

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: <b>FEBRUARY 2008</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY / BA-7</b>				R-1 ITEM NOMENCLATURE 0308601N/MODELING AND SIMULATION SUPPORT			
COST (\$ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	7.287	7.665	8.007	8.144	8.336	8.503	8.672
2222/Modeling and Simulation	7.287	7.665	8.007	8.144	8.336	8.503	8.672

**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 and focus 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 four product areas: (1) Engineering Studies and Analysis: identifies and measures the relevance of existing and emerging standards, technologies and services necessary to guide Navy M&S use; (2) Products and Services: promotes the policy, standards and technologies necessary to guide more efficient development and use of M&S across the Navy, including development and management of the Navy Modeling and Simulation Information Service (NMSIS); (3) M&S Quality Assurance Program: establishes and manages a disciplined process of model Verification, Validation and Accreditation (VV&A); and (4) Simulation Experiments: supports M&S use in Navy exercises and experiments across a wide variety of warfighting and supporting communities. Specifically, Simulation Experiments integrate appropriate models and simulations into Fleet exercises to test, validate and evaluate for possible transition to operationally relevant M&S products in support of Navy operations, training, acquisition, analysis and assessment.

**B. PROGRAM CHANGE SUMMARY:**

Funding:	FY 2007	FY 2008	FY 2009
FY 08 DON Budget	7.475	7.832	8.007
FY08/09 OSD Budget	7.287	7.832	8.007
FY09 OSD Budget		7.665	8.007
Total Adjustments	0.188	0.167	0.000
Summary of Adjustments			
Congressional Undistributed Reductions Contrator Efficiency		-0.013	
Congressional Undistributed Reductions Revised Economic		-0.037	
Miscellaneous Adjustments	0.188	-0.117	
	0.188	-0.167	0.000

Subtotal

**PROGRAM CHANGE EXPLANATION:**

Technical: Not applicable

Schedule: Not applicable

**C. OTHER PROGRAM FUNDING SUMMARY:**

Not applicable

**D. ACQUISITION STRATEGY:**

Not applicable

**E. PERFORMAMCE METRICS:**

\_\_\_\_\_

This program supports ongoing 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 in 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE: <b>FEBRUARY 2008</b>				
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>		PROGRAM ELEMENT NUMBER AND NAME 0308601N Modeling and Simulation Support		PROJECT NUMBER AND NAME 2222/MODELING AND SIMULATION				
COST (\$ in Millions)		FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
2222/Modeling and Simulation		7.287	7.665	8.007	8.144	8.336	8.503	8.672
RDT&E Articles Qty								

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

This project addresses critical coordination of Navy M&S efforts, integrates individual programs into a coherent whole, promotes reuse of resources, and aligns Navy efforts with Joint programs. It develops and maintains a comprehensive repository of models, simulations and authoritative data to support broad-based Navy requirements. It promotes reusability through the Quality Assurance process for models, simulations and data, and enhances interoperability by coordinating and reviewing Navy's transition to DoD-mandated standards for distributed simulations. The project participates in Fleet exercise experiments, distributed simulations and demonstrations such as Limited Objective Experiments (LOE), Virtual at Sea Training (VAST), and Virtual Missile Range (VMR).

**B. ACCOMPLISHMENTS/PLANNED PROGRAM:**

	FY 2007	FY 2008	FY 2009
<b>ENGINEERING STUDIES AND ANALYSIS</b>	3.222	3.718	3.814

This activity conducts engineering studies and analyses 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 will support the full range of architecture and engineering design and analysis requirements across the Navy. This activity also provides an M&S degree program through the Naval Postgraduate School, Modeling Virtual Environments and Simulation (MOVES) curriculum.

