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| Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force | | | | | | | | | | Date: March 2014 | | |
|--|-------------|---------|---------|--------------|---|---------------|---------|---------|---------|------------------|------------------|------------|
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | | | | | R-1 Program Element (Number/Name) PE 0207601F I USAF Modeling and Simulation | | | | | | | |
| COST (\$ in Millions) | Prior Years | FY 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO # | FY 2015 Total | FY 2016 | FY 2017 | FY 2018 | FY 2019 | Cost To Complete | Total Cost |
| Total Program Element | - | 14.147 | 8.734 | 16.723 | - | 16.723 | 25.161 | 22.993 | 22.365 | 22.790 | Continuing | Continuing |
| 674567: M&S Foundations | - | 5.249 | 1.202 | 9.692 | - | 9.692 | 13.753 | 11.805 | 12.036 | 12.265 | Continuing | Continuing |
| 675135: Warfighter Readiness | - | 8.898 | 7.532 | 7.031 | - | 7.031 | 11.408 | 11.188 | 10.329 | 10.525 | Continuing | Continuing |

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

United States Air Force (USAF) Modeling & Simulation (M&S) Program Element (PE) is broken into two thrust areas: Modeling and Simulation Foundations, and Warfighter Readiness. It directly supports Air Force, Joint, Coalition composite training and rehearsal, concept development, and acquisition and testing through model and simulation development as well as the integration of these across and within Live, Virtual, and Constructive (LVC) environments. This program focuses on support of Department of Defense (DoD) Training Transformation (T2), acquisition excellence initiatives, and foundational capabilities needed for interoperability, accessibility, reuse, and scalability. It allows the authoritative portrayal of new and emerging Air Force capabilities within DoD and coalition LVC environments; as well as reciprocating their capabilities within our Air Force LVC environments.

LVC environments today are used as the most cost effective and practical means to meet mission needs. In support of the DoD T2 initiative, USAF M&S program thrust areas develop and modernize models and simulations that are the constructive backbone of Air Force and joint training and rehearsal. Once these models and simulations are developed, they are integrated across training LVC environments for use by Major and Combatant Commands. This development and integration is imperative to ensure that air, space, and cyberspace training and mission rehearsal activities are supported with realistic, interoperable, and readily available tools, data, and services. These, in turn, enable joint, coalition, and interagency training required to prepare forces for combat by generating the air and space picture for the Air and Space Operations Center (AOC), Joint Force Air Component Commander (JFACC), and Joint Force Commander in combat exercises; training over 50,000 personnel per year in exercises (e.g., Ulchi Freedom Guardian, Red & Blue Flags, Unified Endeavor, etc). These programs also provide the current foundational environment that enables warfighters to interact with high-fidelity tactical cockpit simulators, which replicate high demand/low density platforms that are often unavailable for training due to real-world operations; while simultaneously linking it to warfighters using their current command and control systems 1,000 miles away and the constructive simulations being run from key operational wargaming and simulation centers worldwide.

USAF M&S is integral to inter-agency Homeland Defense (HLD) exercises chartered to train combat units tasked to protect the Homeland, including the National Capital Region (exercise Amalgam Arrow); this generates equipment and manpower efficiencies by using simulations which reduce fuel consumption, aircraft wear and tear, and manpower costs. In support of the DoD drive to improve the effectiveness and efficiency of its enterprise-wide acquisition business processes, the USAF M&S Program Element develops and supports enhancements to models, simulations, tools, and the LVC infrastructure to provide for system-of-systems M&S capabilities across the lifecycle, reduce developmental costs, and minimize risks. These capabilities support the acquisition process from concept development through test and evaluation. Activities also include studies and analysis to support both current program planning and execution and future program planning.

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| 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 0207601F / <i>USAF Modeling and Simulation</i> |
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This program is in Budget Activity 7, Operational System Development, 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 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO | FY 2015 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 15.501 | 10.448 | 19.601 | - | 19.601 |
| Current President's Budget | 14.147 | 8.734 | 16.723 | - | 16.723 |
| Total Adjustments | -1.354 | -1.714 | -2.878 | - | -2.878 |
| • Congressional General Reductions | -0.021 | -0.031 | | | |
| • Congressional Directed Reductions | - | -1.683 | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | - | - | | | |
| • Other Adjustments | -1.333 | - | -2.878 | - | -2.878 |

Change Summary Explanation

In FY 2013: Other Adjustment row (-\$1.333M) due to sequestration.

In FY 2014: Congressional Directed Reduction row (-\$1.683) due to program decrease.

In FY 2015: Other Adjustment row (-\$2.878M) due to higher AF priorities.

