



CHAIRMAN OF THE JOINT CHIEFS OF STAFF INSTRUCTION

J-8
DISTRIBUTION: A,B,C,J,S

CJCSI 8510.01
24 April 1996

JOINT MODELING AND SIMULATION MANAGEMENT

References: See Enclosure D.

1. Purpose. This instruction:

a. Implements policy guidance established in reference a and incorporates the principles set forth in reference b.

b. Establishes joint modeling and simulation (JM&S) policy, assigns responsibilities, and outlines a JM&S Master Planning Process. (Reference c.)

c. Establishes the Joint Modeling and Simulation Executive Panel (JMSEP). (See Enclosure C.)

2. Cancellation. SM-82-89, 31 January 1989, "Basic Policy Guidance on Modeling and Simulation," is canceled.

3. Applicability and Scope

a. This instruction applies to the Joint Staff, joint activities reporting to the Chairman of the Joint Chiefs of Staff, and the combatant commands (hereafter collectively referred to in this instruction as "Joint Components") and to their use, management, sponsorship, or resourcing of modeling and simulation (M&S) activities. (Reference d.)

b. This instruction is distributed to the Services and Defense agencies to foster cooperation and sharing of JM&S resources and capabilities. It is distributed to the multinational combined commands for information only; however, they are encouraged to use it as a guide in developing their own M&S management applications.

4. Policy

a. The Joint Staff, in coordination with the Joint Components, will develop JM&S policies and guidance; provide oversight, expertise, and requirements management; and be a proponent for JM&S use in the joint community.

b. The Joint Staff will use the JM&S master planning process, as described in Enclosure B, to collect and manage JM&S requirements; develop solutions for these requirements; support the process of resourcing them; and prevent proliferation of duplicate, unneeded JM&S. (Reference c.)

c. The Joint Staff will foster joint involvement in JM&S development, integration, use, and interfacing with operational command, control, communications, computers, and intelligence (C4I) systems, such as the Global Command and Control System (GCCS) and the Global Combat Support Systems (GCSS) in accordance with references e, f, and g. This will require that JM&S be compatible with the GCCS/GCSS Common Operating Environment.

d. The Joint Components will formulate and implement programs and activities to promote JM&S capabilities to satisfy their assigned missions and to consolidate similar functions to prevent unnecessary JM&S proliferation.

e. JM&S applications used to support joint training and major DOD decision-making organizations and processes (e.g., the Defense Planning and Resources Board, Joint Requirements Oversight Council, Joint Warfighting Capability Assessment, and the DOD Planning, Programming, and Budgeting System) will be accredited for that use.

f. JM&S configurations will:

(1) Evolve from stovepipe legacy systems toward open-systems (hardware, software, and connectivity) in accordance with reference h, that will operate in synthetic environments that can be electronically linked or accessed to satisfy JM&S requirements.

(2) Comply with existing national, Federal, DOD, and, where practicable, international standards to facilitate JM&S and C4I interoperability.

(3) Exploit connectivity and M&S interoperability to link existing M&S centers to accomplish analysis and training requirements.

(4) Conform to the standards for life-cycle management (LCM) in references i, j, and k and for configuration management in reference l.

g. A systematic plan of LCM and verification, validation, and accreditation (VV&A) of models and simulations and verification, validation, and certification (VV&C) of data and processes is required for all JM&S in accordance with references a, i, and m. VV&A/VV&C will be accomplished as part of the overall CM and application of each JM&S. Verification and validation will be integral parts of JM&S development and life-cycle management. Joint Staff VV&A procedures are outlined in reference n.

(1) Proponents for models, simulations, and supporting data bases will ensure LCM, verification, and validation.

(2) Users will accredit models and simulations and certify supporting data bases to ensure appropriateness for each intended use. Each user's accreditation or certification process will ensure that the level of verification and validation or other workarounds are sufficient to support the accreditation or certification decision based on guidance provided by recognized M&S authorities.

(3) JM&S proponents and developers will ensure that forces and capabilities represented in JM&S have been validated by the responsible Service or functional proponents.

h. Data, information, and information technologies used in support of JM&S will comply with information management policies contained in references o and p. Data and supporting data bases used in JM&S will undergo a formal verification, validation, and certification process for use in specific applications.

