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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 1206770F I Enterprise Ground Services							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	138.870	0.000	138.870	116.830	194.090	165.500	158.320	Continuing	Continuing
673140: Enterprise Ground Services EGS	-	0.000	0.000	138.870	0.000	138.870	116.830	194.090	165.500	158.320	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## **A. Mission Description and Budget Item Justification**

Note: FY 2018-2019 EGS funds are allocated in the Space and Missile Test and Evaluation Center (RDSMO) Program Element (PE) 1203173F and in FY2020+ EGS funds have transferred to a new Program Element (PE) 1206770F, Project 673140, Enterprise Ground Services (EGS).

The Enterprise Ground Services (EGS) program is part of the evolving current and future space domain demands. Multi-Mission Satellite Operations Center (MMSOC) capability will transition to become the EGS command and control (C2) product line. The EGS C2 product line will perform technology maturation, experiments, prototyping and operational mission transition for increased commonality and resiliency in space program ground systems. The EGS capability will become the primary ground C2 system for Air Force Space Enterprise.

The main objective of EGS is to provide a robust enterprise ground architecture for Air Force space systems. EGS will focus efforts on developing and integrating data centers in laboratories at three separate sites, advanced concept exploration, prototype development and demonstrations, user experience maturation, training and Concept of Operations (CONOPS) refinement, cyber 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 our ability to rapidly respond to known and emerging threats. Space enterprise efforts aim to execute technology risk reduction efforts, integration of 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 software applications and other services that support onboarding 23 missions covering the range of mission areas including Missile Warning, Missile Defense, MILSATCOM, Space Domain Awareness and other experimental satellites. The modifications to core software applications provided by EGS will be made in an Agile DevSecOps environment which has and continues to be demonstrated through current EGS activities.

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.

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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.						
As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.						
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget		0.000	0.000	0.000	0.000	0.000
Current President's Budget		0.000	0.000	138.870	0.000	138.870
Total Adjustments		0.000	0.000	138.870	0.000	138.870
• 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	138.870	0.000	138.870
Change Summary Explanation						
FY 2020: EGS was transferred from program element 1203173F to 1206770F.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: Enterprise Ground Services (EGS) Development				0.000	0.000	67.610
Description: Perform prototype Mission Partner Demonstrations, cybersecurity and crypto development and implementation, standards and interface refining, training and CONOPs refinement, advance concept maturation, integration and test of mission unique software, and integration of common application and services. Expand development environment in order to develop software applications and services in support of onboarding additional satellite missions.						
FY 2019 Plans:						

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
N/A  <b>FY 2020 Plans:</b> Continue maturation of EGS laboratories including providing an enduring initial capability to support DevOps at the Space Management Battle Lab planned at the Catalyst Campus. Continue prototype Mission Partner Demonstrations, cybersecurity and crypto development and implementation, platform development and interface refining, training and CONOPs refinement, advance concept maturation, integration and test of mission unique software, and integration of common applications and services at the distributed Software Integration Lab. Expand User Experience guidelines to include multiple services beyond TT&C, Ground Resource Manager, and Mission Management. Expand EGS core services based on mission needs. Mature EGS deployment automation and testing. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, prototyping, etc.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> FY2018-2019 Enterprise Ground Services (EGS) funds are allocated in the RDSMO Program Element(PE) 1203173F and in FY2020+ EGS funds have transferred to a new Program Element (PE) 1206770F, Project 673140.				
<b>Title:</b> EGS Pre-Operations (Pre-Ops) Support  <b>Description:</b> Maintain EGS hardware baseline, update software licenses, cyber security, help desk operations, and associated training.  <b>FY 2019 Plans:</b> N/A  <b>FY 2020 Plans:</b> Conduct pre-ops support activities for FY19 satellites EGS to include maintaining EGS hardware baseline, updating software licenses, cyber security, help desk stand up operations, as well as ssociated training.  <b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> FY2018-2019 Enterprise Ground Services (EGS) funds are allocated in the RDSMO Program Element(PE) 1203173F and in FY2020+ EGS funds have transferred to a new Program Element (PE) 1206770F, Project 673140.		0.000	0.000	35.746
<b>Title:</b> EGS Deployment  <b>Description:</b> Integrate operational EGS data centers with current and future space domain capabilities. Support customer-funded mission onboarding including future mission acquisition planning and risk reduction efforts.  <b>FY 2019 Plans:</b>		0.000	0.000	35.514

