

# UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy Date: May 2017

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development					PE 0308601N / Modeling & Simulation Support							
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	30.740	4.585	4.709	5.238	-	5.238	5.280	5.280	5.386	5.494	Continuing	Continuing
2222: Modeling & Simulation	30.740	4.585	4.709	5.238	-	5.238	5.280	5.280	5.386	5.494	Continuing	Continuing

## A. Mission Description and Budget Item Justification

This Program Element addresses projects under the Navy Modeling and Simulation (M&S) Office. It supports technical and management initiatives directed by Congress, Department of Defense (DoD), Secretary of the Navy (SECNAV), and Chief of Naval Operations (CNO) with the aim of bringing organization, focus, and efficiency to the development and use of M&S throughout the Navy and DoD. It provides a central agency for the formulation and implementation of policy and guidance in M&S, and represents Navy interests in Joint and other Agency initiatives. It funds efforts to define and coordinate the corporate Navy M&S policy and guidance to evolve an interoperable and reusable core M&S capability consistent with the M&S technical framework prescribed by DoD.

Efforts are organized around three product areas:

- (1) Core Services: This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S standards, visibility, and potential reuse across DoD.
- (2) Community Services: This activity provides M&S subject matter expert support embedded in the DON M&S Communities to recommend implementations for M&S policies, standards, VV&A, and reuse within their Community and to ensure that the wider DON and DoD are aware (visibility) of the M&S products and services, initiatives, processes, and standards.
- (3) Community Experiments and Prototypes: This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S and investigates Service-unique requirements for standards or guidance to achieve M&S efficiencies.

B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	4.757	4.709	5.238	-	5.238
Current President's Budget	4.585	4.709	5.238	-	5.238
Total Adjustments	-0.172	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.172	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

UNCLASSIFIED

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> FY 2018 Navy		<b>Date:</b> May 2017
<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0308601N / <i>Modeling &amp; Simulation Support</i>	
<b><u>Change Summary Explanation</u></b> The FY 2017 request was reduced by -\$0.270 million to account for the availability of prior year execution balances.  Technical: Not applicable.  Schedule: Not applicable.		

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support				Project (Number/Name) 2222 / Modeling & Simulation			
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
2222: Modeling & Simulation	30.740	4.585	4.709	5.238	-	5.238	5.280	5.280	5.386	5.494	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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

This Program Element addresses projects under the Navy Modeling and Simulation (M&S) Office. It supports technical and management initiatives directed by Congress, Department of Defense (DoD), Secretary of the Navy (SECNAV), and Chief of Naval Operations (CNO) with the aim of bringing organization, focus, and efficiency to the development and use of M&S throughout the Navy and DoD. It provides a central agency for the formulation and implementation of policy and guidance in M&S, and represents Navy interests in Joint and other Agency initiatives. It funds efforts to define and coordinate the corporate Navy M&S policy and guidance to evolve an interoperable and reusable core M&S capability consistent with the M&S technical framework prescribed by DoD.

Efforts are organized around three product areas:

- (1) Core Services: This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S standards, visibility, and potential reuse across DoD.
- (2) Community Services: This activity provides M&S subject matter expert support embedded in the DON M&S Communities to recommend implementations for M&S policies, standards, VV&A, and reuse within their Community and to ensure that the wider DON and DoD are aware (visibility) of the M&S products and services, initiatives, processes, and standards.
- (3) Community Experiments and Prototypes: This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S and investigates Service-unique requirements for standards or guidance to achieve M&S efficiencies.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
<b>Title:</b> CORE SERVICES	1.597	1.607	1.781	0.000	1.781
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> This activity provides essential planning and coordination of M&S efforts with other Services, the Office of Secretary of Defense (OSD), the Joint Staff, and other agencies to develop policies and procedures necessary for M&S visibility and potential reuse across DoD. It provides updates to the Navy M&S website, M&S Master Plan, and M&S Investment Strategy. This activity supports development of common services, tools, and databases to ensure the integration and connectivity of M&S products employed in Naval assessments, training, acquisition, and among operational communities. It manages and maintains the Navy M&S Information Service (NMSIS), the central Naval M&S information resource to support informed M&S investment decision making across DON. It implements and manages the Modeling and Simulation (M&S) Quality Assurance (VV&A) process and guidelines for implementing for modeling, simulation, and data. It					

