Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force											Date: April 2022	
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 1201017SF / *Global Sensor Integrated on Network (GSIN)*							
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	-	5.411	4.731	5.321	0.000	5.321	7.545	7.275	6.873	7.007	Continuing	Continuing
675368: *GSIN (Global Integrated Sensor Network)*	-	5.411	4.731	5.321	0.000	5.321	7.545	7.275	6.873	7.007	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The missions of US Space Command (USSPACECOM) and US Strategic Command (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), nuclear enterprise, and specialized planning expertise.

The Nation's strategic Command and Control (C2) sensors and mission planning programs cannot rapidly exchange information across multiple missions, creating ambiguity that delays time critical national C2 decision making processes. Global Sensor Integrated on Network (GSIN) developed and established a unified schema that integrates disparate Missile Warning (MW), Missile Defense (MD), Technical Intelligence (TI), Measurement and signature intelligence (MASINT), and a variety of non-traditional data into a single, exposed data set, providing resilient 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.

Global Data Integration (GDI) is the new project name previously known as Global Sensor Integration on Networks (GSIN). GDI supports the DoD Data Strategy, by exposing, transporting, and fusing previously stove-piped data and making it available, exploitable, and able to be analyzed for a variety of mission perspectives, agnostic of the Information Technology (IT) platform. GDI directly supports USSPACECOM, USSTRATCOM and other Combatant Commands and Major Commands, and Nuclear Enterprise Center (NEC) mission sets.

As a leading Data as a Service (DaaS) and Analytics as a Service (AaaS) provider, GDI provides access to over 1,300+ diverse data sources; meshing selected systems and sensors, from tactical to strategic, including the nation's most modern and capable assets, improved algorithms, mobility, and forward deployment to provide earlier cross-cueing and expanded decision space when every second counts. GDI enables creation of a User-Defined Operating Picture (UDOP) to provide a single, unambiguous missile event picture allowing real-time collaboration for nuclear C2 and improved senior leader situational awareness (SA) for effective decision-making.

GDI also improves Space Domain Awareness (SDA) by accessing additional sensor capability and provides this data for the larger space order of battle capabilities. GDI dramatically improves the ingestion of non-traditional, but readily available, non-US government and commercial data to the Space Force satellite catalog. GDI addresses US Northern Command (USNORTHCOM) and USSTRATCOM's signed Joint Emergent Operational Need (JEON) ST-0010 request for uninterrupted

traditional and non-traditional sensor data integration, and is an enabling capability supporting the Global Threat Characterization Assessment (GTCA) Operational Planning Team report. GDI provides critical and unique data to USSPACECOM SDA data repositories to facilitate the large Space Battle Management Command and Control (BMC2) suite of capabilities/programs. Finally, GDI provides Cross Domain Solution (CDS) access, machine learning, data analysis and correlation/fusion functions to optimize SA in the field.

The GDI Program includes two major thrusts: GDI Development; and Radar, Sensor, Technical Intelligence (TI), and Allied Systems data integration.

The GDI Development effort includes four sub-efforts: 1) DATABAHN; 2) Fusion Engine for All-Source Tracking (FEAST), 3) Analytical Collaborative Environment - Multi Intelligence (ACE-M), and 4) Data Integrity (DI) efforts.
- DATABAHN includes developing and fielding dedicated CDS Concepts of operation (CONOPS), including geographically-separated, redundant nodes, to provide greater operational resiliency.
- FEAST fuses and correlates Radio Assisted Detection and Ranging (RADAR), Overhead Persistent Infrared (OPIR) and Electronic Signals Intelligence (ELINT) data at the SECRET level, and provides high-fidelity source geolocation in support of multiple DoD and Intelligence Community (IC) organizations. This capability is being replicated on Joint Worldwide Intelligence Communications System (JWICS), greatly increasing the functionality and value to the warfighter.
- ACE-M is a cloud-based, multi enclave (Secure Internet Protocol Router (SIPR)/JWICS), battlespace awareness and tactical decision aid capability which provides agile access to authoritative and dynamic intelligence data feeds, analytics, and geospatial information layers in a single visualization environment.
-DI develops plans to use artificial intelligence (AI) and block chain technology in support of data governance, provenance and discoverability.