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| Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force | | | | | | | | | | Date: March 2014 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0207601F / USAF Modeling and Simulation | | | | Project (Number/Name) 674567 / M&S Foundations | | | |
| COST (\$ in Millions) | Prior Years | FY 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO # | FY 2015 Total | FY 2016 | FY 2017 | FY 2018 | FY 2019 | Cost To Complete | Total Cost |
| 674567: M&S Foundations | - | 5.249 | 1.202 | 9.692 | - | 9.692 | 13.753 | 11.805 | 12.036 | 12.265 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |
| # The FY 2015 OCO Request will be submitted at a later date. | | | | | | | | | | | | |
| A. Mission Description and Budget Item Justification | | | | | | | | | | | | |
| Modeling and Simulation Foundations (MSF) focuses on integrating foundational capabilities needed to improve the usefulness, productivity, scalability and efficiency of Modeling and Simulation (M&S) capabilities derived from the Warfighter Readiness (WR) thrust. MSF is the: standards, policies, procedures, architectures, and tools that enable the rapid and efficient composition of distributed environments to support both the warfighter needs and the US Air Force's (USAF) functional communities of: acquisition, training, planning, analysis, testing, education, and experimentation requirements. The efforts supporting the MSF thrust include both concept exploration and development. | | | | | | | | | | | | |
| MSF provides the capability to rapidly and efficiently create realistic and accurate synthetic operational battlespaces to support the full spectrum of activities associated with concept development to acquisition and testing through composite training and mission rehearsal. This is done by providing appropriate authoritative data and component representations. With the capability generated via MSF, users will readily access available repositories of reusable, validated, and integrated synthetic components. Synthetic components include representations of operational battlespace entities (such as friendly and enemy assets) and representations of the natural environment that include the terrain, atmospheric and space weather effects given the proper data sets, and energy and signal propagation effects. The rapid composition is based on a durable common architecture framework, policies, and common standards. MSF capability also supports: efficient, cost-effective verification, validation, and accreditation activity across all of the M&S functional and organizational communities. | | | | | | | | | | | | |
| The Air Constructive Environment-Information Operations Suite (ACE-IOs) provides the authoritative representation of Air Force information operations. ACE-IOs is comprised of models that support training and mission rehearsal for the Air Force, Joint Task Force commanders, and COCOM battle staffs during Joint and Service exercises and experimentations. | | | | | | | | | | | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | | | | | | | | FY 2013 | FY 2014 | FY 2015 | |
| Title: Air Constructive Environment - Information Operations Suite (ACE-IOs) | | | | | | | | | 4.849 | 1.202 | 9.692 | |
| Description: ACE-IOs provides the authoritative representation of Air Force information operations. IOS is comprised of models that support training and mission rehearsal for the Air Force, Joint Task Force commanders, and COCOM battle staffs during Joint and Service exercises and experimentations. | | | | | | | | | | | | |
| FY 2013 Accomplishments: | | | | | | | | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force | | Date: March 2014 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0207601F / USAF Modeling and Simulation | Project (Number/Name) 674567 / M&S Foundations | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2013 | FY 2014 | FY 2015 |
| Provided the authoritative representation of Air Force information operations. ACE-IOS is comprised of models that support training and mission rehearsal for the Air Force, Joint Task Force commanders, and Combatant Command (COCOM) battle staffs during Joint and Service exercises and experimentations. FY 2014 Plans: Version 5.0.15.0 provides the authoritative representation of Air Force information operations. IOS is comprised of models that support training and mission rehearsal for the Air Force, Joint Task Force commanders, and COCOM battle staffs during Joint and Service exercises and experimentations. Specific accomplishments are the development of these capabilities: ACE-IOS Terrain Modeling, Process Abstract Intent and produce communication traffic/intelligence, Identification Friend or Foe/Selective Identification Feature (IFF/SIF) Mode 5 and S, New Joint Intelligence Messaging Management System (JIMMS) database application, model for Air Warfare Simulation (AWSIM) Airbase Communication Facility, and develop/replace the National Wargaming Simulation (NWARS) interface for the Joint Live Virtual Constructive (JLVC) Federation. FY 2015 Plans: Version 6.0.16.0 will continue to provide the authoritative representation of Air Force information operations at a reduced level of effort. ACE-IOS is comprised of models that support training and mission rehearsal for the Air Force, Joint Task Force commanders, and COCOM battle staffs during joint and service exercises and experimentations. Will continue to support the development of: ACE-IOS Terrain Modeling, Process Abstract Intent and produce communication traffic/intelligence, IFF/SIF Mode 5 and S, Joint Intelligence Messaging Management System (JIMMS) database application, model for Air Warfare Simulation (AWSIM) Airbase Communication Facility, and the National Wargaming Simulation (NWARS) interface for the Joint Live Virtual Constructive (JLVC) Federation. | | | | |
| Title: Air & Space Natural Environment (ASNE) Description: Provide DoD M&S community with tools to search the ASNE scenarios; measure effects on weapon systems and subsystems and distribute tailored reusable databases and products. FY 2013 Accomplishments: Continued to develop and implement ASNE capabilities that enabled a standardized integrated architecture for the Live, Virtual, and Constructive (LVC) enterprise. FY 2013 is the last year funds are being provided for ASNE. FY 2014 Plans: N/A FY 2015 Plans: N/A | | 0.400 | - | - |
| Accomplishments/Planned Programs Subtotals | | 5.249 | 1.202 | 9.692 |

