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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0606017F I Requirements Analysis and Maturation							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	45.134	35.453	35.285	0.000	35.285	59.433	64.395	58.828	35.476	Continuing	Continuing
666157: Development Planning	-	21.011	12.946	12.007	0.000	12.007	12.251	12.494	12.753	12.984	Continuing	Continuing
666158: INTEGRATED SIMULATION AND ANALYSIS	-	24.123	22.507	23.278	0.000	23.278	47.182	51.901	46.075	22.492	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Requirements Analysis and Maturation (RAM) program funds development planning (DP) to include early systems engineering and integrated simulation and analysis. These activities include requirements analysis, capability decomposition and trade space characterization, concept development (system of systems, air, space, and cyber), cost analysis, modeling and simulation of representative or prototype systems, and costs associated with these activities to include analytical tools and travel. Outcomes of these activities are fiscally and technologically informed requirements, mature concepts that are technically feasible, and areas for science and technology (S&T) investment to reduce technology risks. These activities provide the analytic basis for cost and capability trades driving non-materiel solutions as well as weapon systems requirements, acquisition milestones, decision points, and phases. A number of Department of Defense (DoD), Government Accountability Office (GAO), and independent studies point to a need for more disciplined, early systems engineering and pre-systems acquisition planning and analysis to produce decision quality acquisition information that previously did not surface until after the initiation of a program. Early-phase systems engineering and technical planning activities funded by this program provide the foundation for informed investment decisions leading to successful acquisition programs. DP efforts have been coordinated with the Air Force Capability Development Council to ensure funding supports the highest Air Force priorities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver development planning and integrated simulation and analysis capabilities.

This program is in Budget Activity 6, RDT&E Management Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		129.100	35.453	33.578	0.000	33.578
Current President's Budget		45.134	35.453	35.285	0.000	35.285
Total Adjustments		-83.966	0.000	1.707	0.000	1.707
• Congressional General Reductions		-0.353	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		17.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.595	0.000			
• SBIR/STTR Transfer		-1.208	0.000			
• Other Adjustments		-100.000	0.000	1.707	0.000	1.707
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: 666157: Development Planning						
Congressional Add: Program Increase						
Congressional Add: Program Increase - nuclear command, control, and communications development.						
Congressional Add Subtotals for Project: 666157						
Project: 666158: INTEGRATED SIMULATION AND ANALYSIS						
Congressional Add: Program Increase						
Congressional Add Subtotals for Project: 666158						
Congressional Add Totals for all Projects						
Change Summary Explanation						
Other adjustment decrease of \$100 million in FY 2017 because FY 2017 Request for Additional Appropriations (RAA) for Planning for Development (PFD) and Joint Simulation Environment (JSE) was not appropriated.						
Increase in FY 2019 for JSE Simulation and Analysis Facility (SIMAF) activities.						

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0606017F / Requirements Analysis and Maturation				Project (Number/Name) 666157 / Development Planning			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
666157: Development Planning	-	21.011	12.946	12.007	0.000	12.007	12.251	12.494	12.753	12.984	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Development Planning (DP) project funds activities to analyze Air Force capability needs and requirements to identify potential shortfalls and opportunities; formulate candidate concepts and solution options to address Air Force capability needs and shortfalls; and conduct coordinated analysis and assessment activities to address requirements, technology needs, capability trades, schedule, cost, and pre-systems acquisition planning. Emphasis is placed on activities to inform strategic planning, analyzing multi-domain capabilities that look first at non-materiel solutions before generating materiel needs and requirements.												
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Long-range Capability Analyses								5.278	5.240	4.860	0.000	4.860
Description: Conduct long-range capability analyses by analyzing warfighter capability needs and requirements to identify potential shortfalls and opportunities.												
FY 2018 Plans: Identify and assess enduring and future Air Force capability challenges and opportunities. Develop capability roadmaps, advanced concept studies and analyses, and derive technology needs required to realize future solutions to warfighter capability needs.												
FY 2019 Base Plans: Continue to identify and assess enduring and future Air Force capability challenges and opportunities. Continue to develop capability roadmaps, advanced concept studies and analyses, and derive technology needs required to realize future solutions to warfighter capability needs.												
FY 2019 OCO Plans: Not applicable.												
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$0.380 million. Justification for this decrease is described in plans above.												
Title: Concept Development								2.600	4.750	4.405	0.000	4.405

