

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0308601N
PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 2000 ACTUAL	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	FY 2006 ESTIMATE	FY 2007 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R2222 Naval Modeling and Simulation	10,920	13,976	7,828						CONT.	CONT.
TOTAL	10,920	13,976	7,828						CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Funds the efforts of Navy Modeling and Simulation (M&S) Management Office and the Department of the Navy Technical Support Group (TSG). Supports technical and management initiatives directed by Congress, Department of Defense (DoD) and Secretary of Navy (SECNAV) with the aim of bringing organization and focus to the development and use of M&S tools throughout Navy and DoD. It provides a central agency for the formulation and implementation of policy and guidance in M&S; represents Navy interests in Joint/other Agency. Funds efforts to define and coordinate execution of a Navy M&S program 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, to define the feasibility and applicability of proposed standards to Navy and to investigate service unique requirements for standards or guidance; (2) Products and Services, to develop the policy, standards, and common tools and services necessary to guide more efficient development and use of M&S across Navy; this includes development and management of the Navy Modeling and Simulation Information System (NMSIS), Navy counterpart to the DOD M&S Resource Repository, to provide a central M&S information resource to reduce stove-piped development, promote tool reuse and support informed M&S investment decisions; (3) M&S Quality Assurance Program, to establish and manage a disciplined process of model verification, validation and accreditation (VV&A) required by current directives; (4) Simulation Experiments, to test distributive simulation technology in fleet exercises, experiments, and pilot efforts which demonstrate and examine the value and limitations of proposed standards (such as High Level Architecture (HLA) and Simulation Based Acquisition (SBA) to mission and program requirements.

R-1 Line Item 214

Budget Item Justification
(Exhibit R-2, page 1 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7 PROGRAM ELEMENT: 0308601N
PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

(U) PROGRAM CHANGE FOR TOTAL PE:

	FY 2000	FY 2001	FY 2002
FY 2001 President's Budget	12,054	9,106	8,418
Adjustments from FY 2001 President's Budget			
Execution Adjustment	-911		
Congressional Recissions	-47	-130	
SBIR Adjustment	-176		
Program Adjustment			-609
NWCF Adjustment			+9
Non Pay Inflation Adjustment			+10
Congressional Plus-up		+5,000	
FY 2002 Presbudg Submission	10,920	13,976	7,828

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

R-1 Line Item 214

Budget Item Justification
(Exhibit R-2, page 2 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7	PROGRAM ELEMENT: 0308601N	PROJECT NUMBER: R2222
	PROGRAM ELEMENT TITLE: Naval Modeling and Simulation	PROJECT TITLE: Naval Modeling and Simulation

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY 2000 ACCOMPLISHMENTS:

- (U) (\$ 3,502) Engineering Studies and Analysis: Continued to develop and implement the Navy strategy for the transition of Navy M&S to the Office of the Secretary of Defense (OSD)-mandated M&S interoperability standard, High Level Architecture (HLA). Led Navy HLA implementation planning, reported Navy compliance to DoD, and participated in the DoD HLA transition working group. Briefed Navy flags, intra and inter service forums on the issues and technical implications of Navy M&S compliance with HLA. Performed a set of study tasks that focused on the assessment of the adequacy of the Run Time Infrastructure (RTI) of the HLA. Assessments included application areas linking disparate and pre-existing federations such as aggregated/disaggregated federation and a real time federation linked to a faster than real time federation. Continued to develop attributes for designing modeling standards of communication networks and information systems. This was done in collaboration with the Joint Staff (J6) Network Warfare Simulation (NETWARS) standards working group. Performed analysis of current operational communications infrastructure and derived a method to extract, process and archive information to support operational analysis capabilities through modeling and simulation. Initiated studies to identify building blocks functions required within Defense Information Infrastructure (DII) Common Operating Environment (COE) based Command, Control, Communication, Computers and Intelligence (C4I) systems to support simulation development. This will provide the capability to link Global Command and Control System (GCCS) operational functions with simulations. Continued to develop and implement a roadmap for migrating existing standalone training modeling capability into a more integrated, interoperable core suite of capability tailored to the Navy training requirements. Initiated and established a Modeling and Simulation degree program at the Naval Postgraduate School, Modeling, Virtual Environments and Simulation Program at the Naval Postgraduate School (MOVES) curriculum.
- (U) (\$ 3,547) Products and Services: Developed and provided an initial operational implementation of the web-based Navy Modeling and Simulation Information System (NMSIS), the Naval component of the DoD M&S resource repository (part of the DoD M&S Framework). Updated and provided user assistance and support on the Naval M&S Catalog. Supported planning and technical coordination of efforts across Navy M&S Functional Areas, other Services, OSD, Joint Staff, and other agencies to develop policies and procedures for M&S standardization. Coordinated and chaired Navy's M&S Working Group and Navy Flag M&S Steering Group; participated in the Defense M&S Office's M&S working group and the DoD M&S Executive Council,