The Radar, Sensor, Technical Intelligence (TI), and Allied Systems data integration effort designs, develops, exposes and integrates data from radar, sensors and technical intelligence systems in regions of the world where potential GDI users currently do not have coverage.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver GDI capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826SF, 605827SF, 0605828SF, 0605829SF, 0605830SF, 0605831SF, 0605832SF, and 0605898SF.

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force	Date: April 2022
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 1201017SF *I Global Sensor Integrated on Network (GSIN)*

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	5.597	4.731	0.000	0.000	0.000
Current President's Budget	5.411	4.731	5.321	0.000	5.321
Total Adjustments	-0.186	0.000	5.321	0.000	5.321
• 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	-0.186	0.000			
• Other Adjustments	0.000	0.000	5.321	0.000	5.321

Change Summary Explanation

FY 2021: -$0.186 decrease for SBIR.

FY 2023: The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY 2023 cannot be made in a relevant manner.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Global Data Integration (GDI) Development	4.911	4.231	4.821
Description: Effort title changed from "Global Data Integration (GDI)" to "Global Data Integration (GDI) Development" to differentiate major thrust from new project title. This is not a new start. Develop common Extensible Markup Language (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 GDI data consumers and providers who require GDI sensor data. Upgrade GDI capabilities as Defense Information Systems Agency (DISA) Enterprise Services evolve. Continue modifications to data services. Support integration of GDI sensor data into appropriate registries/ catalogs. Continue development of GDI 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. ***FY 2022 Plans:*** - DATABAHN: Continue accreditation and certification of Mountain Pass site one and begin replication of Mountain Pass to site two; continue integration efforts with ACE-M			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
- FEAST: Finalize integration and testing of TS/SCI data sources - Data Integrity: In conjunction with MIT/LL, continue to develop methodologies to implement block-chain technology to further ensure the integrity GDI-exposed data sources - Additionally, FY 2022 funding will allow the program to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to: studies, technical analysis, risk reduction experiments and prototyping, integration and test of command and control (C2), resiliency measures and mission partner interfaces, space test/combat range events, and office support etc. ***FY 2023 Plans:*** -DATABAHN: Continue pursuing accreditation. Develop and field a dedicated CDS and Cloud presence, including geographically-separated, redundant nodes, providing greater operational resiliency. Provide capability to include new data consumers and providers who require GDI sensor data. Support integration of GDI sensor data into appropriate registries and catalogs. Continue development of GDI data services to enable visualization in a common operating picture. -FEAST: Develop a test bed for block-chain efforts and finalize replication of Secret Internet Protocol Routed Network (SIPRNET)-level FEAST capability on Joint Worldwide Intelligence Communications System (JWICS). Integrate additional Top Secret/Special Compartmentalized Information (TS/SCI) data sources and algorithms. -ACE-M: Develop data fusion plans and capabilities, such as visual display of situational awareness data, analytic tools and algorithms, and historical playback of events, for new and existing GDI users -DI: Develop plans to incorporate new capabilities in AI and block-chain technology. Test and evaluate all GDI segments in support of data governance, provenance and discovery. Additionally, FY 2023 funding will allow the program to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to: studies, technical analysis, risk reduction experiments and prototyping, integration and test of command and control (C2), resiliency measures and mission partner interfaces, space test/combat range events, and office support etc. ***FY 2022 to FY 2023 Increase/Decrease Statement:***			

