U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol: CG-0931
Phone: (202) 372-4564
Fax: (202) 372-4976

COMDTINST 5200.38
22 DEC 2006

COMMANDANT INSTRUCTION 5200.38

Subj: COAST GUARD MODELING AND SIMULATION (M&S) MANAGEMENT

Ref:
(a) DoD Modeling and Simulation (M&S) Management, DoD Directive 5000.59 (series)
(b) DoD Modeling and Simulation (M&S) Verification, Validation and Accreditation (VV&A), DoD Instruction 5000.61(series)
(c) Verification, Validation and Accreditation (VV&A) of Models and Simulation, SECNAVINST 5200.40 (series)
(d) Department of the Navy Modeling and Simulation Management, SECNAVINST 5200.38 (series)
(e) Command, Control, Communications, Computers and Information Technology (C4&IT) Configuration Management (CM) Policy, COMDTINST 5230.69 (series)
(f) Command, Control, Communications, Computers and Information Technology (C4&IT) Investment Management Policy, COMDTINST 5230.71 (series)
(g) Command, Control, Communications, Computers and Information Technology (C4&IT) System Development Life Cycle (SDLC) Policy, COMDTINST 5230.66 (series)
(h) Verification, Validation and Accreditation (VV&A) of Models and Simulations, COMDTINST 5200.40 (series)
(i) Classified Information Management Program, COMDTINST M5510.23 (series)
(j) DHS Ports Waterways Coastal Security (PWCS) Classification Guide, DHS SCG USCG 001
(k) DHS Sensor and Instrument Performance Security Classification Guide, DHS SCG USCG 002 (SIP)

1. PURPOSE. This Instruction provides vision, policies, procedures, and standards for the administration and management of Coast Guard Modeling and Simulation (M&S).

2. ACTION. Area and district commanders, commanders of maintenance and logistics commands, commanding officers of headquarters units, assistant commandants for directorates, Judge Advocate

DISTRIBUTION – SDL No. 145

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A																										
B		8	10		3	2	2		2		2	2	2		4	2				1	1	1	1	1	1	
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NON-STANDARD DISTRIBUTION:

General, and special staff offices at Headquarters shall ensure compliance with this Instruction. Internet release authorized.

3. DIRECTIVES AFFECTED. None.

4. BACKGROUND. The cost of doing "business as usual" has become prohibitively high. It is simply too expensive to train, plan, analyze, and develop new systems using traditional methods. Additionally, the capabilities of modern systems have rendered the current training areas inadequate. The expansion of capabilities and mission demands have made planning and training for contingencies difficult, at best. M&S provides a cost-effective method to interact with a complex environment, allowing for the creation of realistic training, forward looking analysis, or a safe testing environment that may be too expensive or futuristic to do live. It allows for changes to variables such as weather, sea state, terrain, or threat capabilities. M&S provides the ability to develop and test new systems, to train, and to analyze plans and proposed force structure in a realistic and secure environment. It allows users to experience failure or create success with no risk to personnel, equipment, or the environment. M&S improves efficiency and effectiveness by eliminating the need to assemble participants in one place, by providing instructional capability, by providing a test capability for concepts, strategy, and tactics, and through the ability to rapidly develop and test different scenarios. Finally, M&S fosters communication. Operators work closely with M&S developers to ensure new M&S tools accurately represent the operational environment. Operators communicate with each other during after action reviews to determine what went well and what areas need more emphasis. Operational planners and developers of new systems use M&S results as a catalyst to discuss issues and to resolve problems. With the increase in this technology, its applicability, and the workforce's technical skills, M&S use has grown significantly in both the private and public sectors. For example, DoD has made great strides over the last decade managing their M&S to improve performance and reusability while leveraging their M&S capability to reduce project cost and risk. This Coast Guard M&S management policy adapts many of these DoD best practices, which are in references (a – d).

