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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
|--|-------------|---------|---------|--------------|---|---------------|---------|---------|---------|----------------|------------------|------------|
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | | | | | R-1 Program Element (Number/Name) PE 0207697F I Distributed Training and Exercises | | | | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| Total Program Element | - | 4.202 | 3.886 | 4.190 | 0.000 | 4.190 | 4.257 | 4.336 | 4.410 | 4.500 | Continuing | Continuing |
| 675190: JFCOM Wargaming | - | 4.202 | 3.886 | 4.190 | 0.000 | 4.190 | 4.257 | 4.336 | 4.410 | 4.500 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Funding supports the CSAF Title 10 wargaming efforts to test concepts, capabilities, programming choices, and plans using simulation and other techniques, otherwise known as wargaming. Based on the Department and Air Force direction, there is a concerted effort in these periods of fiscal pressure to reinvigorate, institutionalize, and systematize wargaming across the Department. This effort requires continued funding to maintain the level of effort to most effectively pursue an innovative strategy, avoid operational and technical surprise and make best use of limited resources. The Air Force is charting a new course to better integrate and synergize the wargaming efforts in support of the new Air Force Strategy, Planning, and Programming (SP3) process. Specifically, in addition to maintaining a robust Title 10 Wargame series, Global Engagement, servicing Chief of Staff of the Air Force (CSAF) objectives, the HAF Wargaming Enterprise is executing on-call Wargaming in support of the AF/A5/8, the Agile series, along with quick-turning wargame support to the USAF Enterprise Capability Collaboration Team (ECCT) requirements, the Enterprise series, as well as, a wargame series, Plan Blue, to service AF/A5S strategy and concept development objectives; all to better address the requirements of the SP3 process and cycles. Additionally, HAF Wargaming provides and coordinates Air Force representation at other Service and Joint wargames as they execute across the department. These efforts are providing decision support to senior Air Force leaders with regard to investment strategies and develop concepts to best employ U.S. forces in future conflicts.

The Wargame Information Environment (WIE) is a continually evolving system that provides an array of services to game players which enables the accomplishment of game objectives. The backbone of the WIE is GameNet, a deployable, standalone, Local Area Network (LAN) with servers and laptops that host applications to support virtual battlespace collaboration, decision making, three-dimensional visualizations & mapping and services. Behind these applications are cutting edge technologies and database architectures from both commercial off-the-shelf and government developed software that assures relevance to the wargame. The modeling, simulation, and analysis applications allow participants, adjudicators, and control team members to effectively and efficiently collaborate, make decisions, present those decisions, and execute moves within the wargame; documenting each step in the process. This information capture enables discovery during the wargame and permits post-game analysis. These findings inform portfolio rebalancing exercises, concept and strategy development, and very senior leader decision making. Having concluded Global Engagement 16, the current wargaming cycle, the current version of the WIE is being given a major overall to match the new charter and SP3 process along with supporting greater number and more diverse wargames.

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.

