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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605056F / <i>Open Architecture Management</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	-	28.902	30.491	37.109	0.000	37.109	-	-	-	-	-	-
656060: <i>Standards Management</i>	-	28.902	30.491	37.109	0.000	37.109	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Open Architecture Management (OAM) Office (OAMO) at the Air Force Life Cycle Management Center is responsible for developing, evolving, and managing open standards. Open standards permit Department of Defense programs to reduce acquisition and life-cycle costs as well as the risks associated with development, sustainment, technology refresh, and capability upgrades of mission systems on weapon systems. The OAMO continues to manage the Open Mission Systems (OMS) and the Universal Command and Control (C2) Interface (UCI) Standards. Additionally, the OAMO will continue working activities for other standards and open architecture initiatives to transition to OAMO management/ownership.

OAMO provides funding to multiple entities, including the Air Force Research Laboratory (AFRL), the 76th Software Engineering Group (76 SWEG), defense contractors, Federally Funded Research and Development Centers, and University Affiliated Research Centers in support of standards management activities. AFRL is responsible for executing science and technology initiatives to further develop the OMS/UCI Standards. The 76 SWEG is responsible for key activities and deliverables for the OMS and UCI standards including: managing a collaborative tools environment, updating tools in the OMS/UCI Starter Kit, updating the Government critical abstraction layer, maintaining the Reference Implementation, integrating and testing the Mission Package, completing Change Package Development and Sponsorship, supporting the OMS and UCI management activities, providing support to adopting programs, and providing training and associated documentation. These entities will also be funded to support activities for other standards or open architecture initiatives to transition to OAMO management/ownership.

The OAMO will begin development/maintenance of the Government Avionics Reference Architecture (GARA), an Avionics Model Based Systems Engineering (MBSE) environment for conducting automated evaluations, trade studies, and implementation of open standards.

The OAMO will execute P3I initiatives as required and include activities such as specifically targeted improvements to open standards and open architecture initiatives, coordination with other standardization efforts, enhancements (including cybersecurity, as required), and widening the applicability of the standards the OAMO is involved with.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver open standards capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	30.000	30.547	31.165	0.000	31.165
Current President's Budget	28.902	30.491	37.109	0.000	37.109
Total Adjustments	-1.098	-0.056	5.944	0.000	5.944
• 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	-1.098	-0.056	5.944	0.000	5.944

Change Summary Explanation

FY 2022 increased due to realignment from PE 0604414F Weapon Systems Cyber Resiliency to the Open Architecture Management PE to more appropriately align open standards initiatives. This improves congressional transparency. FY 2020 and FY 2021 differences due to standard taxes, inflationary adjustments, etc.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
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Title: Open Architecture Management Office	28.902	30.491	37.109
Description: Accomplish all industry activities that result in the annual release of the OMS and UCI standards along with the associated documentation, including training materials. Manage government activities to support the OMS and UCI Standards. Accomplish industry and government activities to support other open standards and open architecture initiatives managed by the OAMO. Conduct preplanned activities to add additional capability and evolve standards and open architecture initiatives managed and supported by the OAMO.			
FY 2021 Plans: Continue to modify and update the existing OMS and UCI standards to widen the pool of OMS/UCI applicability, account for emerging technologies, adjust for program specific needs, and conduct targeted training. In coordination with industry partners develop annual releases of the OMS/UCI standards, develop training and implementation materials, and conduct quarterly common governance boards. Provide government expertise to support standards development efforts. Continue working transition activities for other standards, as required. Develop an annual starter kit, update tool kits, perform testing and integration activities, assist in the generation and modification of an Anti-Tamper (AT) interface control document, and conduct other management and development activities. Ensure development of the standard incorporates cybersecurity considerations including			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<p>message/data transfer security, cyber risk mitigation, and implementation standardization. Conduct other P3I initiatives, such as specifically targeted improvements to the standards, and coordination with other standardization efforts.</p> <p>FY 2022 Plans: Continue to modify and update the existing OMS and UCI Standards to widen the pool of OMS/UCI applicability, account for emerging technologies, adjust for program specific needs, and conduct targeted training. In coordination with industry partners and government agencies, complete all activities (including quarterly common governance boards) to develop annual releases of the OMS/UCI Standards. Provide government expertise to support open standards and open architecture development efforts. Work activities to advance, modify, or transition to OAMO ownership/management of other open standards and open architecture initiatives, as required. Develop starter kits, tool kits (including required updates), perform testing and integration activities, assist in the generation and maintenance of anti-tamper and cybersecurity documentation, and conduct other management and development activities, as required. Conduct P3I initiatives, such as specifically targeted improvements to the standards in coordination with other standardization efforts. Fund efforts to develop the open architecture initiatives including the Government Avionics Reference Architecture (GARA). Fund Sensor Open Systems Architecture (SOSA) hardware initiatives.</p> <p>FY 2021 to FY 2022 Increase/Decrease Statement: FY 2022 increased compared to FY 2021 by 0.603 million. Increase is due to realignment from the Weapon System Cyber Resilience 0604414F PE to Open Architecture Management to realign open standards initiatives into one PE. This improves congressional transparency.</p>			
Accomplishments/Planned Programs Subtotals	28.902	30.491	37.109

D. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

E. Acquisition Strategy
The Air Force Life Cycle Management Center's OAMO awarded a follow-on contract to continue the standards management activities conducted under a previously classified Air Force RDT&E Program Element. The contract is a cost plus fixed fee (CPFF) indefinite delivery/indefinite quantity (ID/IQ) that was awarded in December 2018. The first delivery order has a period of performance of 3 years beginning 1 January 2019. A second delivery order with a one-year period of performance will be awarded in first quarter of FY2021 to cover the period 1 January 2022 through 31 December 2022. An acquisition strategy is being worked.

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605056F / <i>Open Architecture Management</i>	Project (Number/Name) 656060 / <i>Standards Management</i>
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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			
Open Architecture Collaborative Working Group - BAE Systems	SS/CPFF	BAE Systems : Nashua, NH	-	1.144	Jan 2020	1.225	Dec 2020	1.135	Dec 2021	-		1.135	-	-	-
Open Architecture Collaborative Working Group - Boeing	SS/CPFF	Boeing : St. Louis, MO	-	4.145	Jan 2020	4.180	Dec 2020	4.178	Dec 2021	-		4.178	-	-	-
Open Architecture Collaborative Working Group - General Atomics ASI	SS/CPFF	General Atomics ASI : Poway, CA	-	1.088	Jan 2020	1.152	Dec 2020	1.081	Dec 2021	-		1.081	-	-	-
Open Architecture Collaborative Working Group - Collins Aerospace	SS/CPFF	Collins Aerospace : Westford, MA	-	1.204	Jan 2020	1.168	Dec 2020	1.075	Dec 2021	-		1.075	-	-	-
Open Architecture Collaborative Working Group - Harris Corp	SS/CPFF	Harris Corp : Clifton, NJ	-	1.274	Jan 2020	1.320	Dec 2020	1.254	Dec 2021	-		1.254	-	-	-
Open Architecture Collaborative Working Group - Lockheed Martin	SS/CPFF	Lockheed Martin : Fort Worth, TX	-	6.906	Jan 2020	6.370	Dec 2020	6.428	Dec 2021	-		6.428	-	-	-
Open Architecture Collaborative Working Group - Northrop Grumman	SS/CPFF	Northrop Grumman : Melbourne, FL	-	5.082	Jan 2020	5.189	Dec 2020	5.239	Dec 2021	-		5.239	-	-	-
Open Architecture Collaborative Working Group - Raytheon	SS/CPFF	Raytheon : El Segundo, CA	-	1.923	Jan 2020	1.979	Dec 2020	1.912	Dec 2021	-		1.912	-	-	-
Air Force Research Laboratory (AFRL) Science and Technology Initiatives	MIPR	AFRL : Various	-	1.239	Jan 2020	2.487	Dec 2020	2.334	Dec 2021	-		2.334	-	-	-
76th Software Maintenance Group (76 SMXG) Development	PO	76 SWEG : Tinker AFB, OK	-	4.013	Jan 2020	4.498	Dec 2020	4.506	Dec 2021	-		4.506	-	-	-