5. DEFINITIONS. For this policy, models and simulations are defined as:

   a. Model: A physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process.

   b. Simulation: A method for implementing a model over time. Also, a technique for testing, analysis, or training in which real-world systems are used, or where real-world and conceptual systems are reproduced by a model.

6. VISION. The vision for Coast Guard M&S is for models and simulations to provide a pervasive set of tools and capabilities to support decision making, discovery, operations, analysis, training, and acquisition throughout the Coast Guard. To attain this vision the Coast Guard will vigorously pursue the following objectives:

   a. Apply M&S and associated information technology consistently across each of the four pillars of Coast Guard M&S. These pillars are operations and experimentation, training, acquisition, and analysis and assessment.

b. Make M&S capability and information readily available and apply the benefits and knowledge derived from their use throughout the Coast Guard.

c. Invest in cost effective M&S technology that has measurable benefits, provides timely insights, and builds on or leverages best practices of DHS, DoD, academic, or commercial entities.

7. POLICY.

a. General.

(1) Coast Guard M&S activities encompass a wide range of functional disciplines including research and development, test and evaluation, education and training, operations, logistics, acquisition, assessment, doctrine development, experimentation and discovery. This Instruction supplements the existing regulations in those areas.

(2) The Coast Guard will coordinate M&S efforts. Where feasible and beneficial, a lead organization will be assigned to develop and/or maintain M&S capability that provides general support across the Coast Guard or DHS, such as web based document catalogs, simulation trainers, or technical support groups.

b. Life-cycle Management. Coast Guard M&S requires life-cycle management that addresses program management (cost, schedule, and performance), configuration management, verification, validation and accreditation, data management, usability, and documentation. The extent and formality of this management is proportional to the M&S project risks (cost, complexity, lifetime, number of users, etc.) and the risks associated with the intended use. When these risks are high, a written life-cycle management plan is a recommended method to plan the M&S related activities to manage these risks. When M&S use is required beyond the developer's needs, the continuing users assume life-cycle management responsibility during their period of use. Reference (g) contains other life-cycle management requirements for M&S executing within the C4&IT infrastructure.

c. Interoperability. Interoperability is the ability of a model or simulation to provide services to and accept services from other models and simulations, and to use the services so exchanged to enable them to operate effectively together. All M&S applications designated for DoD or DHS use must comply with that department's interoperability policies and standards.

d. M&S Repository. A consolidated and searchable relational database of all Coast Guard M&S shall be established and maintained in a centralized location. For each M&S in the repository, sufficient documentation for categorization is required.

e. Verification, Validation, and Accreditation (VV&A). The credibility of M&S results from the conscientious application of the verification and validation (V&V) process. The formal process of accreditation establishes the official approval of the M&S as adequate for a particular use. These two processes combined are VV&A. M&S meeting the requirements in reference (h) require formal accreditation in accordance with that instruction. For those M&S not designated for formal accreditation, the M&S Program Manager shall take reasonable steps to ensure those M&S are verified and validated so that modeling assumptions are accurate and documented,

results produced by the M&S are stable, consistent and repeatable, and the correlation between the M&S behavior and real world behavior is clearly understood.

f. Configuration Management (CM). To improve the consistency and reliability of Coast Guard M&S, CM shall be applied throughout the life-cycle of all M&S. The degree of CM shall be tailored to the complexity, size, quantity, intended use, and life-cycle phase. Reference (e) contains other CM requirements for M&S executing within the C4&IT infrastructure.

g. Data Management. Common data facilitates interoperability of M&S and allows for results sharing (i.e., consistent metrics). A common M&S data dictionary, data structure, and data repository shall be established and maintained in a centralized location. The goal of this data management activity is to produce a common set of verified, validated, and certified (VV&C) data with high data quality at a minimal production and maintenance cost.

h. M&S Release. A separate policy statement shall be created that sets parameters for the release of Coast Guard M&S and/or M&S data to other government and private entities. This policy statement shall consider security issues, ownership issues, and financial responsibilities.