R-1 Line Item 214

Budget Item Justification
(Exhibit R-2, page 3 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7	PROGRAM ELEMENT: 0308601N	PROJECT NUMBER: R2222
	PROGRAM ELEMENT TITLE: Naval Modeling and Simulation	PROJECT TITLE: Naval Modeling and Simulation

including separate forums for training, assessments & acquisition; and coordination of technical reviews of joint programs and initiatives Joint Simulation System (JSIMS), Joint Warfare Simulation System (JWARS), Joint Modeling and Simulation System (JMASS),and Network Warfare Simulation (NETWARS). Participated in select Office of the Secretary of Defense (OSD) and industry sponsored symposia. Initiated a Navy M&S Standards Steering Group and a series of Technical Interchange Meetings for the M&S community.

- (U) (\$800) M&S Quality Assurance Program: Continued to implement and manage the M&S Quality Assurance development of the Verification, Validation, and Accreditation (VV&A) process and guidelines for modeling, simulation, and data. Provided technical review on M&S VV&A plans and reports and provided subject matter expertise and advice on how to meet Navy policy requirements within existing fiscal and programmatic constraints. Develop and implemented an initial version of a web-based VV&A Handbook aimed at supporting program managers across the Navy. Establish and implement a VV&A training curriculum for developers and accreditors. Provide annual VV&A assessment to the Chief of Naval Operations (CNO).
- (U) (\$3,071) Simulation Experiments: Provided Navy share of Services' contribution to maintenance of the simulation protocol needed to use Joint Training Confederation simulations in Joint Task Force Exercises. Ensured simulation of Naval forces and supported Navy participation in Joint exercises; supported Ulchi Focus Lens, Synthetic Theater of War, and United Endeavor. Identified initial suite of existing M&S tools to offer near term relevance and application to the goals of the Maritime Battle Center (MBC) and the ongoing evaluation of systems and technologies in reoccurring Fleet Battle Experiments (FBE). Continued development of a Virtual Missile Range to support Fleet training needs. Continued development of the Maritime Virtual Environmental Data Specification (MARVEDS) to provide standards that represent the natural environment. This type of standard for simulation environments is critical to enabling Simulation Based Acquisition (SBA). Participated in OSD effort to develop a definition, functional description, and implementation plan for simulation-based acquisition. Provided core support in the development of a PRA (Probability of Raid Annihilation) Federation for use in surface ship combat system test and evaluation.
-
- (U) FY 2001 PLAN:
- (U) (\$5,280) Engineering Studies and Analysis: Conduct engineering studies and analysis aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy and at investigating service unique requirements for standards or guidance. Individual study thrusts will focus on developing or evaluating

R-1 Line Item 214

Budget Item Justification
(Exhibit R-2, page 4 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7	PROGRAM ELEMENT: 0308601N	PROJECT NUMBER: R2222
	PROGRAM ELEMENT TITLE: Naval Modeling and Simulation	PROJECT TITLE: Naval Modeling and Simulation

approaches to optimize training, assessments and acquisition functional/mission objectives through more efficient development and use of M&S. Develop 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 Navy. Provide a M&S degree program through the Naval Postgraduate School, MOVES curriculum.