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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			
Engineering Support (1)	MIPR	EPASS Contract: TBD : TBD	-	0.000		0.000		-		-		-	-	-	-
Engineering Support (2)	MIPR	P3I: TBD : TBD	-	0.000		0.000		-		-		-	-	-	-
Engineering Support (3)	MIPR	MIT-LL : TBD	-	0.364	Apr 2020	0.404	Mar 2021	0.395	Jan 2022	-		0.395	-	-	-
Engineering Support (4)	MIPR	GTRI : TBD	-	0.408	Jul 2020	0.363	Mar 2021	0.000		-		0.000	-	-	-
SOSA Initiatives	C/CPFF	Existing IDIQ: TBD : TBD	-	-		-		2.758	Jan 2022	-		2.758	-	-	-
Government Avionics Reference Architecture (GARA)	C/CPAF	GTRI UARC : Atlanta, GA	-	-		-		4.375	Mar 2022	-		4.375	-	-	-
Subtotal			-	28.790		30.335		36.670		-		36.670	-	-	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			
Program Management Administration	Various	OAM Program Office : Wright-Patterson AFB, OH	-	0.112	Jan 2020	0.156	Jan 2021	0.439	Jan 2022	-		0.439	-	-	-
Subtotal			-	0.112		0.156		0.439		-		0.439	-	-	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		-	28.902	30.491	37.109	-	-	37.109

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605056F / <i>Open Architecture Management</i>	Project (Number/Name) 656060 / <i>Standards Management</i>

	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
<i>Develop and Evolve Standards</i>																												
Quarterly Governance Boards																												
FY 2020 Annual Release of Open Mission System and Universal Command and Control Interface (OMS/UCI) Standards																												
FY 2021 Annual Release of OMS/UCI Standards																												
FY 2022 Annual Release of OMS/UCI Standards																												
FY 2023 Annual Release of OMS/UCI Standards																												
FY 2024 Annual Release of OMS/UCI Standards																												
FY 2025 Annual Release of OMS/UCI Standards																												
FY 2026 Annual Release of OMS/UCI Standards																												
FY 2020 Annual Integration Event																												
FY 2021 Annual Integration Event																												
FY 2022 Annual Integration Event																												
FY 2023 Annual Integration Event																												
FY 2024 Annual Integration Event																												
FY 2025 Annual Integration Event																												
FY 2026 Annual Integration Event																												
FY 2022 GARA Quarterly Model Update																												
FY 2022 GARA Quarterly Configuration Management Plan Updates																												

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

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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
FY 2022 GARA Quarterly Conformance Plan Updates																												

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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>Develop and Evolve Standards</i>				
Quarterly Governance Boards	1	2020	4	2026
FY 2020 Annual Release of Open Mission System and Universal Command and Control Interface (OMS/UCI) Standards	1	2020	1	2020
FY 2021 Annual Release of OMS/UCI Standards	1	2021	1	2021
FY 2022 Annual Release of OMS/UCI Standards	1	2022	1	2022
FY 2023 Annual Release of OMS/UCI Standards	1	2023	1	2023
FY 2024 Annual Release of OMS/UCI Standards	1	2024	1	2024
FY 2025 Annual Release of OMS/UCI Standards	1	2025	1	2025
FY 2026 Annual Release of OMS/UCI Standards	1	2026	1	2026
FY 2020 Annual Integration Event	4	2020	4	2020
FY 2021 Annual Integration Event	4	2021	4	2021
FY 2022 Annual Integration Event	4	2022	4	2022
FY 2023 Annual Integration Event	4	2023	4	2023
FY 2024 Annual Integration Event	4	2024	4	2024
FY 2025 Annual Integration Event	4	2025	4	2025
FY 2026 Annual Integration Event	4	2026	4	2026
FY 2022 GARA Quarterly Model Update	1	2022	4	2026
FY 2022 GARA Quarterly Configuration Management Plan Updates	1	2022	4	2026
FY 2022 GARA Quarterly Conformance Plan Updates	1	2022	4	2026