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy			<b>Date:</b> May 2017		
<b>Appropriation/Budget Activity</b> 1319 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0308601N / <i>Modeling &amp; Simulation Support</i>	<b>Project (Number/Name)</b> 2222 / <i>Modeling &amp; Simulation</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>			<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b> <b>FY 2018 OCO</b> <b>FY 2018 Total</b>
<p>reviews both new and legacy M&amp;S VV&amp;A plans and reports and develops and maintains the Naval M&amp;S VV&amp;A repository. It establishes and implements a VV&amp;A training curriculum for developers and Accreditation Agents.</p> <p><b>FY 2016 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Develop a virtual environment POA&amp;M for SECNAV to cover: <ul style="list-style-type: none"> <li>* Identifying centers of excellence within the DON, across the DoD, commercial industry.</li> <li>* Develop a strategic plan for the DON on scaling up the use of virtual environments.</li> </ul> </li> <li>- Update the SECNAV Instruction on M&amp;S to enable a more integrated DON approach to M&amp;S</li> <li>- Help develop core M&amp;S workforce education , especially on contracting language, M&amp;S Support Plans, and user level M&amp;S guidance.</li> <li>- Provide VV&amp;A, Standards and M&amp;S support to programs, PEOs and other DON activities.</li> <li>- Collect and make available "best practices" and guides for digital and M&amp;S efforts.</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Document capabilities of centers of excellence in DON, DoD, and industry virtual environments and make discoverable and usable</li> <li>- Identify where, and in what conditions, virtual environments demonstrate value and to what levels of fidelity for various use cases.</li> <li>- Develop a roadmap for the DON that includes the opportunities, risks, and barriers associated with scaling up the use of virtual environments.</li> <li>- Update the Verification, Validation and Accreditation (VV&amp;A) Implementation Guide.</li> <li>- Educate the M&amp;S workforce on how to participate in the reuse of core M&amp;S knowledge and efforts.</li> <li>- Provide VV&amp;A, Standards and M&amp;S support to programs, PEOs and other DON activities.</li> <li>- Collect and make available "best practices" and guides for digital and M&amp;S efforts.</li> </ul> <p><b>FY 2018 Base Plans:</b></p> <p>Continue FY 2017 Plans</p> <ul style="list-style-type: none"> <li>- Document capabilities of centers of excellence in DON, DoD, and industry virtual environments and make discoverable and usable</li> <li>- Develop a roadmap for the DON that includes the opportunities, risks, and barriers associated with scaling up the use of virtual environments.</li> <li>- Update the Verification, Validation and Accreditation (VV&amp;A) Implementation Guide.</li> <li>- Educate the M&amp;S workforce on how to participate in the reuse of core M&amp;S knowledge and efforts.</li> <li>- Provide VV&amp;A, Standards and M&amp;S support to programs, PEOs and other DON activities.</li> </ul>					

## UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy				Date: May 2017		
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support		Project (Number/Name) 2222 / Modeling & Simulation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Collect and make available "best practices" and guides for digital and M&S efforts.						
FY 2018 OCO Plans: N/A						
Title: COMMUNITY SERVICES		2.329	2.299	2.567	0.000	2.567
Articles:		-	-	-	-	-
Description: This activity provides M&S subject matter expert support embedded in the DON M&S Communities to recommend implementations for M&S policies and standards within their Community and to ensure that the wider Navy is aware of the M&S products and services, initiatives, processes, and standards (visibility). It promotes M&S reuse through cooperative Community M&S activities which identify and prioritize M&S capability requirements between and across Communities. It also provides an M&S degree program through the Naval Postgraduate School (NPS), Modeling Virtual Environments and Simulation (MOVES) curriculum which qualifies officers to fill 6202-P coded billets. Financial support for thesis and dissertation efforts done by the students is covered by this funding. Topics are broad M&S topics of concern which are prioritized based on how they meet the requirements across, between and within the M&S Communities.						
FY 2016 Accomplishments:						
- Develop open standards and architectures for M&S Communities' use which will foster Virtual Environments and M&S Enterprise Solutions						
- Consolidate investment requirements of the M&S Communities to identify common or similar gaps and develop common solutions.						
- Develop DON Officer M&S postgraduate knowledge requirements and submit to the M&S program at Naval Postgraduate School.						
- Fund DON M&S Forum tasks to share M&S efforts, Best Practices, and lessons learned.						
FY 2017 Plans:						
- Develop open standards and architectures for M&S Communities' use which will foster Virtual Environments and M&S Enterprise Solutions						
- Consolidate investment requirements of the M&S Communities to identify common or similar gaps and develop common solutions..						
- Develop DON Officer M&S postgraduate Knowledge requirements and submit to the M&S program at Naval Postgraduate School.						

