational Planning Team report. GSIN provides critical and unique data to the USSPACECOM SSA data repositories to facilitate the large Space Battle Management Command and Control (BMC2) suite of capabilities/programs. Finally, GSIN provides Machine Learner and Data Analysis functions to optimize and operate situational awareness in the field.

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 Global Data Integration (GDI) weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

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.

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	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	3.708	0.000	3.708
Total Adjustments	0.000	0.000	3.708	0.000	3.708
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• 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	0.000	0.000			
• Other Adjustments	0.000	0.000	3.708	0.000	3.708

Change Summary Explanation

FY 2021: +\$3.708M; 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
Title: Radar, sensor, technical intelligence (TI), and Allied Systems	0.000	0.000	3.600

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>Description: Radar, sensor, technical intelligence and Allied Systems: Designs, develops, exposes and integrates data from radar, sensors and technical intelligence systems in regions of the world where potential GSIN users currently do not have coverage. Provide real time data from systems that previously reported in hours or days after critical events. Conduct studies/surveys/meetings as necessary to continually identify systems meeting GSIN user data exposure needs. Space Situational Awareness (SSA): Designs, develops, tests, exposes, and integrates SSA data from previously untapped systems into space production systems and the Global Information Grid (GIG). Develop implementation plans to mature data exposure capabilities.</p> <p>FY 2020 Plans: N/A</p> <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> - Complete development of Radar/Sensor/TI Project 5. - Complete Production/Fielding of Radar/Sensor/TI Project 5. - Complete Integration and Testing of Radar/Sensor/TI Project 5. - Rapidly respond and implement system resiliency and situational awareness necessary to operate in the contested space domain. RDT&E funding is required to support this transformation and enable Space Superiority end-to-end integration activities such as, but not limited to, program office support, studies, technical analysis, experimentation, prototyping, architectural development, systems engineering, demonstrations, testing, command and control integration, mission partner integration, and space test/combat range events. <p>FY 2020 to FY 2021 Increase/Decrease Statement: N/A</p>				
<p>Title: Data Services, Net Centric Integration and Configuration Control, and program outreach</p> <p>Description: Develop common XML net-enabled data schemas and configuration management processes and procedures for Missile Warning, Missile Defense, Space, MASINT/Technical Intelligence, and Sensor data to manage the XML schema and associated XML messaging and services. Develop technical outreach for potential new GSIN data consumers and providers who require GSIN sensor data. Upgrade GSIN capabilities as DISA Enterprise Services evolve. Continue modifications to data services. Support integration of GSIN sensor data into appropriate registries/catalogs. Continue development of GSIN data services to enable visualization in a common operating picture. Conduct studies and demonstrations of SSA capabilities, data correlation, and assessment services for risk reduction evaluations.</p> <p>FY 2020 Plans:</p>		0.000	0.000	0.108

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
N/A				
<p>FY 2021 Plans:</p> <ul style="list-style-type: none"> - Complete development of Radar/Sensor/TI Project 6. - Complete Production/Fielding of Radar/Sensor/TI Project 6. - Complete Integration and Testing of Radar/Sensor/TI Project 6. - Begin Design/Development of Radar/Sensor/TI Project 7. - Develop GSIN Next to leverage Block Chain and Artificial Intelligence technologies and provide metadata of data type, data attributes and data limitation - Develop algorithms that support fusion of GSIN state vectors and alternate information. - Begin pursuit of long-term Data Enterprise Messaging System to include data analytics, Artificial Intelligence (AI)/ block chain, and several classified programs. These will address capability gaps as determined over the next 5 years. <p>\$1.889M is incorrectly requested in PE 1201017F for FY 2021; these funds should have transferred to 1201017SF.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p> <p>N/A</p>				
Accomplishments/Planned Programs Subtotals		0.000	0.000	3.708
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
E. Acquisition Strategy				
<p>GSIN uses existing government contract vehicles, from agencies such as Missile Defense Agency (MDA) or Air Force Life Cycle Management Center (AFLCMC); to develop and modernize the combined SSA/MW/MD/MASINT/TI data exposure architecture and solution. The contracts are managed by the relevant organization's contracting office. GSIN does not award or manage any contracts. The AFLCMC at Hanscom AFB and SMC at Los Angeles AFB provide necessary program management, financial management, and other support as may be applicable for GSIN.</p>				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3620F / 7				PE 1201017SF / Global Sensor Integrated on Network (GSIN)				675368 / GSIN (Global Integrated Sensor Network)							
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
GSIN Space Situational Awareness Data Exposure - Radar/Sensor/TI Project 5	C/CPAF	RAYTHEON : Colorado Springs, CO	-	-		-		1.109	Dec 2020	-		1.109	Continuing	Continuing	-
GSIN Space Situational Awareness Data Exposure - Radar/Sensor/TI Project 6	C/CPAF	RAYTHEON : Boston, MA	-	-		-		0.708	Dec 2020	-		0.708	Continuing	Continuing	-
GSIN Space Situational Awareness Data Exposure - Enhancements/Upgrades	TBD	TBD : TBD	-	-		-		0.742	Jan 2021	-		0.742	Continuing	Continuing	-
GSIN Space Situational Awareness Data Exposure-Data Exploitation & Launch Characterization	C/Various	MIT/LL : Boston, MA	-	-		-		0.700	Jan 2021	-		0.700	Continuing	Continuing	-
Subtotal			-	-		-		3.259		-		3.259	Continuing	Continuing	N/A
Management Services (\$ 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
A&AS	C/FFP	Various : Omaha, NE	-	-		0.000		0.449	Oct 2020	-		0.449	Continuing	Continuing	-
Subtotal			-	-		0.000		0.449		-		0.449	Continuing	Continuing	N/A
Project Cost Totals			-	-		0.000		3.708		-		3.708	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3620F / 7	R-1 Program Element (Number/Name) PE 1201017SF / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>

	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
GSIN Data Exposure																												
(MASINT 5) Production/Fielding																												
(MASINT 5) Integration and Testing																												
(MASINT 5) Operational																												
(Radar/MASINT 6) Production/Fielding																												
(Radar/MASINT 6) Integration and Testing																												
(Radar/MASINT 6) Operational																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3620F / 7	R-1 Program Element (Number/Name) PE 1201017SF / <i>Global Sensor Integrated on Network (GSIN)</i>	Project (Number/Name) 675368 / <i>GSIN (Global Integrated Sensor Network)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
GSIN Data Exposure				
(MASINT 5) Production/Fielding	1	2021	2	2021
(MASINT 5) Integration and Testing	3	2021	3	2021
(MASINT 5) Operational	4	2021	4	2021
(Radar/MASINT 6) Production/Fielding	1	2021	2	2021
(Radar/MASINT 6) Integration and Testing	3	2021	3	2021
(Radar/MASINT 6) Operational	4	2021	4	2021