i. Representations of non-Coast Guard Systems or Functions. When included in Coast Guard M&S, the representations of systems or functions of other military services, governments, or private agencies shall be coordinated with each respective service or agency involved, to the extent practicable.

j. Reuse. At a minimum, all M&S shall be documented at a level of detail that allows them to be adapted and reused for the same purposes for which they were created. Existing models, simulations, and data sets in the USCG and DoD M&S and Data Repositories shall be explored for reuse or modification before creating a new M&S tool and/or developing new data sets. Primary considerations will be suitability for purpose, currency and relevance of data/data format.

k. Workforce Capabilities. The development and management of M&S requires a significant and varied set of competencies and technical skills. The M&S workforce capabilities shall be effectively managed and the workforce suitably trained to ensure the successful implementation and sustainment of Coast Guard M&S.

l. Alignment and Integration of Requirements and Investments. The Coast Guard will create a strategic direction for Coast Guard M&S, which facilitates the alignment and integration of M&S requirements and capabilities, and promotes the visibility of M&S activities throughout the Coast Guard. This strategic direction and associated policy will be in the Coast Guard Master Plan for M&S. A central goal of this plan is to establish mechanisms to determine the M&S budget and program priorities and to integrate them into the Coast Guard budget process. The M&S Master Plan shall consider the C4&IT investment requirements in reference (f) for M&S executing within the C4&IT infrastructure.

m. Security. M&S impact is greatest when the input and results are shared with the widest audience possible in an unclassified manner. However, all M&S shall be evaluated for security concerns against references (i-k) to ensure appropriate classification if merited.

8. COAST GUARD M&S ROLES AND RESPONSIBILITIES.

a. The Chief of Staff (CG-01) is the senior official in the Coast Guard dealing with M&S and shall:

(1) Act as the M&S Executive.

(2) Establish and maintain policies and guidelines for M&S applications, standards, and data managed by the Coast Guard.

(3) Promote the effective use of M&S in the Coast Guard.

(4) Resolve M&S issues between different Coast Guard entities.

(5) Establish Coast Guard-wide M&S vision and objectives.

b. The Office of Performance Management and Decision Support (CG-0931) provides Coast Guard M&S oversight and shall:

(1) Assign responsibilities for M&S management and prescribe M&S policy and doctrine.

(2) Coordinate and resolve issues on Coast Guard M&S policies and guidelines for M&S applications, standards, and data.

(3) Review, recommend, and forward all appropriate M&S correspondence and issues to the M&S Executive for review and appropriate disposition.

(4) Act as the Executive Secretariat and chair the M&S Advisory Council.

(5) Produce the Coast Guard Master Plan for M&S.

(6) Serve as the external point of contact for Coast Guard M&S.

(7) Establish and maintain the Coast Guard M&S repository and the Coast Guard M&S data repository.

(8) Establish policy for the release of Coast Guard modeling data, placeholder data, data structures, simulation mechanisms, and M&S applications, as appropriate.

c. Functional Area Managers (FAM) with the rank of O-6 or civilian equivalent shall serve as a single point of contact for their respective functional areas and shall deal with M&S issues that span the Coast Guard. FAMs shall possess sufficient function area knowledge and experience to represent their area on all M&S issues.

(1) Table 1 lists the organizations that shall designate a M&S FAM:

Table 1: Functional Area Assignments

Organization	Functional Area
G-A	T&E, Acquisition
G-D	
CG-0949	
CG-3	Doctrine, Requirements & Capabilities
CG-0931	Assessment & Analysis
CG-1	Manpower & Personnel
	Training, Training System & Education
CG-2	Intelligence Requirements & Capabilities
CG-4	Logistics
CG-6	Science & Technology Requirements
	Enterprise Architecture
CG-5	Planning and Performance

(2) The Functional Area Managers shall:

(a) Participate as members of the Coast Guard M&S Advisory Council.

