

UNCLASSIFIED
FY 2000 PRESIDENTS BUDGET
R-2A RDT&EN BUDGET ITEM JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0308601N

PROGRAM ELEMENT TITLE: Modeling and Simulation Program

(U) COST (Dollars in thousands)

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
X2222 Naval Modeling & Simulation	4,212	0*	9621	9677	8922	9195	11,663	12,294	Cont	Cont

* Note: In 1999, the program was funded and executed in P.E. 0605853N

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, DoD and 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 4 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 M&S Information System (NMSIS), Navy counterpart to the DOD M&S Resource Repository, to provide a central M&S information resource to reduce stovepiped 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 HLA and JMASS) to mission and program requirements.

Note: In FY 2000 a Technical Change moves the Naval Modeling and Simulation X2222 Project from Program Element 0605853N to Program Element 0308601N in order to more accurately describe the Naval Modeling and Simulation Project.

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(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$ 762) Engineering Studies and Analysis: Developed Navy strategy for the transition of Navy M&S to the OSD-mandated M&S interoperability standard, High Level Architecture (HLA). Led Navy HLA implementation planning, reported Navy compliance intentions 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. Completed Phase I of Maritime Virtual Environmental Data Specification (MARVEDS), initial analysis and feasibility of approach to developing an information model, data format, data dictionary, algorithms, techniques, and database management system that can define and mediate the environmental data required to enable a virtual prototype. This type of standard for simulation environments is critical to enabling Simulation Based Acquisition (SBA). Developed a roadmap for migrating existing standalone logistics modeling capability into a more integrated, interoperable core suite of capability to support both operational logistics and long term logistics wargaming and assessment. Logistic study was directly applicable to the development of the M&S Investment Plan.
- (U) (\$2,271) Products and Services: Developed an initial prototype 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; added HLA compliance information for Navy systems. 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, including separate forums for training, assessments & acquisition; and coordination of technical reviews of joint programs and initiatives (JSIMS, JWARS, JMASS and NETWARS). Developed draft of DoD and SECNAV-required Navy M&S Investment Plan and developed and coordinated draft/final review and approval of SECNAV Instruction for Navy M&S VV&A. Provided M&S education and information services to the full spectrum of M&S developers and users via production and dissemination of a Navy M&S information video; home page maintenance and distribution of informational brochures; established Navy Postgraduate School curriculum on M&S development and application; and participation in select OSD and industry sponsored symposia. Initiated effort to define a common technical framework to support consistent evaluation and measurement of C4I return on investment and provided Navy requirements in the Joint development of a Network Warfare Simulation (NETWARS), a key element in the establishment of a common technical framework for consistent C4I analysis across DoD.

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Exhibit R-2, RDT&E Budget Item Justification
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- (U) (\$ 555) M&S Quality Assurance Program: Developed Navy process and guidelines for Verification, Validation, and Accreditation (VV&A) of M&S and a process of Verification, Validation, and Certification (VV&C) for 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. Developed the Naval M&S VV&A/VV&C repository. Developed and implemented a prototype web-based distributed interactive VV&A/VV&C training capability for M&S developers and accreditors.
 - (U) (\$ 624) 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 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). Participated in OSD effort to develop a definition, functional description, and implementation plan for simulation-based acquisition.
- (U) PROGRAM ACCOMPLISHMENTS AND PLANS:
2. (U) FY 1999 Plan: Program was funded and executed in PE0605853N
 3. (U) FY 2000 PLAN:
 - (U) (\$1,713) 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 standards for modeling communication networks and information systems with the overarching objective of facilitating the development of a core, reusable, communications M&S capability which supports the full range of architecture and engineering design and analysis requirements across Navy. Support the Naval Postgraduate School Modeling and Simulation degree program, Modeling, Virtual Environments and Simulation (MOVES) curriculum.
 - (U) (\$3,698) Products and Services: Continue development of common services, tools, and data bases. Develop the Navy Modeling and Simulation Information System (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 Navy Modeling and Simulation Information System (NMSIS), as a central M&S information resource to reduce stovepiped development, promote standardization and reuse and

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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 Verification, Validation, and Accreditation (VV&A) process and guidelines for modeling and simulation and the Verification, Validation, and Certification (VV&C) process and guidelines for data. Continue implementation of the VV&A/VV&C process and review on both new and legacy M&S plans and reports. Develop and maintain the Naval M&S VV&A/VV&C repository. Establish and implement a VV&A/VV&C training curriculum for developers and accreditors. Provide annual VV&A/VV&C assessment to the CNO.
- (U) (\$3,420) Simulation Experiments: Support Fleet Exercise simulation experiments and the application of distributed simulation to a wide variety of operational, research and development, training, test and evaluation exercises. 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: In FY 2000, Funds were decreased -\$105K for Budget Submitting Office realignment, -139K for Non Pay Inflation, and -7K for Working Capital-NAWC. It was increased +50K for NCWF rate adjustments and +22K for Civilian Pay Rates.

(U) OTHER PROGRAM FUNDING SUMMARY:

	FY1998	FY1999	FY2000
O&M,N PE0204662N/1C1C (Partial)			
(SEE PE 0605853N)			877

(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: Not applicable.

Exhibit R-3 Cost Analysis (page 1)									Date FEBRUARY 1999			
APPROPRIATION/BUDGET ACTIVITY: 7				PROGRAM ELEMENT: 0308601N					PROJECT NAME AND NUMBER: Modeling & Simulation, X2222			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-99 Cost	FY-99 Award Date	FY-00 Cost	FY-00 Award Date	FY-01 Cost	FY-01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Navy M&S Info Syst Developmt	Various	Various	-	-	-	1825	TBD		TBD	Cont.	Cont.	Cont.
Quality Assurance	Various	Various	555	-	-	790	TBD		TBD	Cont.	Cont.	Cont.
Subtotal Product Development			555			2615				Cont.	Cont.	Cont.
Remarks:												
M&S Services	Various	Various	2373	-	-	1873	TBD		TBD	Cont.	Cont.	Cont.
Subtotal Support			2373			1873				Cont.	Cont.	Cont.
Remarks:												

Exhibit R-3, Project Cost Analysis

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Exhibit R-2, RDT&E Budget Item Justification
(Exhibit R-2, page 5 of 6)

Exhibit R-3 Cost Analysis (page 2)									Date: FEBRUARY 1998			
APPROPRIATION/BUDGET ACTIVITY: 7				PROGRAM ELEMENT: 0308601N					PROJECT NAME AND NUMBER: Modeling & Simulation, X2222			
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY-99 Cost	FY-99 Award Date	FY-00 Cost	FY-00 Award Date	FY-01 Cost	FY-01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Simulation Experiments	Various	Various	627	-	-	3420	TBD		TBD	Cont.	Cont.	Cont.
Subtotal T&E			627			3420				Cont.	Cont.	Cont.
Remarks												
Engineering Studies/Analyses	Various	Various	592	-	-	1713	TBD		TBD	Cont.	Cont.	Cont.
Program Management			65								Cont.	Cont.
Subtotal Management			657			1713				Cont.	Cont.	Cont.
Remarks												
Total Cost			4212	0		9621						