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force	Date: April 2022
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
FY 2023 funding increased due to additional effort to field a dedicated CDS and Cloud presence and initiating ACE-M data fusion efforts.			
Title: Radar, Sensor, Technical Intelligence (TI), and Allied Systems ***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 GDI 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 GDI user data exposure needs. Designs, develops, tests, exposes, and integrates SDA data from previously untapped systems into space production systems and the Global Information Grid (GIG). Develop implementation plans to mature data exposure capabilities. ***FY 2022 Plans:*** - Continue Integration and Testing of Radar 1 - Start Design/Development & Production/Fielding of Radar 2 - Rapidly implement system resiliency and situational awareness changes required to operate in the contested space domain ***FY 2023 Plans:*** - Complete Integration and Testing of Radar 1 and support Initial Operational Capability (IOC) - Continue Production/Fielding of Radar 2 - Rapidly implement system resiliency and situational awareness changes required to operate in the contested space domain ***FY 2022 to FY 2023 Increase/Decrease Statement:*** N/A	0.500	0.500	0.500
Accomplishments/Planned Programs Subtotals	5.411	4.731	5.321

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

GDI uses existing government contract vehicles whenever available, from agencies such as Missile Defense Agency (MDA) or Air Force Life Cycle Management Center (AFLCMC) to develop and modernize the combined SDA/MW/MD/MASINT/TI data exposure architecture and solution. When appropriate contracts do not exist or not available to GDI, USSTRATCOM awards new contracts in support of responsive and consistent GDI goals. The contracts are managed by the relevant organization's contracting office.

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Massachusetts Institute of Technology/Lincoln Labs (MIT/LL) will provide the Data Integrity effort based upon ongoing research as an FFRDC.

All contracts are competed whenever possible.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1201017SF / *Global Sensor Integrated on Network (GSIN)*	**Project (Number/Name)** 675368 / *GSIN (Global Integrated Sensor Network)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
GDI DATABAHN	Various	Various : Various	-	4.009	Jun 2021	2.519	May 2022	0.820	Mar 2023	-		0.820	Continuing	Continuing	-
GDI FEAST	Various	Various : Various	-	0.359	Sep 2021	1.212	Dec 2021	0.498	Mar 2023	-		0.498	Continuing	Continuing	-
GDI ACE-M	Various	Various : Various	-	-		-		1.555	Jan 2023	-		1.555	Continuing	Continuing	-
GDI DI	Various	Various : Various	-	0.543	Jan 2021	0.500	Jan 2022	1.948	Mar 2023	-		1.948	Continuing	Continuing	-
Radar, Sensor, Technical Intelligence (TI), and Allied Systems	C/CPAF	Raytheon : Colorado Springs, CO	-	0.500	Apr 2021	0.500	Apr 2022	0.500	Apr 2023	-		0.500	Continuing	Continuing	-
		Subtotal	-	5.411		4.731		5.321		-		5.321	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	5.411		4.731		5.321		-		5.321	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
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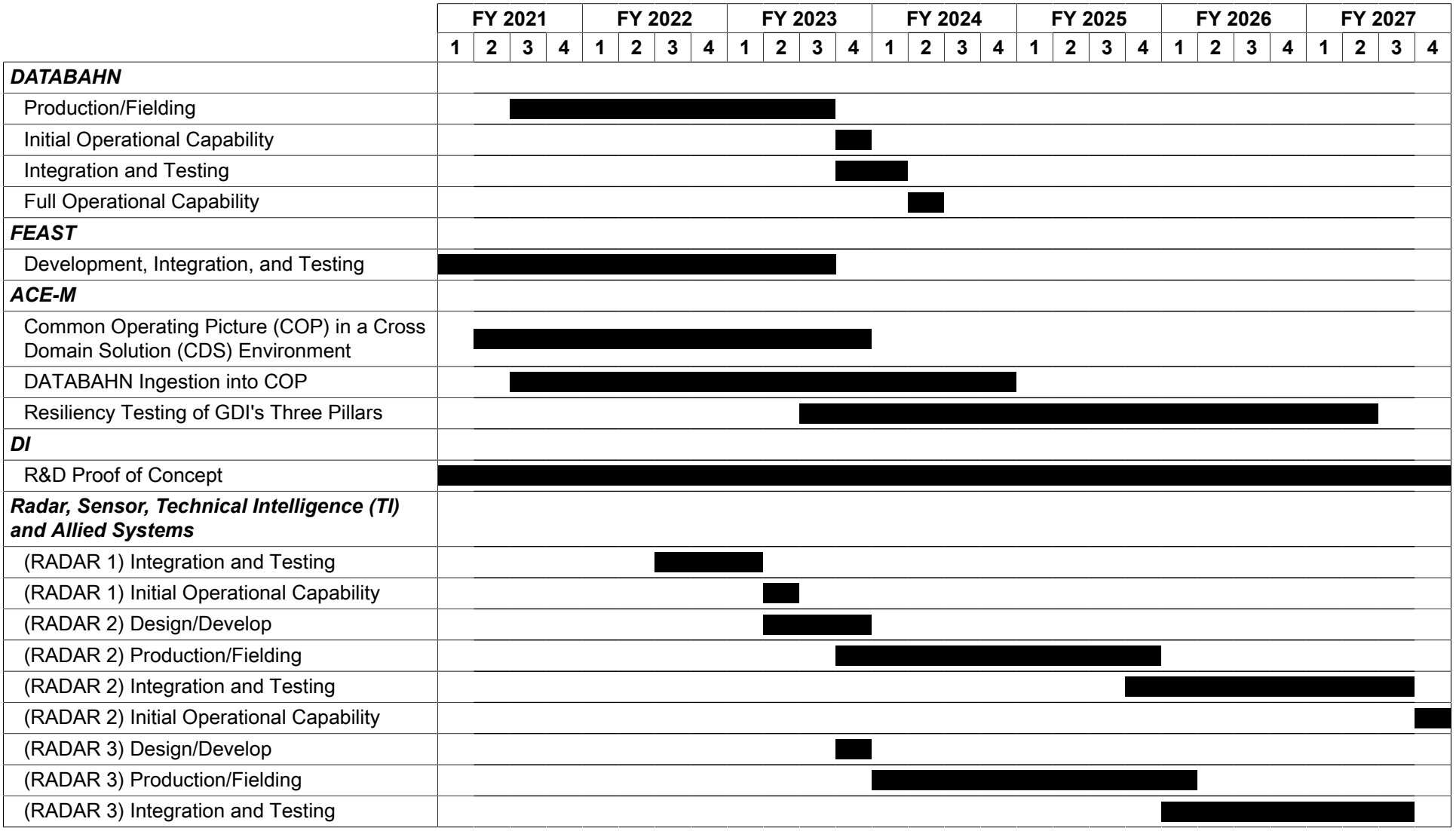