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017			
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support		Project (Number/Name) 2222 / Modeling & Simulation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
- Fund DON M&S Forum tasks to share M&S efforts, Best Practices, and lessons learned. <b>FY 2018 Base Plans:</b> Continue FY 2017 Plans - Develop open standards and architectures for M&S Communities' use which will foster Virtual Environments and M&S Enterprise Solutions - Consolidate investment requirements of the M&S Communities to identify common or similar gaps and develop common solutions.. - Develop DON Officer M&S postgraduate Knowledge requirements and submit to the M&S program at Naval Postgraduate School. - Fund DON M&S Forum tasks to share M&S efforts, Best Practices, and lessons learned. <b>FY 2018 OCO Plans:</b> N/A						
Title: COMMUNITY EXPERIMENTS and PROTOTYPES <div>Articles:</div> <b>Description:</b> This activity conducts experiments and prototypes aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy M&S, and investigate Service-unique requirements for standards or guidance. Individual efforts focus on developing or evaluating approaches to optimize training, assessments and acquisition functional, mission objectives through more efficient development and use of M&S. This activity develops methodologies and standards that will result in model and data reusability and interoperability through the formulation of a technical framework. These standards support the full range of architecture and engineering design requirements across the Navy. This activity also supports Fleet exercises and experiments through the application of distributed simulations across a wide variety of warfighting and supporting communities. Specifically, it develops and integrates appropriate M&S into Fleet Synthetic Training (FST), and develops simulation efforts to test and evolve the standards for models, interfaces, and data. It supports development of tools necessary to enable the seamless access and use of operationally relevant M&S products to support Navy training, warfare assessments and acquisition requirements. <b>FY 2016 Accomplishments:</b> - In conjunction with DoD and the other Services, develop M&S Enterprise Services for all to use and reuse.		0.659 -	0.803 -	0.890 -	0.000 -	0.890 -

**UNCLASSIFIED**

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy				Date: May 2017		
Appropriation/Budget Activity 1319 / 7		R-1 Program Element (Number/Name) PE 0308601N / Modeling & Simulation Support		Project (Number/Name) 2222 / Modeling & Simulation		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<div>- Develop a collaboration environment for use in identifying components and innovative concepts to develop the DON Virtual Environment.</div> <div>- Collaborate on common development environment and maintain successes and lessons learned so follow-on efforts and users may benefit from them.</div> <div>- Assist labs in obtaining the necessary connectivity to participate in the shared digital environments.</div> <div>- Integrate model based System Engineering digital tools and processes.</div> <div>FY 2017 Plans:</div> <div>- In conjunction with DoD and the other Services, develop M&amp;S Enterprise Services for all to use and reuse.</div> <div>- Develop a guide on recommended contract language for M&amp;S efforts to ensure appropriate simulation and data government rights and that the industry deliverables will plug into the government framework.</div> <div>- Develop and test M&amp;S Enterprise solutions for the users and developers of M&amp;S in and for the DON.</div> <div>- Improve collaboration environment for use in identifying components and innovative concepts to develop the DON. Virtual Environment and evolve it to meet projected program and M&amp;S users' requirements.</div> <div>- Assist labs in obtaining the necessary connectivity to be participate in the shared digital environments.</div> <div>- Continue Integration of model based System Engineering digital tools and processes.</div> <div>FY 2018 Base Plans:</div> <div>Continue FY 2017 Plans</div> <div>- In conjunction with DoD and the other Services, develop M&amp;S Enterprise Services for all to use and reuse.</div> <div>- Develop a guide on recommended contract language for M&amp;S efforts to ensure appropriate simulation and data government rights and that the industry deliverables will plug into the government framework.</div> <div>- Develop and test M&amp;S Enterprise solutions for the users and developers of M&amp;S in and for the DON.</div> <div>- Improve collaboration environment for use in identifying components and innovative concepts to develop the DON. Virtual Environment and evolve it to meet projected program and M&amp;S users' requirements.</div> <div>- Collaborate on Common Development Environment and maintain successes and lessons learned so follow-on efforts and users may benefit from them.</div> <div>- Assist labs in obtaining the necessary connectivity to be participate in the shared digital environments.</div> <div>- Continue Integration of model based System Engineering digital tools and processes.</div> <div>FY 2018 OCO Plans:</div> <div>N/A</div>						
Accomplishments/Planned Programs Subtotals		4.585	4.709	5.238	0.000	5.238

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy		<b>Date:</b> May 2017
<b>Appropriation/Budget Activity</b> 1319 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0308601N / <i>Modeling &amp; Simulation Support</i>	<b>Project (Number/Name)</b> 2222 / <i>Modeling &amp; Simulation</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>Remarks</b>		
<b>D. Acquisition Strategy</b> This is a non-ACAT program. The focus of the Navy Modeling and Simulation (M&S) Office is to facilitate and enable the efficient use of M&S by minimizing duplication of M&S efforts and maximize the reuse of M&S and data.		
<b>E. Performance Metrics</b> This program supports efforts to define, develop, and utilize M&S technologies, standards and techniques in DON and joint programs across a wide range of disciplines and technical arenas. As such, performance metrics are specific to individual projects initiated under this program element. Representative examples of performance criteria for M&S support include the following: VV&A of deployed M&S systems to support Fleet and Force missions and assessments; degree of composability and adaptability of system architectures employed M&S systems; ability of M&S systems to replicate and permit recreation of force or system interactions that otherwise would be performed by more labor-intensive or expensive personnel, forces, or elements; degree to which M&S frameworks would permit rapid integration and employment of analytic capabilities for the analysis and documentation of warfighter missions, weapons systems or Tactics, Techniques and Procedures (TT&P); and ability of a specific M&S technology or technique to meet the requirements specified in an individual project supported by this program.		