5. Definitions. See Glossary.
6. Responsibilities. See Enclosure A.
7. Procedures. See Enclosure B.

8. Effective Date. This instruction is effective upon receipt.

For the Chairman of the Joint Chiefs of Staff:



WALTER KROSS
Lieutenant General, USAF
Director, Joint Staff

Enclosures

A--Responsibilities

B--Joint Modeling and Simulation Master Planning Process

C--Joint Modeling and Simulation Executive Panel Charter

D--References

Glossary

Distribution

Copies

Distribution A, B, C, and J plus the following:

| | |
|---|----|
| Under Secretary of Defense for Acquisition and Technology ... | 9 |
| Director of Defense Research and Engineering | 2 |
| Director, Defense Modeling and Simulation Office | 30 |
| Director, Advanced Research Projects Agency | 5 |
| President, National Defense University, | 5 |
| Commander, Joint Warfighting Center | 10 |
| Commander US Element, North American Aerospace Defense Command | 5 |
| Commander, US Forces Korea | 5 |

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ENCLOSURE A

RESPONSIBILITIES

1. The heads of Joint Components will:
 - a. Establish and implement a management structure for M&S oversight and internal coordination and communication of M&S issues. Each Joint Component's management structure will reflect its unique M&S requirements while complying with all DOD and Joint Staff M&S, information management, LCM, data administration, and C4I policies, directives, and initiatives (references a, i, j, and p).
 - b. Identify a M&S focal point and advise the Joint Staff M&S focal point, J-8. These focal points will:
 - (1) Represent component requirements and activities in the JMSEP and other JM&S forums.
 - (2) Act as the central point of contact within their organization for coordination of JM&S matters.
 - (3) Provide information on their JM&S applications, standards, and data bases to the Joint Staff M&S focal point who will provide the information to the DOD M&S Resource Repository (MSRR).
 - (4) Develop the JM&S requirements validation process for their organization.
 - (5) Identify short-term (present to 6 years) and long-term (beyond 6 years) programs to provide required capabilities, goals, and objectives for their organizations' establishment and use of JM&S and associated JM&S resource requirements (reference a). These plans will include migration strategies as required by reference h and will be updated annually and forwarded to the Joint Staff M&S focal point for inclusion in the JM&S master planning process. (Reference c.)
 - c. Develop a LCM plan in accordance with references i and j to define appropriate CM methodologies for their automated information systems (AISs) and M&S components.
 - d. Establish VV&A and VV&C policies and procedures for JM&S applications they manage.

(1) Routinely provide their VV&A information regarding models and simulations to the DOD MSRR and to other users as requested.

(2) Establish procedures to ensure JM&S are accredited for use (references a, m, and n).

(3) Establish procedures to ensure the certification of supporting data bases for JM&S (reference a).

2. The Joint Staff, under the direction of the Vice Director, Joint Staff, as the Senior Information Resources Management Official (SIRMO), will:

a. Establish a management and administrative structure for oversight, coordination, and communication of Joint Component JM&S issues and activities. The Director, J-8, will provide the overall Joint Staff M&S focal point. The Director, J-7, will oversee training, exercise, and Joint Warfighting Center (JWFC) JM&S. The Director, J-6, will oversee C4I JM&S and will act as the primary interface with the Defense Information Systems Agency (DISA), the C4 Intelligence, Surveillance, and Reconnaissance (C4ISR) Decision Support Center, and the Joint Battle Center.

b. Represent the interests of, and integrate JM&S requirements of, the joint community at the DOD Executive Council for Models and Simulations (EXCIMS) and the Defense Modeling and Simulation Office (DMSO).

c. Promote and manage JM&S technologies in support of operational needs and the acquisition process; develop common tools, methodologies, and data bases; and comply with current national, Federal, DOD, and, where practicable, international standards and protocols promoting the internetting, data exchange, open system architecture, and software reusability of JM&S applications.

d. Develop a master planning process to satisfy JM&S needs of the Joint Components (Enclosure B). Establish a coherent JM&S strategy and create a supporting investment plan for the Program Objective Memorandum. The Director, J-8, is responsible for the JM&S master planning process. The Joint Staff SIRMO will approve the JM&S Master Plan and Investment Plan. (Reference c.)

e. Establish and maintain a user-responsive program to manage the planning, resourcing, programming, development,

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acquisition, operation, maintenance, accountability, and phase-out of Joint Staff JM&S capabilities.

f. Establish a forum for the Joint Components to coordinate JM&S priorities, master planning, M&S technology applications, and promising M&S initiatives. (See Enclosure C.)