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| Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force | | Date: March 2014 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0207601F / <i>USAF Modeling and Simulation</i> | Project (Number/Name) 674567 / <i>M&S Foundations</i> |
| <p><u>C. Other Program Funding Summary (\$ in Millions)</u> N/A</p> <p><u>Remarks</u></p> <p><u>D. Acquisition Strategy</u> Air Force Life Cycle Management Center (AFLCMC) at Hanscom AFB, MA manages the acquisition and incremental development process for all M&S activities. All major contracts will be awarded after full and open competition.</p> <p><u>E. Performance Metrics</u> 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.</p> | | |

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Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

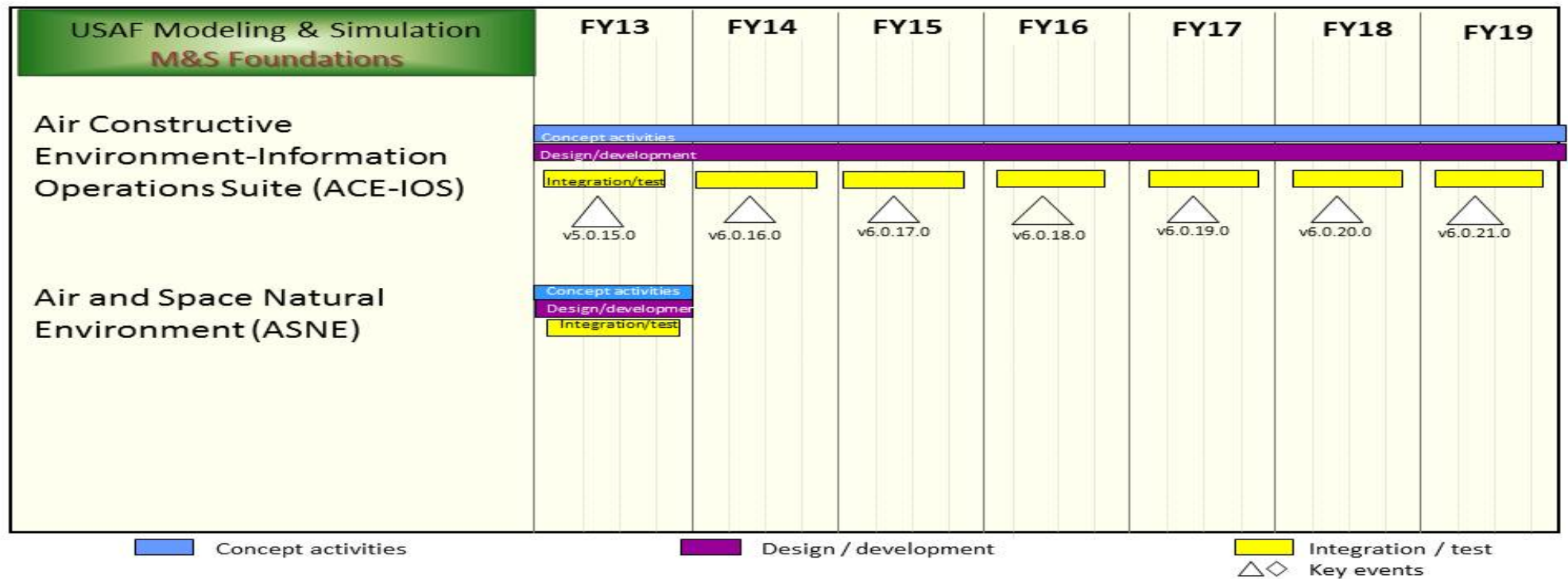
Date: March 2014

Appropriation/Budget Activity
3600 / 7

R-1 Program Element (Number/Name)
PE 0207601F / USAF Modeling and Simulation

Project (Number/Name)
674567 / M&S Foundations

PE 0207601F – USAF Modeling & Simulation M&S Foundations (674567) Schedule



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| Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force | | | | | | | | | | Date: March 2014 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0207601F / USAF Modeling and Simulation | | | | Project (Number/Name) 675135 / Warfighter Readiness | | | |
| COST (\$ in Millions) | Prior Years | FY 2013 | FY 2014 | FY 2015 Base | FY 2015 OCO # | FY 2015 Total | FY 2016 | FY 2017 | FY 2018 | FY 2019 | Cost To Complete | Total Cost |
| 675135: Warfighter Readiness | - | 8.898 | 7.532 | 7.031 | - | 7.031 | 11.408 | 11.188 | 10.329 | 10.525 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |
| # The FY 2015 OCO Request will be submitted at a later date. | | | | | | | | | | | | |
| A. Mission Description and Budget Item Justification | | | | | | | | | | | | |
| Modeling and Simulation support to our Warfighter's Readiness is a United States Air Force (USAF) corporate imperative to ensure air, space, cyberspace training, and mission rehearsal activities are supported with realistic, interoperable, and readily available, tools, data, services and environments. Warfighter readiness supports Department of Defense (DoD) Training Transformation (T2) and Joint National Training Capability (JNTC) along with the USAF priorities and core functions. Activities also include studies and analysis to support both current program planning, execution, and future program planning. | | | | | | | | | | | | |
| It includes several complimentary programs, initiatives and areas for investment: Warfighter and Joint Training Integration supports the Chief of Staff of the Air Force (CSAF) directed Live, Virtual, and Constructive (LVC) integration efforts and is a critical piece to the USAF's implementation of the Strategic Plan for Transforming DoD Training. The goal of LVC training and mission rehearsal is to prepare our warfighters for the full range of military operations and maintain the combat readiness levels required by the Combatant Commands (COCOMs). This can only be accomplished by training and rehearsing in realistic operational environments. These environments include live training ranges and virtual simulators enhanced with constructive entities. Specific training and mission rehearsal events can include some or all of these simultaneously; making the ability to integrate LVC capabilities a necessity. | | | | | | | | | | | | |
