



Department of Defense **INSTRUCTION**

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Incorporating Change 3, October 15, 2018

USD(R&E)

SUBJECT: Management of DoD Modeling and Simulation (M&S) Activities

References: See Enclosure 1

1. **PURPOSE.** This Instruction:

- a. Implements DoD M&S management activities of DoD Directive (DoDD) 5000.59 (Reference (a)), pursuant to DoD Directive 5134.01 (Reference (b)).
- b. Assigns responsibilities for the DoD Modeling and Simulation Steering Committee (M&S SC) pursuant to the provisions of Reference (a).
- c. Establishes the Director, DoD Modeling and Simulation Coordination Office (M&SCO), as the focal point for coordinating all matters related to DoD M&S, with the advice and recommendation of the M&S SC, and as Secretariat for the M&S SC.
- d. Extends discovery metadata policy consistent with DoD Instruction 8320.02 (Reference (c)) to those DoD M&S tools, data, services, data assets (as defined in Reference (c)), models, and simulations (hereinafter collectively referred to as "M&S assets") that are key.
- e. Authorizes the publication of the DoD M&S Glossary at <http://www.msco.mil>.
- f. Cancels DoD 5000.59-M (Reference (d)).

2. **APPLICABILITY.** This Instruction applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (hereinafter referred to collectively as the "DoD Components").

3. **DEFINITIONS.** See Glossary.

4. POLICY. It is DoD policy in accordance with Reference (a):

a. That M&S assets shall be visible and accessible within and across the DoD Components.

(1) M&S discovery metadata shall conform to the DoD Discovery Metadata Specification (DDMS) (Reference (e)) and be discoverable, searchable, and retrievable using the DoD M&S discovery metadata search capability and federated DoD discovery metadata search capabilities.

(2) Visibility and accessibility shall be facilitated by creating and associating discovery metadata consistent with Reference (c) to key M&S assets.

(3) When intellectual property considerations and restrictions apply to M&S assets, all restrictions on use and reuse will be clearly noted in discovery metadata.

b. To encourage efficient and effective development, use, and reuse of M&S, particularly Government-owned, non-proprietary M&S assets.

c. That the DoD M&S discovery metadata search capability shall be used in assessing existing M&S assets for reuse.

5. RESPONSIBILITIES. See Enclosure 2.

6. PROCEDURES. See Enclosure 3.

7. RELEASABILITY. Cleared for public release. This Instruction is available on the Directives Division Website at <http://www.esd.whs.mil/DD/>.

8. SUMMARY OF CHANGE 3. This change reassigns the office of primary responsibility for this instruction to the Under Secretary of Defense for Research and Engineering in accordance with the July 13, 2018 Deputy Secretary of Defense Memorandum (Reference (f)).

8. EFFECTIVE DATE. This Instruction is effective May 10, 2012.



Frank Kendall
Acting Under Secretary of Defense for
Acquisition, Technology, and Logistics

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Glossary

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ENCLOSURE 1

REFERENCES

- (a) DoD Directive 5000.59, “DoD Modeling and Simulation (M&S) Management,” August 8, 2007
- (b) DoD Directive 5134.01, “Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)),” December 9, 2005, as amended
- (c) DoD Instruction 8320.02, “Sharing Data, Information, and Information Technology (IT) Services in the Department of Defense,” August 5, 2013
- (d) DoD 5000.59-M, “DoD Modeling and Simulation (M&S) Glossary,” January 15, 1998 (hereby cancelled)
- (e) Department of Defense Discovery Metadata Specification (DDMS)¹
- (f) Deputy Secretary of Defense Memorandum, “Establishment of the Office of the Under Secretary of Defense for Research and Engineering and the Office of the Under Secretary of Defense for Acquisition and Sustainment,” July 13, 2018
- (g) DoD Instruction 4120.24, “Defense Standardization Program (DSP),” July 13, 2011
- (h) DoD 7000.14-R, “Department of Defense Financial Management Regulation (FMRs),” Volumes 1-15, date varies by volume

¹ Latest version available at <http://metadata.dod.mil/mdr/irs/DDMS/>.

ENCLOSURE 2

RESPONSIBILITIES

1. UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS (USD(AT&L)). The USD(AT&L) shall:

a. In coordination with the M&S SC, develop and implement the DoD M&S discovery metadata search capability.

(1) Develop governance and configuration management for the DoD M&S discovery metadata search capability and Reference (e).

(2) Develop and implement minimum required discovery metadata for key M&S assets consistent with Reference (e).

(3) Develop and implement process rules and procedures to promote and to populate the DoD M&S discovery metadata search capability with M&S asset discovery metadata consistent with Reference (e).