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
N/A				
<b>FY 2020 Plans:</b> Continue the maturation of EGS prototype data centers, networks and links to converge capabilities across the EGS enterprise. Continue integration efforts with current and future space domain capabilities. Build on the FY 2019 deliveries by building out the enclave at BAFB to be identical to the EGS Instances at SAFB and KAFB for resilience. Continue developing the programmatic, technical and architectural roadmap to enable the phased transition of mission partners to EGS. Support customer-funded mission on-boarding including future mission acquisition planning and risk reduction efforts.				
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> FY 2018-2019 Enterprise Ground Services (EGS) funds are allocated in the RDSMO Program Element(PE) 1203173F and in FY2020+ EGS funds have transferred to a new Program Element (PE) 1206770F , Project 673140.				
<b>Accomplishments/Planned Programs Subtotals</b>		0.000	0.000	138.870
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>E. Acquisition Strategy</b>				
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 as a service (PaaS) capabilities, system engineering services, and pre-operations support for mission users. Leverage existing contracts in FY 2019 and continue consolidation of contracts into FY 2020. The intent is to award 2 SBIRS phase 3 contracts in 2nd Qtr FY 2019 to continue this consolidation and to begin scaling of the enterprise to onboard the missions post demonstration activity.				
<b>F. Performance Metrics</b>				
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force												Date: February 2019			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 1206770F / Enterprise Ground Services				Project (Number/Name) 673140 / Enterprise Ground Services EGS					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Pre-Ops Support	Various	Various : Various	-	-		-		36.500	Jan 2020	-		36.500	Continuing	Continuing	-
HW, SW and Integration	Various	Various : Various	-	-		-		35.494	Mar 2020	-		35.494	Continuing	Continuing	-
Development	Various	Various : Various	-	-		-		24.604	Oct 2019	-		24.604	Continuing	Continuing	-
Technical Mission Analysis (FFRDC Aerospace Costs)	MIPR	Aerospace : El Segundo, CA	-	-		-		16.957	Oct 2019	-		16.957	Continuing	Continuing	-
Enterprise Systems Engineering and Integration (SE&I)	Various	MITRE : Bedford, MA	-	-		-		16.000	Oct 2019	-		16.000	Continuing	Continuing	-
Subtotal			-	-		-		129.555		-		129.555	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 Support	Various	Varioius : Various	-	-		-		8.765	Nov 2019	-		8.765	Continuing	Continuing	-
Other Support	Various	Various : El Segundo, CA	-	-		-		0.550	Dec 2019	-		0.550	Continuing	Continuing	-
Subtotal			-	-		-		9.315		-		9.315	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		0.000		138.870		-		138.870	Continuing	Continuing	N/A
Remarks FY2018-2019 Enterprise Ground Services (EGS) funds are allocated in the RDSMO Program Element(PE) 1203173F and in FY2020+ EGS funds have transferred to a new Program Element (PE) 1206770F , Project 673140.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force																Date: February 2019			
Appropriation/Budget Activity								R-1 Program Element (Number/Name)								Project (Number/Name)			
3600 / 7								PE 1206770F / Enterprise Ground Services								673140 / Enterprise Ground Services EGS			

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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																												
Buckley AFB																												
Schriever AFB																												
Kirtland AFB																												
EGS Pre-Ops Support																												
EGS Pre-Ops Support																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Air Force			<b>Date:</b> February 2019
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206770F / <i>Enterprise Ground Services</i>	<b>Project (Number/Name)</b> 673140 / <i>Enterprise Ground Services EGS</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>EGS Development</i></b>				
System Integration Lab (SIL)	1	2020	4	2024
Space Management Battle Lab (SMBL)	1	2020	4	2024
Development to Operations (DevOps)	1	2020	4	2024
<b><i>EGS Deployment</i></b>				
Buckley AFB	1	2020	4	2024
Schriever AFB	1	2020	4	2024
Kirtland AFB	1	2020	4	2024
<b><i>EGS Pre-Ops Support</i></b>				
EGS Pre-Ops Support	1	2020	4	2024

**Note**

The schedule reflects EGS current development plan