(b) Within their functional areas, identify conflicting policy interpretations and provide recommendations on deviations from M&S policy for final disposition by the Coast Guard Executive for M&S through the M&S Advisory Council.

(c) Within their functional areas, provide and communicate the vision for employment of M&S to commands, facilities, and organizations.

(d) Within their functional areas, promote and support participation in service wide cooperative research, development, acquisition, and operation of M&S systems, technologies, and capabilities.

(e) Ensure that M&S systems and data developed within their functional area comply with Coast Guard policy and maximize interoperability and reuse of M&S.

(f) Within their functional areas, provide and certify authoritative M&S data for use across the enterprise.

d. The M&S Advisory Council consists of all the Functional Area Managers and Commandant (CG-0931), which acts as the chair and Executive Secretariat. The M&S Advisory Council shall:

(1) Provide the Coast Guard's recommendations and advice to the M&S Executive on matters pertaining to M&S.

(2) Develop a shared strategic direction that facilitates the alignment and integration of Coast Guard M&S requirements and investments to advance Coast Guard M&S.

(3) Guide the development of the Coast Guard Master Plan for M&S.

(4) Support and provide subject matter expertise for M&S initiatives such as VV&A, data standards, etc.

(5) Provide the M&S Executive a coordinated Coast Guard response on M&S issues external to the service.

(6) Determine and communicate the M&S workforce requirements including competencies and skills to Commandant (CG-1).

e. The Program Manager, Coast Guard Research, Development, Test and Evaluation (RDT&E) Program, shall appoint a Coast Guard M&S Technical Advisor to the M&S Advisory Council that shall:

(1) Provide technical advice to the M&S Executive Secretariat and the M&S Advisory Council.

(2) Investigate, develop, and recommend new modeling, simulation and analysis techniques that show promise and benefit.

f. The M&S Program Manager is the organization, i.e., program manager, commanding officer, headquarters office, project officer, etc., who has primary responsibility for the development, V&V and configuration management of a particular M&S capability as well as its application in specific areas of interest. The M&S Program Manager shall:

(1) Follow the M&S directives and policies promulgated in the execution of this Instruction and be primarily responsible for:

(a) Life-cycle Management

(b) Interoperability

(c) Verification &Validation

(d) Configuration Management

(e) Data Management

(f) Elevating requests for release through the FAM to the M&S Advisory Council for adjudication by the Executive Secretariat.

(g) Representation

(h) Security

(i) Reuse

(2) Update the Coast Guard M&S Repository with appropriate information about the M&S under their management.

(3) When in doubt about the application of this policy, bring exceptions or questions through the appropriate FAM for adjudication or clarification by the M&S Advisory Council.

(4) Use sound professional judgment when accomplishing the activities in paragraphs 8.f.(1). These activities are generally accepted as being critical success factors for a M&S project to meet its objectives. However, it is clear that the extent of the requirements of paragraph 8.f.(1) will vary for different M&S. Procedures may be tailored as appropriate to satisfy the intentions of the policy consistent with common sense, sound business management and accepted industry practices and the time-sensitive nature of the requirements themselves. In addition, tailoring may be applied differently to the various phases of the M&S development process. Some examples:

(a) The depth of analysis involved with the V&V of an established legacy or commercial off-the-shelf (COTS) M&S would be different from the development of a new M&S. In the case of the legacy or COTS M&S, the M&S PM could leverage the existing V&V information or commercial acceptance.

(b) The extent of a life-cycle management plan for a new development M&S that will be supporting a multi-year major acquisition from concept development through deployment will be greater than the informal planning done for a simple spreadsheet M&S used to set performance goals.

(c) The formality and requirements of configuration management for an M&S, which is centrally managed and distributed to multiple users is much greater than the informal CM processes for a M&S developed in a commercial off-the-shelf product and used by only a few users.

9. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS. Environmental considerations were examined in the development of this Instruction and have been determined to be not applicable.

10. FORMS/REPORTS. None.

R.J. PAPP, JR. /s/
Chief of Staff