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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force **Date:** May 2021

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 1206770F / <i>Enterprise Ground Services</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	114.824	0.000	0.000	0.000	0.000	-	-	-	-	-	-
673140: <i>Enterprise Ground Services EGS</i>	-	114.824	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

In FY 2021, PE 1206770F, Enterprise Ground Services efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206770SF Enterprise Ground Services from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

The Enterprise Ground Services (EGS) program will provide a robust enterprise ground architecture for United States Space Force satellite systems. EGS capability will become the primary ground command and control (C2) suite of services for the Space Force enterprise to meet evolving current and future space domain demands. EGS is based on Multi-Mission Satellite Operations Center (MMSOC) C2 capabilities developed under the Research and Development Space and Missile Operations (RDSMO) program.

The EGS program will perform technology maturation, development, prototyping and operational mission transition for increased commonality and resiliency in space program systems. EGS will focus efforts on the rapid development and deployment of tactical C2 services, developing and integrating on-premise and cloud infrastructure and laboratories at multiple sites, advanced concept exploration, prototype development and demonstrations, user experience maturation, training and Concept of Operations (CONOPs) refinement, cybersecurity operations and operational mission training support. These efforts will require support such as systems engineering, integration and test, standards and interface development, architecture development, enhanced cybersecurity development and implementation. Programs and projects in the space warfighting enterprise are evaluating ways to maximize innovation, resiliency, and the ability to rapidly respond to known and emerging threats. Space enterprise efforts aim to execute technology risk-reduction efforts and integrate new or repurposed capabilities, enterprise decision-making tools, experimentation, and rapid prototyping and fielding via all appropriate acquisition authorities and contract mechanisms.

Over the Future Years Defense Program (FYDP), EGS will be developing and deploying C2 services and software applications that support integrating legacy and new missions such as Missile Warning; Missile Defense; MILSATCOM; Positioning, Navigation, and Timing; Environmental Monitoring; Space Domain Awareness; and various classified and experimental satellites and missions to the EGS open architecture. The modifications to catalog software applications provided by EGS are being made in an agile development, security, and operations (DevSecOps) environment.

Space acquisition must respond with speed and agility to emerging adversary threats. The Space and Missile Systems Center (SMC) has transformed 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

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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.

The program element may include necessary civilian pay expenses required to manage, execute, and deliver EGS 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.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	118.870	0.000	0.000	0.000	0.000
Current President's Budget	114.824	0.000	0.000	0.000	0.000
Total Adjustments	-4.046	0.000	0.000	0.000	0.000
• 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	-4.046	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
Title: Enterprise Ground Services (EGS) Development	53.929	0.000	0.000
Description: Integrate common applications and services, refine standards and interfaces, develop and implement cybersecurity and cryptography requirements, refine training and CONOPs, and mature advanced concepts. Support prototype mission partner demonstrations and integration and test of mission-unique software. Expand the development environment in order to develop software applications and services in support of integrating additional satellite missions.			
FY 2021 Plans: N/A			
FY 2022 Plans: N/A			
Title: EGS Pre-Operations (Pre-Ops) Support	8.778	0.000	0.000