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| B. Program Change Summary (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | | 4.358 | 3.886 | 4.178 | 0.000 | 4.178 |
| Current President's Budget | | 4.202 | 3.886 | 4.190 | 0.000 | 4.190 |
| Total Adjustments | | -0.156 | 0.000 | 0.012 | 0.000 | 0.012 |
| • 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 | | -0.156 | 0.000 | 0.012 | 0.000 | 0.012 |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | FY 2016 | FY 2017 | FY 2018 |
| Title: Develop/ Upgrade M&S Tools for WIE | | | | 1.918 | 1.360 | 1.463 |
| Description: Develop air, space and cyber space wargaming specific functionality in existing modeling and simulation and analysis tools and integrate into the latest version of the WIE | | | | | | |
| FY 2016 Accomplishments: | | | | | | |
| - Expanded the WIE from the current construct to support Air Force Materiel Command, Air Mobility Command and Air Force Space Command wargames. This required reprograming of some hard coded, CONOPS-specifics to into broader, more generic, wargame support. Additional models and analytical tools used by other wargames and organizations required the creation of custom interfaces to allow interaction within the WIE. Examples include analytic tools being tested for agile combat support and operational energy management. Additionally, registration and IT permissions process were templated and partially automated in order to better service a more diverse user pool and mission set. | | | | | | |
| - Developed and deployed the Force Tracker Request For Forces (RFF) Tool. RFF Tool permits wargame participants to nominate, vet, and authorize the movement of forces through player selected processes reflecting experimental command and control constructs tested in Flexible Engagement and Global Engagement 16. Its integration into the previously developed Force Tracker suite makes the process transparent in a universally accessible database, eliminating errors in transposition. It also serves as a record of participant decisions suitable for subsequent analysis. | | | | | | |
| FY 2017 Plans: | | | | | | |
| - Develop the WIE as a standard platform for Air Force wargaming, permitting integration with other Air Force Wargaming systems, such as BubbleNet at Lemay Center Wargaming Institute and the nascent Schriever Wargame System, currently being tested and evaluated. | | | | | | |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>- Continue to expand and develop the WIE, incorporating latest technology and tools, in support of a more flexible and agile wargaming enterprise; quicker to respond and tailorable for a wider range of wargaming. This will require analysis of utility and functionality of additional models and analytical tools used by other wargames, as well as creation of custom interfaces to allow interaction within the WIE. Given the sharp increase in the number and frequency of diverse wargames, additional capacity is being acquired to manage a greater number of server instantiations that serve as the informational architecture for each effort. as creation of custom interfaces to allow interaction within the WIE.</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Recertify the "GameNet", component of the WIE as a RDT&E Local Area Network. - Extend the WIE to include either the Lemay Center Wargaming Institute BubbleNet or Air Force Space Command Schriever Wargame System in support of an Air Force Title 10 Game event. - Integrate tools to capture implications of force structures and capabilities employed in wargames to budgeting and programming. - Continue to expand and develop the WIE, incorporating latest technology and tools, in support of a more flexible and agile wargaming enterprise; quicker to respond and tailorable for a wider range of wargaming. This will require analysis of utility and functionality of additional models and analytical tools used by other wargames, as well as creation of custom interfaces to allow interaction within the WIE. | | | | |
| <p>Title: Joint Concept Development & Experimentation (JCD&E) Tools</p> <p>Description: Develop scenarios and data for future synthetic environment that grounded in truth to support several wargames and mini-wargames.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Designed and implemented novel wargaming support plan in accord with Strategy, Planning and Programming (SP3). This plan will include flexible and agile, quick-turn efforts to provide analytic support as required by HAF and SAF efforts. - Designed and executed a midterm, theater-baseline wargame hosted by USAFE. This baseline wargame directly services HAF objectives and provides high fidelity data for subsequent quick-turn efforts supporting dynamic SP3 requirements. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Refine wargame support plan to SP3 process, with respect to timing, sequence and focus to ensure greatest utility of wargaming efforts in the provision of analytic support; to include dynamic, quick-turn wargaming efforts in support of HAF and SAF initiatives as required. - Maintain, direct, and mature the Air Force Wargaming Enterprise to better coordinate, integrate, and leverage efforts, resources, and expertise across Air Force organizations. - Develop Scenarios, plan and execute materiel-focused, theater baseline wargame involving Air Force, Sister Services, Pacific Command, functional commands, and multinational coalition. | | 2.284 | 2.526 | 2.727 |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| -Add organic capability to manage and provide analysis of Special Access Programs and Requirements data. | | | | |
| FY 2018 Plans: - Continue to refine and provide tailored wargame support and analytic decision support to Air Force, Joint, and Senior Defense leaders. To include development of processes tailored to enable participation of senior leaders. - Maintain, direct, and mature the Air Force Wargaming Enterprise to better coordinate, integrate, and leverage efforts, resources, and expertise across Air Force organizations. - Develop Scenarios, plan and execute materiel-focused, theater baseline wargame involving Air Force, Sister Services, Pacific Command, functional commands, and multinational coalition. | | | | |
| Accomplishments/Planned Programs Subtotals | | 4.202 | 3.886 | 4.190 |
| D. Other Program Funding Summary (\$ in Millions) N/A | | | | |
| Remarks | | | | |
| E. Acquisition Strategy In order to achieve an innovative strategy, avoid operational and technical surprise and make best use of limited resources, the newly revamped wargame approach will require an evolutionary acquisition approach and continued senior-leadership engagement in setting the objectives and strategy for every wargame. Contract support will be required because that is where wargame specialized expertise resides. The requirements are constantly evolving and cannot be accurately defined at the outset of the contract; therefore, a cost plus fixed fee (CPFF) contract will be used. There is currently an adequate accounting system and government monitoring in place. The Air Force is aware of the increased risk but Air Force will continue to monitor the performance and cost to ensure the contractor has efficient methods and effective cost controls. | | | | |
| F. 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. | | | | |