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Appropriation/Budget Activity 3600 / 6		R-1 Program Element (Number/Name) PE 0606017F / Requirements Analysis and Maturation		Project (Number/Name) 666157 / Development Planning				
B. Accomplishments/Planned Programs (\$ in Millions)				FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
<p>Description: Conduct concept development activities to inform strategic investment decisions. Formulate and explore multi-domain options (materiel and non-materiel) to better understand operational decision space.</p> <p>FY 2018 Plans: Formulate and explore multi-domain options (materiel and non-materiel) to better understand operational decision space.</p> <p>FY 2019 Base Plans: Continue to formulate and explore multi-domain options (materiel and non-materiel) to better understand operational decision space.</p> <p>FY 2019 OCO Plans: Not applicable.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 decreased compared to FY 2018 by \$0.345 million. Justification for this decrease is described in plans above.</p>								
<p>Title: Pre-systems Acquisition Planning</p> <p>Description: Conduct coordinated pre-systems acquisition planning activities that address requirements, schedule, cost, technology, and acquisition strategy.</p> <p>FY 2018 Plans: Perform pre-systems acquisition planning activities, including concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation.</p> <p>FY 2019 Base Plans: Continue to perform pre-systems acquisition planning activities, including concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation.</p> <p>FY 2019 OCO Plans: Not applicable.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>				1.338	2.956	2.742	0.000	2.742

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Appropriation/Budget Activity 3600 / 6		R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>		Project (Number/Name) 666157 / <i>Development Planning</i>	

<u>B. Accomplishments/Planned Programs (\$ in Millions)</u>	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2019 decreased compared to FY 2018 by \$0.214 million. Justification for this decrease is described in plans above.					
Accomplishments/Planned Programs Subtotals	9.216	12.946	12.007	0.000	12.007

	FY 2017	FY 2018
<i>Congressional Add:</i> Program Increase	4.900	0.000
<i>FY 2017 Accomplishments:</i> Conducted Congressionally-directed effort.		
<i>FY 2018 Plans:</i> Not applicable.		
<i>Congressional Add:</i> Program Increase - nuclear command, control, and communications development.	6.895	0.000
<i>FY 2017 Accomplishments:</i> Conducted Congressionally-directed effort.		
<i>FY 2018 Plans:</i> Not applicable.		
Congressional Adds Subtotals	11.795	0.000

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

Remarks

D. Acquisition Strategy
Not applicable.

E. Performance Metrics
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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Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0606017F / Requirements Analysis and Maturation				Project (Number/Name) 666158 / INTEGRATED SIMULATION AND ANALYSIS			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
666158: INTEGRATED SIMULATION AND ANALYSIS	-	24.123	22.507	23.278	0.000	23.278	47.182	51.901	46.075	22.492	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Integrated Simulation and Analysis project provides system-of-systems synthetic environments for modeling, simulation, and analysis of systems and concepts under assessment. This effort accomplishes system performance representations and models, environments, architectures, and tools that underpin variable fidelity; stand-alone, interactive, and distributed simulations; and virtual prototyping using high performance computing for rapid assessment of warfighting capabilities. Integrated simulation and analyses combines real-time and constructive simulations, operators-in-the-loop, experimental and operational software and hardware engineered in synthesized environments to conduct air, space, cyber, and multi-domain capabilities assessments in support of development planning, experimentation, and related activities.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Integrated Simulation and Analysis	19.279	22.507	23.278	0.000	23.278
Description: Develop cross-domain system-of-systems modeling, simulation, and analysis capabilities to support development planning, capabilities assessment, and acquisition decisions.					
FY 2018 Plans: Reconfigure and mature models and toolsets to provide integrated simulation capabilities with variable levels of fidelity and realistic representation of battlespace environments. Provide a core set of composable models and a common suite of cross-domain, reusable frameworks at the engineering, engagement, mission, and campaign levels that can be used to support robust development planning and experimentation for high-priority capability gaps, needs, and warfighting challenges identified by Air Force leadership.					
FY 2019 Base Plans: Continue to reconfigure and mature models and toolsets to provide integrated simulation capabilities with variable levels of fidelity and realistic representation of battlespace environments. Begin to mature capabilities into a high-fidelity, multi-platform, multi-domain, operationally representative virtual environment to supplement open air testing. Provide a core set of composable models and a common suite of cross-domain, reusable frameworks at the engineering, engagement, mission, and campaign levels that can be used to support robust					

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
development planning and experimentation for high-priority capability gaps, needs, and warfighting challenges identified by Air Force leadership.					
FY 2019 OCO Plans: Not applicable.					
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.771 million. Justification for this increase is described in plans above.					
Accomplishments/Planned Programs Subtotals	19.279	22.507	23.278	0.000	23.278

	FY 2017	FY 2018
Congressional Add: Program Increase	4.844	0.000
FY 2017 Accomplishments: Conducted Congressionally-directed effort.		
FY 2018 Plans: Not applicable.		
Congressional Adds Subtotals	4.844	0.000

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

Remarks

D. Acquisition Strategy
 Not applicable.

E. Performance Metrics
 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.