- (U) (\$2,542) Products and Services: Continue development of common services, tools, and data bases. Develop and enhance the NMSIS, through an evolutionary process, integrating standards, standard models, standard data and connectivity to support all Naval assessments, training, acquisition and operational communities. Manage and maintain the NMSIS, as a central M&S information resource to reduce stove-piped development, promote standardization and reuse and support informed M&S investment decision making across Navy. Provide the necessary planning and coordination of M&S efforts across the Navy M&S Functional Areas, other Services, OSD, Joint Staff, and other agencies to develop policies and procedures necessary for M&S standardization within the Navy. Provide annual updates to the Naval M&S Catalog, Master Plan, and Investment Strategy.
- (U) (\$790) M&S Quality Assurance Program: Continue to implement and manage the M&S Quality Assurance development of the VV&A process and guidelines for modeling, simulation, and data. Continue to review both new and legacy M&S VV&A plans and reports. Develop and maintain the Naval M&S VV&A repository. Establish and implement a VV&A training curriculum for developers and accreditors. Provide annual VV&A assessment to the CNO.
- (U) (\$5,364) Simulation Experiments: Support Fleet exercises and experiments through the application of distributed simulation to a wide variety of operational, research and development, training, test and evaluation exercises. Develop and integrate appropriate models and simulations into the FBE. Develop a series of simulation projects to test and evolve the standards for models, interfaces, data, and tools necessary to enable the seamless access and use of operationally relevant M&S to support the range of Navy training, warfare assessments and acquisition requirements.

(U) FY 2002 PLAN:

R-1 Line Item 214

Budget Item Justification
(Exhibit R-2, page 5 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0308601N

PROJECT NUMBER: R2222

PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

PROJECT TITLE: Naval Modeling
and Simulation

- (U) (\$1,313) Engineering Studies and Analysis: Conduct engineering studies and analysis aimed at determining the feasibility and applicability of proposed standards or technical approaches to Navy and at investigating service unique requirements for standards or guidance. Individual study thrusts will focus on developing or evaluating approaches to optimize training, assessments and acquisition functional/mission objectives through more efficient development and use of M&S. Develop 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 Navy. Provide a M&S degree program through the Naval Postgraduate School, MOVES curriculum.
- (U) (\$2,680) Products and Services: Continue development of common services, tools, and data bases. Develop and enhance the NMSIS, through an evolutionary process, integrating standards, standard models, standard data and connectivity to support all Naval assessments, training, acquisition and operational communities. Manage and maintain the NMSIS, as a central M&S information resource to reduce stove-piped development, promote standardization and reuse and support informed M&S investment decision making across Navy. Provide the necessary planning and coordination of M&S efforts across the Navy M&S Functional Areas, other Services, OSD, Joint Staff, and other agencies to develop policies and procedures necessary for M&S standardization within the Navy. Provide annual updates to the Naval M&S Catalog, Master Plan, and Investment Strategy.
- (U) (\$790) M&S Quality Assurance Program: Continue to implement and manage the M&S Quality Assurance development of the VV&A process and guidelines for modeling, simulation, and data. Continue to review both new and legacy M&S VV&A plans and reports. Develop and maintain the Naval M&S VV&A repository. Establish and implement a VV&A training curriculum for developers and accreditors. Provide annual VV&A assessment to the CNO.
- (U) (\$3,045) Simulation Experiments: Support Fleet exercises and experiments through the application of distributed simulation to a wide variety of operational, research and development, training, test and evaluation exercises. Develop and integrate appropriate models and simulations into the FBE. Develop a series of simulation projects to test and evolve the standards for models, interfaces, data, and tools necessary to enable the seamless access and use of operationally relevant M&S to support the range of Navy training, warfare assessments and acquisition requirements.