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ENCLOSURE B

JOINT MODELING AND SIMULATION MASTER PLANNING PROCESS

1. The Joint Components JM&S master planning process will facilitate the development, coordination, and issuance of an annual JM&S Master Plan and JM&S Investment Plan and will provide for the:
 - a. Identification of JM&S requirements.
 - b. Programming and allocation of resources to provide JM&S capabilities.
 - c. Coordination, technical support, and internal management control and oversight of JM&S activities, investments, and LCM decisions.
2. The Joint Staff M&S focal point, in collaboration with J-7 and J-6, will direct and coordinate the JM&S master planning process with the Joint Components in support of the DOD M&S Master Plan. The JM&S master planning process will facilitate the development of a consolidated and prioritized listing of joint validated requirements that might be fulfilled through M&S. The Joint Staff will forward this listing to the Under Secretary of Defense for Acquisition and Technology. (Reference c.)
3. Requirements identification will be performed by the Joint Staff directorate, combatant command staff, or joint activity having functional responsibility. The JWFC, as a field operating activity of the Joint Staff, will collect, coordinate, and submit requirements, goals, objectives, and programs for joint training JM&S capabilities through J-7 to the Joint Staff M&S focal point. DISA, the C4ISR Decision Support Center, and the Joint Battle Center will collect, coordinate, and submit requirements, goals, objectives, and programs for C4I JM&S capabilities through J-6 to the Joint Staff M&S focal point.
4. The Joint Components will program sufficient funds to support the development and operation of required JM&S and other information technology in their Program Objective Memorandums.

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ENCLOSURE C

JOINT MODELING AND SIMULATION EXECUTIVE PANEL CHARTER

1. Type of Organization. The Joint Modeling and Simulation Executive Panel (JMSEP) is a permanent panel established to assist in the implementation of DOD Directive 5000.59, "DOD Modeling and Simulation (M&S) Management." The JMSEP provides a forum for the Joint Staff, joint activities reporting to the Chairman of the Joint Chiefs of Staff, and the combatant commands (hereafter collectively referred to in this charter as "Joint Components") to coordinate joint modeling and simulation (JM&S) activities, master planning, applications, and promising M&S initiatives.
2. Date Established. 24 April 1996.
3. Authority. CJCSI 8510.01, 24 April 1996, "Joint Modeling and Simulation Management."
4. Scope. The JMSEP is the primary management and administrative structure of the Joint Components for improving the oversight, coordination, and communication of JM&S issues.
5. Purpose. The JMSEP will:
 - a. Communicate and coordinate the JM&S requirements and activities of the Joint Components.
 - b. Provide liaison for the Joint Components with the other DOD components for JM&S matters.
6. Organization and Composition. The JMSEP will:
 - a. Consist of senior-level representatives (O-6 or higher) involved in JM&S from each Joint Component. Other DOD components may be invited to the JMSEP at the request of any JMSEP member.
 - b. Be chaired by the Joint Staff Deputy Director for Wargaming, Simulation, and Operations (DDWSO), J-8. The DDWSO is the Joint Staff M&S focal point and JMSEP representative.
 - c. Meet semiannually. The chair may schedule a JMSEP meeting at the request of any JMSEP member.

7. JMSEP Responsibilities. The JMSEP will:
 - a. Facilitate the coordination, technical support, and internal management control and oversight of JM&S activities and requirements.
 - b. Address and, if appropriate, recommend solutions to problem areas, or issues associated with policies, planning, operations, oversight, or resourcing of JM&S.
8. Joint Component Responsibilities. Each joint component will:
 - a. Designate in writing, its JMSEP representative, to the Joint Staff M&S focal point, J-8/DDWSO. Ensure attendance at all JMSEP meetings.
 - b. Ensure JMSEP issues and actions are coordinated within their component.
9. Administration
 - a. DDWSO, J-8, will appoint the Executive Secretary to the JMSEP.
 - b. The Executive Secretary will:
 - (1) Develop the agenda for each JMSEP. Any JMSEP member may place items on the agenda by providing them to the chair or executive secretary.
 - (2) Publish and disseminate minutes. Copies of these minutes will be provided to the Defense Modeling and Simulation Office (DMSO) and the Services.
 - (3) Circulate JMSEP documents for coordination.