| The Air, Space, and Cyberspace Constructive Environment (ASCCE) is the USAF's authoritative federation of constructive training models and tools realistically representing the tactical and operational capabilities the USAF brings to the joint fight. It includes the Air Force Modeling and Simulation Training Toolkit (AFMSTT), which provides the authoritative representation of AF and joint theater-level air and space power and is used to train Air and Space Operations Center (AOC) personnel and Combat Commanders (COCOM) battle staffs. The primary model in the AFMSTT is the Air Warfare Simulation (AWSIM). | | | | | | | | | | | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | | | | | | | | FY 2013 | FY 2014 | FY 2015 | |
| Title: Air, Space, and Cyberspace Constructive Environment (ASCCE) | | | | | | | | | 8.898 | 7.532 | 7.031 | |
| Description: Air Force Modeling & Simulation Training Toolkit (AFMSTT)/Air Warfare Simulation (AWSIM) | | | | | | | | | | | | |
| FY 2013 Accomplishments: Version 5.4 continued to develop the Air, Space, and Cyberspace Constructive Environment (ASCCE) via the Air Force Modeling & Simulation Training Toolkit (AFMSTT)/ Air Constructive Environment-Information Operations Suite (ACE-IOS) modernization effort. | | | | | | | | | | | | |
| FY 2014 Plans: | | | | | | | | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2015 Air Force | | Date: March 2014 | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0207601F / <i>USAF Modeling and Simulation</i> | Project (Number/Name) 675135 / <i>Warfighter Readiness</i> | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2013 | FY 2014 |
| Version 6.0 continues the development of the Air, Space, and Cyberspace Constructive Environment (ASCCE) via the Air Force Modeling & Simulation Training Toolkit (AFMSTT)/ Air Constructive Environment-Information Operations Suite (ACE-IOS) modernization effort. | | | |
| FY 2015 Plans: Version 6.2 will continue the development of the Air, Space, and Cyberspace Constructive Environment (ASCCE) via the Air Force Modeling & Simulation Training Toolkit (AFMSTT)/Air constructive Environment-Information Operations Suite (ACE-IOS) modernization effort. | | | |
| Accomplishments/Planned Programs Subtotals | | 8.898 | 7.532 |
| C. Other Program Funding Summary (\$ in Millions) N/A | | | |
| Remarks | | | |
| D. Acquisition Strategy Air Force Life Cycle Management Center (AFLCMC) at Hanscom AFB, MA manages the acquisition and incremental development process for all M&S activities. All major contracts will be awarded after full and open competition. | | | |
| 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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Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force

Date: March 2014

Appropriation/Budget Activity
3600 / 7

R-1 Program Element (Number/Name)
PE 0207601F / USAF Modeling and Simulation

Project (Number/Name)
675135 / Warfighter Readiness

PE 0207601F – USAF Modeling & Simulation Warfighter Readiness (675135) Schedule