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>FEBRUARY 2008</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME 0308601N MODELING AND SIMULATION SUPPORT	PROJECT NUMBER AND NAME 2222/MODELING AND SIMULATION
<p>For FY07, the Navy Modeling and Simulation Office (OPNAV N70M1) reallocated funds between the four functional areas (Engineering Studies and Analyses; Products and Services; M&amp;S Quality Assurance; and Simulation Experiments) to more closely reflect current priorities for modeling and simulation support to the Fleet/Force. The increase in overall FY07 budget, and the earlier reallocation of funds among the functional areas account for the change in this functional area.</p> <p><b>FY 2007 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• Continued to segment the Embedded Simulation Infrastructure and two Mission Applications and continued to prepare and demonstrate documentation for test and release in Global Command and Control System (GCCS) and Global Command and Control System/Maritime (GCCS/M).</li> <li>• Continued to develop a set of models, architectures, and standards for communications M&amp;S.</li> <li>• Continued to work with the MOVES Institute and the MOVES degree program to provide military relevant thesis topics for research.</li> <li>• Continued M&amp;S support to Fleet Forces Command (FFC) for the CNO-directed Task Force Sim.</li> <li>• Continued M&amp;S utilization in Campaign/Mission assessments to support OPNAV N70 analysis of warfighting requirements.</li> </ul> <p><b>FY 2008 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue all efforts of FY07.</li> </ul> <p><b>FY 2009 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue all efforts of FY08.</li> </ul>		
R-1 Line Item No. 204		

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>FEBRUARY 2008</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME 0308601N MODELING AND SIMULATION SUPPORT	PROJECT NUMBER AND NAME 2222/MODELING AND SIMULATION

**B. ACCOMPLISHMENTS/PLANNED PROGRAM:**

	FY 07	FY 08	FY 09
<b>PRDDUCT AND SERVICES</b>	1.500	1.544	1.682

This activity supports development of common services, tools, databases and standards to ensure the integration and connectivity of M&S products employed in Naval assessments, in training and acquisition, and among operational communities. It manages and maintains the Navy M&S Information System (NMSIS), as a central M&S information resource to support informed M&S investment decision making across Navy. It 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 standardization within the Navy. It provides annual updates to the Naval M&S Catalog, Master Plan, and Investment Strategy.

For FY07, the Navy Modeling and Simulation Office (OPNAV N70M1) reallocated R2222 funds between the four functional areas (Engineering Studies and Analyses; Products and Services; M&S Quality Assurance; and Simulation Experiments) to more closely reflect current priorities for M&S support to the Fleet/Force. The increase in overall FY07 budget, and the earlier reallocation of funds among the functional areas account for the change in this functional area.

**FY 2007 Accomplishments:**

- Continued to promote and enhance state-of-practice and technology within the Navy M&S community.
- Continued the development, servicing and use of NMSIS as directed under applicable DoD DIR, SECNAVINST, and OPNAVINST.
- Continued to organize and facilitate quarterly Navy M&S Technical Interchange Meetings to bring together the Navy M&S community for a direct interchange of M&S requirements, technology, standards and experience.
- Continued to foster and develop the Navy M&S Standards Process that draws M&S experts from the acquisition, training and operational communities, and from industry.
- Continued development of a Navy Enterprise M&S Support Plan.

**FY 2008 Plans:**

- Continue all efforts of FY07

**FY 2009 Plans:**

- Continue all efforts of FY08.

R-1 Line Item No. 204

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>FEBRUARY 2008</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME 0308601N MODELING AND SIMULATION SUPPORT	PROJECT NUMBER AND NAME 2222/MODELING AND SIMULATION	
<b>B. ACCOMPLISHMENTS/PLANNED PROGRAM:</b>			
	FY 07	FY 08	FY 09
<b>M&amp;S QUALITY ASSURANCE PROGRAM</b>	0.520	0.529	0.541
<p>This activity implements and manages the Modeling and Simulation (M&amp;S) Quality Assurance development of the VV&amp;A process and guidelines for modeling, simulation, and data. It 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 accreditors, and provides an annual VV&amp;A assessment to CNO.</p> <p>For FY07, the Navy Modeling and Simulation Office (OPNAV N70M1) reallocated funds between the four functional areas (Engineering Studies and Analyses; Products and Services; M&amp;S Quality Assurance; and Simulation Experiments) to more closely reflect current priorities for modeling and simulation support to the Fleet/Force. The increase in overall FY07 budget, and the earlier reallocation of funds among the functional areas account for the change in this functional area.</p> <p><b>FY 2007 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>• Continued to develop and update case studies within the VV&amp;A Handbook.</li> <li>• Continued to incorporate information developed for training/education into the VV&amp;A Handbook.</li> <li>• Continued to coordinate with the NMSIS effort to update and Beta test new VV&amp;A data entry fields as required.</li> </ul> <p><b>FY 2008 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue all efforts of FY07.</li> </ul> <p><b>FY 2009 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue all efforts of FY08.</li> </ul>			
R-1 Line Item No. 204			