ENCLOSURE D

REFERENCES

- a. DOD Directive 5000.59, 4 January 1994, "DOD Modeling and Simulation (M&S) Management"
- b. Joint Staff pamphlet, February 1994, "Joint Modeling and Simulation (JM&S) Evolutionary Overview"¹
- c. DOD 5000.59-P, October 1995, "DOD Modeling and Simulation Master Plan (MSMP)"
- d. JSI 7200.01, 28 December 1994, "Joint Staff Resource Management"
- e. CJCSI 6212.01A, 30 June 1995, "Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence Systems"
- f. DOD Directive 4630.5, 12 November 1992, "Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence Systems"
- g. DOD Instruction 4630.8, 18 November 1992, "Procedures for Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence Systems"
- h. Deputy Secretary of Defense memorandum, 13 October 1993, "Accelerated Implementation of Migration Systems, Data Standards, and Process Improvement"
- i. DOD Directive 8120.1, 14 January 1993, "Life-Cycle Management (LCM) of Automated Information Systems (AISs)"
- j. DOD Instruction 8120.2, 14 January 1993, "Automated Information System (AIS) Life-Cycle Management (LCM) Process, Review, and Milestone Approval Procedures"
- k. JSI 8100.01, 24 February 1995, "Life-Cycle Management of Automated Information Systems"
- l. Military Standard 973, 17 April 1992, "Configuration Management" (Will be replaced by commercial standards.)

¹ Copies may be requested from the Deputy Director for Wargaming, Simulation, and Operations, J-8, 8000 Joint Staff Pentagon, Washington, DC 20318-8000.

- m. Draft DOD Instruction, "Verification, Validation, and Accreditation (VV&A) of DoD Modeling and Simulation"
- n. JSI 8104.01, 12 January 1995, "Verification, Validation, and Accreditation of Joint Models and Simulations"
- o. DOD Directive 8000.1, 27 October 1992, "Defense Information Management (IM) Program"
- p. DOD Directive 8320.1, 26 September 1991, "DOD Data Administration"

GLOSSARY

Part I--ABBREVIATIONS AND ACRONYMS

| | |
|--------|--|
| AIS | automated information system |
| C4I | command, control, communications, computer systems, and intelligence |
| C4ISR | C4, Intelligence, Surveillance, and Reconnaissance |
| DDWSO | Deputy Director for Wargaming, Simulation, and Operations |
| DISA | Defense Information Systems Agency |
| DMSO | Defense Modeling and Simulation Office |
| EXCIMS | Executive Council for Modeling and Simulations |
| GCCS | Global Command and Control System |
| GCSS | Global Combat Support Systems |
| JM&S | joint modeling and simulation |
| JMSEP | Joint Modeling and Simulation Executive Panel |
| JWFC | Joint Warfighting Center |
| LCM | life-cycle management |
| M&S | modeling and simulation |
| MSRR | M&S Resource Repository |
| SIRMO | Senior Information Resources Management Official |
| VV&A | verification, validation, and accreditation |
| VV&C | verification, validation, and certification |

Part II--TERMS AND DEFINITIONS

accreditation. The official certification that a model or simulation is acceptable for use for a specific purpose.

configuration management. The application of technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a model or simulation, control changes, and record and report change processing and implementation status.

data certification. The determination that data have been verified and validated. Data producer certification is the

determination by the data producer that data have been verified and validated against documented standards of criteria. Data user certification is the determination by the application sponsor or designated agent that data have been verified and validated as appropriate for the specific M&S usage.

data validation. The documented assessment of data by subject area experts and its comparison to known values. Data producer validation is that documented assessment within stated criteria and assumptions. Data user validation is that documented assessment of data as appropriate for use in an intended model.

data verification. Data producer verification is the use of techniques and procedures to ensure that data meets constraints defined by data standards and business rules derived from process and data modeling. Data user verification is the use of techniques and procedures to ensure that data meet user-specified constraints defined by data standards and business rules derived from process and data modeling, and that data are transformed and formatted properly.

data verification, validation, and certification. The process of verifying the internal consistency and correctness of data, validating that it represents real world entities appropriate for its intended purpose or an expected range of purposes, and certifying it as having a specified level of quality or as being appropriate for a specified use, type of use, or range of uses. The process has two perspectives: producer and user process.