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Air Force		Date: April 2022
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
(RADAR 3) Initial Operational Capability																												■

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
Appropriation/Budget Activity 3620F / 7	**R-1 Program Element (Number/Name)** PE 1201017SF / *Global Sensor Integrated on Network (GSIN)*	**Project (Number/Name)** 675368 / *GSIN (Global Integrated Sensor Network)*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
DATABAHN				
Production/Fielding	3	2021	3	2023
Initial Operational Capability	4	2023	4	2023
Integration and Testing	4	2023	1	2024
Full Operational Capability	2	2024	2	2024
FEAST				
Development, Integration, and Testing	1	2021	3	2023
ACE-M				
Common Operating Picture (COP) in a Cross Domain Solution (CDS) Environment	2	2021	4	2023
DATABAHN Ingestion into COP	3	2021	4	2024
Resiliency Testing of GDI's Three Pillars	3	2023	2	2027
DI				
R&D Proof of Concept	1	2021	4	2027
Radar, Sensor, Technical Intelligence (TI) and Allied Systems				
(RADAR 1) Integration and Testing	3	2022	1	2023
(RADAR 1) Initial Operational Capability	2	2023	2	2023
(RADAR 2) Design/Develop	2	2023	4	2023
(RADAR 2) Production/Fielding	4	2023	4	2025
(RADAR 2) Integration and Testing	4	2025	3	2027
(RADAR 2) Initial Operational Capability	4	2027	4	2027
(RADAR 3) Design/Develop	4	2023	4	2023
(RADAR 3) Production/Fielding	1	2024	1	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force		Date: April 2022
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	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
(RADAR 3) Integration and Testing	1	2026	3	2027
(RADAR 3) Initial Operational Capability	4	2027	4	2027

Note

All RADAR timelines are notional, pending FMS actions.