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>FEBRUARY 2008</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME 0308601N MODELING AND SIMULATION SUPPORT	PROJECT NUMBER AND NAME 2222/MODELING AND SIMULATION	
<b>B. ACCOMPLISHMENTS/PLANNED PROGRAM:</b>			
	FY 07	FY 08	FY 09
<b>SIMULATION EXPERIMENTS</b>	2.045	1.874	1.970

This activity 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.

For FY07, the Navy M&S Office (OPNAV N70M1) reallocated funds between the four functional areas (Engineering Studies and Analyses; Products and Services; M&S Quality Assurance; and Simulation Experiments) to more closely reflect current priorities for modeling and simulation support to the Fleet/Force. The increase in overall FY07 budget, and the earlier reallocation of funds among the functional areas account for the change in this functional area.

**FY 2007 Accomplishments:**

- Continued to define Fleet training initiatives and M&S enhancements.
- Continued to support the Olympic Challenge series of Joint experimentations using a synergetic M&S approach.
- Continued development of the Virtual at Sea Training (VAST) concept to provide the capability to conduct training in a virtual environment that would otherwise require a land-based training range or be cost or schedule prohibitive.
- Continued to document elements of the maritime virtual environment and models that can be used effectively to enable reuse in naval simulations and to establish best practices where standards are not yet feasible.
- Continued the upgrade of Virtual Missile Range (VMR) virtual threat capabilities.

**FY 2008 Plans:**

- Continue all efforts of FY07.

**FY 2009 Plans:**

- Continue all efforts of FY08.

R-1 Line Item No. 204

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>FEBRUARY 2008</b>												
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-7</b>	PROGRAM ELEMENT NUMBER AND NAME 0308601N MODELING AND SIMULATION SUPPORT	PROJECT NUMBER AND NAME 2222/MODELING AND SIMULATION												
<p><b>C. OTHER PROGRAM FUNDING SUMMARY:</b></p> <p><b>NAVY RELATED RDT&amp;E:</b> PE 0603235N (Common Picture Advanced Technology)</p> <p><b>NON-NAVY RELATED RDT&amp;E:</b> Not applicable.</p> <p><b>D. ACQUISITION STRATEGY:</b> Not applicable.</p> <p><b>E. MAJOR PERFORMERS:</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Recipients</th> <th style="text-align: left;">City/State</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td>SPAWARSSYSCEN CHASN</td> <td>Charleston, SC</td> <td>Integrated Direct Support to Navy Modeling and Simulation Office</td> </tr> <tr> <td>SPAWARSSYSCEN SAN DIEGO</td> <td>San Diego, CA</td> <td>Standards Maintenance and VV&amp;A of Navy M&amp;S Projects</td> </tr> <tr> <td>NPS MOVES Institute</td> <td>Monterey, CA</td> <td>M&amp;S Research and Functional Namespace Management</td> </tr> </tbody> </table>			Recipients	City/State	Description	SPAWARSSYSCEN CHASN	Charleston, SC	Integrated Direct Support to Navy Modeling and Simulation Office	SPAWARSSYSCEN SAN DIEGO	San Diego, CA	Standards Maintenance and VV&A of Navy M&S Projects	NPS MOVES Institute	Monterey, CA	M&S Research and Functional Namespace Management
Recipients	City/State	Description												
SPAWARSSYSCEN CHASN	Charleston, SC	Integrated Direct Support to Navy Modeling and Simulation Office												
SPAWARSSYSCEN SAN DIEGO	San Diego, CA	Standards Maintenance and VV&A of Navy M&S Projects												
NPS MOVES Institute	Monterey, CA	M&S Research and Functional Namespace Management												
R-1 Line Item No. 204														