Executive Council for Modeling and Simulations (EXCIMS). An organization established by the Under Secretary of Defense (Acquisition and Technology) (USD(A&T)) and responsible for providing advice and assistance on DOD M&S issues. Membership is determined by the USD(A&T) and is at the Senior Executive Service, flag, and general officer level.

information management. The creation, use, sharing, and disposition of data or information as corporate resources critical to the effective and efficient operation of functional activities consistent with IM guidance issued by the Office of the Secretary of Defense. It includes the structuring of functional management improvement processes by the OSD Principal Staff Assistants to produce and control the use of data and information in functional activities; information resources management; and supporting information technology and information services.

JM&S proponent. The Joint Component responsible for LCM of a JM&S application or data base.

joint community. The Joint Components, Military Services, and Defense agencies.

Joint Components. The Joint Staff, joint activities reporting to the Chairman of the Joint Chiefs of Staff, and the combatant commands. For clarity, this also includes US Element, North American Aerospace Defense Command, and US Forces Korea.

joint modeling and simulation (JM&S). Modeling and simulation that represent joint and Service forces, capabilities, equipment, material, and services, used in the joint environment or by two, or more, military Services.

Joint Modeling and Simulation Executive Panel (JMSEP). An organization responsible for providing advice and assistance on Joint Modeling and Simulation issues. The Joint Components provide representatives. Membership is at the O-6 level or higher. The Deputy Director for Wargaming, Simulation, and Operations (DDWSO), J-8, serves as the chair.

Joint Modeling and Simulation Investment Plan. A plan, published under the authority of the Chairman of the Joint Chiefs of Staff and with the coordination of the Joint Components, that establishes short-term (present to 6 years) and long-term (beyond 6 years) programs and funding for JM&S to achieve the specified goals and objectives outlined in the JM&S Master Plan.

Joint Modeling and Simulation Master Plan. A plan, published under the authority of the Chairman of the Joint Chiefs of Staff and with the coordination of the Joint Components, that establishes short-term (present to 6 years) and long-term (beyond 6 years) goals and objectives for the application of JM&S within the Joint Components. It shall also include an assessment of current JM&S capabilities, a status report on JM&S efforts under development, and a road map that delineates the management, investment, and technical strategies required to achieve Joint Components' M&S objectives.

life-cycle management (LCM). A management process, applied throughout the life of an automated information system (AIS), that bases all programmatic decisions on the anticipated mission-related and economic benefits derived over the life of the AIS.

Military Services. For the purpose of this instruction, the Military Services are the US Army, US Navy, US Air Force, and US Marine Corps.

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

modeling and simulation (M&S) interoperability. 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.

open system. A system in which the components and their composition are specified in a non-proprietary environment, enabling competing organizations to use these standard components to build competitive systems. There are three perspectives on open systems: portability -- the degree to which a system component can be used in various environments; interoperability -- the ability of individual components to exchange information; and integration -- the consistency of the various human-machine interfaces between an individual and all hardware and software in the system.

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 real-world and conceptual systems are reproduced by a model.

synthetic environments. Internetworked simulations that represent activities at a high level of realism from simulations of theaters of war to factories and manufacturing processes. These environments may be created within a single computer or a vast distributed network connected by local and wide area networks and augmented by super-realistic special effects and accurate behavioral models. They allow visualization of and immersion into the environment being simulated.

validation. The process of determining the degree to which a model or simulation is an accurate representation of the real world from the perspective of the intended uses of the model or simulation.

verification. The process of determining that a model or simulation implementation accurately represents the developer's conceptual description and specifications. Verification also evaluates the extent to which the model or simulation has been developed using sound and established software engineering techniques.