B. (U) PROGRAM CHANGE SUMMARY: See total program change summary for PE.

R-1 Line Item 214

Budget Item Justification
(Exhibit R-2, page 6 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0308601N

PROJECT NUMBER: R2222

PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

PROJECT TITLE: Naval Modeling
and Simulation

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

R-1 Line Item 214

Budget Item Justification
(Exhibit R-2, page 7 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0308601N

PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

PROJECT NUMBER: R2222

PROJECT TITLE: Naval Modeling
and Simulation

*Exhibit R-3 Cost Analysis (page 1)									DATE: September 2000			
APPROPRIATION/BUDGET ACTIVITY: 7				PROGRAM ELEMENT: 0308601N					PROJECT NAME AND NUMBER: Modeling & Simulation R2222			
Cost Categories	Contract Method & Type	Performin g Activity & Location	Total PYs Cost	FY-00 Cost	FY-00 Award Date	FY-01 Cost	FY-01 Award Date	FY-02 Cost	FY-02 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Navy M&S Info Sys Development	Various	Various	1768	1774	VAR	1271	TBD	1340	TBD	Cont.	Cont.	Cont.
Quality Assurance	Various	Various	1235	800	VAR	790	TBD	790	TBD	Cont.	Cont.	Cont.
Subtotal Product Development			3003	2574		2061		2130		Cont.	Cont.	Cont.
Remarks:												

R-1 Line Item 214

Budget Item Justification
(Exhibit R-3, page 8 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0308601N

PROJECT NUMBER: R2222

PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

PROJECT TITLE: Naval Modeling
and Simulation

M&S Services	Various	Various	1873	1773	TBD	1271	TBD	1340	TBD	Cont.	Cont.	Cont.
Subtotal Support			1873	1773		1271		1340	TBD	Cont.	Cont.	Cont.
Remarks												

R-1 Line Item 214

Budget Item Justification
(Exhibit R-3, page 9 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0308601N

PROJECT NUMBER: R2222

PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

PROJECT TITLE: Naval Modeling
and Simulation

Exhibit R-3 Cost Analysis (page 2)									Date: SEPTEMBER 2000			
APPROPRIATION/BUDGET ACTIVITY: 7			PROGRAM ELEMENT: 0308601N						PROJECT NAME AND NUMBER: Modeling & Simulation, R2222			
Cost Categories	Contract Method & Type	Performin g Activity & Location	Total PYs Cost	FY00 Cost	FY-00 Award Date	FY-01 Cost	FY-01 Award Date	FY-02 Cost	FY-02 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Simulation Experiments	Various	Various	2683	3071	TBD	5364	TBD	3045	TBD	Cont.	Cont.	Cont.
Subtotal T&E			2683	3071		5364		3045		Cont.	Cont.	Cont.
Remarks												

R-1 Line Item 214

Budget Item Justification
(Exhibit R-3, page 10 of 11)

UNCLASSIFIED

UNCLASSIFIED

FY 2002 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: June 2001

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0308601N

PROJECT NUMBER: R2222

PROGRAM ELEMENT TITLE: Naval Modeling and Simulation

PROJECT TITLE: Naval Modeling
and Simulation

Engineering Studies/Analyses	Various	Various	3408	3502	TBD	5280	TBD	1313	TBD	Cont.	Cont.	Cont.
Program Management										Cont.	Cont.	Cont.
Subtotal Management			3408	3502		5280		1313		Cont.	Cont.	Cont.
Remarks:												
Total Cost			10,967	10920		13976		7828		Cont.	Cont.	Cont.

R-1 Line Item 214

Budget Item Justification
(Exhibit R-3, page 11 of 11)

UNCLASSIFIED