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2020	FY 2021	FY 2022
<p>Description: Maintain EGS hardware and software baselines, update software licenses, cyber security, help desk operations, and associated training.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Plans: N/A</p>				
<p>Title: EGS Deployment</p> <p>Description: Rapidly deploy tactical C2 services and space domain capabilities to support customer-funded mission integration with EGS activities including future mission acquisition planning and risk-reduction efforts.</p> <p>FY 2021 Plans: N/A</p> <p>FY 2022 Plans: N/A</p>		52.117	0.000	0.000
Accomplishments/Planned Programs Subtotals		114.824	0.000	0.000
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
FY 2019 EGS funds were allocated in the RDSMO Program Element (PE) 1203173F; in FY 2020 EGS was established as PE 1206770F.				
E. Acquisition Strategy				
The EGS acquisition strategy focuses on rapidly delivering C2 prototypes and operational capabilities to warfighters, while leveraging industry best practices for agile development and continuous integration/delivery (CI/CD). One of the key tenets of the EGS acquisition strategy is to maintain government ownership of the technical baseline. As a result, EGS uses a combination of existing and new contracts and agreements with industry and academia to procure prototypes, platform services, system engineering services, and pre-ops support for mission users. EGS will leverage the two Small Business Innovation Research (SBIR) Phase III contracts that were awarded in late FY 2019 to scale EGS capabilities and enable more rapid development and deployment of tactical C2 services to operational users. Additionally, EGS provides development, integration, and pre-ops support for mission users through a contract awarded in FY 2020.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206770F / Enterprise Ground Services	Project (Number/Name) 673140 / Enterprise Ground Services EGS
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EGS Development	Various	Various : Various	-	35.177	Nov 2019	-		-		-		-	-	-	-
EGS Pre-Ops Support	Various	Various : Various	-	8.778	Dec 2019	-		-		-		-	-	-	-
EGS Deployment	Various	Various : Various	-	36.131	Nov 2019	-		-		-		-	-	-	-
EGS Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	5.000	Oct 2019	-		-		-		-	-	-	-
Enterprise Systems Engineering and Integration (SE&I)	Various	MITRE : Bedford, MA	-	15.986	Oct 2019	-		-		-		-	-	-	-
Subtotal			-	101.072		-		-		-		-	-	-	N/A

Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	RO	Aerospace : El Segundo, CA	-	7.100	Oct 2019	-		-		-		-	-	-	-
A&AS Support	Various	Varioius : Various	-	6.150	Dec 2019	-		-		-		-	-	-	-
Other Support	Various	Various : El Segundo, CA	-	0.502	Dec 2019	-		-		-		-	-	-	-
Subtotal			-	13.752		-		-		-		-	-	-	N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	114.824	0.000	-	-	-	-	N/A

Remarks
 FY 2018-2019 Enterprise Ground Services (EGS) funds were allocated in the RDSMO Program Element (PE) 1203173F and in FY 2020 EGS funds transferred to Program Element (PE) 1206770F, Project 673140.

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206770F / Enterprise Ground Services	Project (Number/Name) 673140 / Enterprise Ground Services EGS
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026							
	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				
EGS Development																																
System Integration Lab (SIL)																																
Space Management Battle Lab (SMBL)																																
Development to Operations (DevOps)																																
EGS Deployment																																
EGS Deployment																																
Buckley AFB Initial Capability																																
EGS Pre-Ops Support																																
EGS Pre-Ops Support																																
Mission Integration																																
-HEO Operations Migration to EGS (HOME)																																
-Mission Partner																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>EGS Development</i>				
System Integration Lab (SIL)	1	2020	4	2020
Space Management Battle Lab (SMBL)	1	2020	4	2020
Development to Operations (DevOps)	1	2020	4	2020
<i>EGS Deployment</i>				
EGS Deployment	1	2020	4	2020
Buckley AFB Initial Capability	2	2020	2	2020
<i>EGS Pre-Ops Support</i>				
EGS Pre-Ops Support	1	2020	4	2020
Mission Integration	1	2020	4	2020
-HEO Operations Migration to EGS (HOME)	3	2020	3	2020
-Mission Partner	4	2020	4	2020

Note

Singular events depicted above represent milestones. All milestones include effort prior to and after the event. This schedule aligns with USSF/CSO approved EGS Long Term Solution Roadmap.

EGS Initial Enterprise Capability milestone includes initial delivery and maturation of tactical C2 enterprise services and space domain capabilities.

EGS Deployment milestones include initial build-outs of EGS enclaves at operational sites. Continuous Integration/Continuous Deployment is on-going.

EGS Pre-Ops support milestones include phased initial integration of mission partners and EGS. Pre-ops support is on-going.