(4) Expand M&S asset discoverability by federating authoritative data repositories with the DoD M&S discovery metadata search capability.

b. Approve and publish the following plans and reports, consistent with Reference (a):

(1) M&S Strategic Vision.

(2) DoD M&S Enterprise Implementation Plan.

c. Establish, manage the membership of, and chair the M&S SC, an executive-level DoD committee established by Reference (a) and comprised of Senior Executive Service, flag or general officers of the military, or officials of equivalent rank and precedence.

d. In coordination with the Heads of the DoD Components, represent the DoD Test and Evaluation Community on the M&S SC, and on all matters of M&S associated with the Testing and Evaluation Community.

e. In coordination with the Heads of the DoD Components, represent the DoD Acquisition Community on the M&S SC, and on all matters of M&S associated with the Acquisition Community.

f. In coordination with the Heads of the DoD Components, develop and publish the Acquisition Community and Test and Evaluation Community M&S Strategic Plans.

2. DIRECTOR, DoD M&SCO. The Director, DoD M&SCO, under the authority, direction, and control of the USD(AT&L) and with the advice and recommendation of the DoD Components as represented on the M&S SC, shall:

- a. Serve as the DoD focal point for coordinating all matters related to DoD M&S.
- b. Recommend policies, plans, and programs to the USD(AT&L) that support the M&S Strategic Vision and DoD M&S priorities.
- c. Provide oversight and management for M&S projects and continuing activities, as directed by the USD(AT&L).
- d. Act as DoD advocate for M&S matters and perform DoD M&S enterprise-level functions that facilitate coordination among M&S activities DoD-wide and with industry, interagency, academia, and international partners.
- e. Manage USD(AT&L) plans and investments in DoD M&S.
- f. Manage M&S enterprise-level standards and standardization activities.
 - (1) Serve as the DoD lead standardization activity (LSA) for managing M&S standards and methodologies (MSSM) in the Defense Standardization Program consistent with DoD Instruction 4120.24 (Reference (g)).
 - (2) Provide a representative to the Defense Information Systems Agency, Information Technology Standards Committee, and chair the M&S Technical Working Group.
 - (3) Coordinate M&S standards activities with national and international M&S standards development and standards setting organizations.
- g. Provide technical expertise to the USD(AT&L) and the M&S SC on DoD M&S-related topics, including architectures, software, computing, data, and other related enabling technologies.
- h. Serve as the DoD focal point for coordinating international M&S activities consistent with Reference (b).
- i. As directed by the M&S SC Chair, advise the USD(AT&L) on key M&S capabilities.
- j. Chair M&S working groups as directed by the M&S SC Chair.
- k. Provide the M&S SC Secretariat functions to facilitate the activities of the M&S SC. The Secretariat shall:
 - (1) Publish and maintain the M&S SC standard operating procedures.

(2) Assist in the conduct and maintain records of the M&S SC proceedings.

l. Assist in integration activities and coordination of DoD Component and DoD Community M&S programs and activities.

m. Assist in the discovery and visibility of DoD Component and DoD Community M&S programs and activities.

n. Publish the DoD M&S Glossary online, and establish and manage the change control process.

3. UNDER SECRETARY OF DEFENSE FOR PERSONNEL AND READINESS (USD(P&R)). The USD(P&R), in coordination with the Heads of the DoD Components, shall:

a. Represent the DoD Training Community on the M&S SC to advise and assist the USD(AT&L) on all matters of M&S associated with the Training Community.

b. Develop and publish the Training Community M&S Strategic Plan.

4. UNDER SECRETARY OF DEFENSE FOR INTELLIGENCE (USD(I)). The USD(I), in coordination with the Heads of the DoD Components, shall:

a. Represent the DoD Intelligence Community on the M&S SC to advise and assist the USD(AT&L) on all matters of M&S associated with the Intelligence Community.

b. Develop and publish the Intelligence Community M&S Strategic Plan.

5. DIRECTOR OF COST ASSESSMENT AND PROGRAM EVALUATION (DCAPE). The DCAPE, in coordination with the Heads of the DoD Components, shall:

a. Represent the DoD Analysis Community on the M&S SC to advise and assist the USD(AT&L) on all matters of M&S associated with the Analysis Community.

b. Develop and publish the Analysis Community M&S Strategic Plan.

6. HEADS OF THE DoD COMPONENTS. The Heads of the DoD Components shall:

a. Develop and maintain current discovery metadata on key M&S assets they are developing, managing, or maintaining pursuant to this Instruction and Reference (c). M&S discovery metadata shall:

(1) Comply with Reference (e).

(2) Be visible, accessible, and discoverable in the DoD M&S discovery metadata search capability, consistent with guidance developed by the USD(AT&L).

b. Review the DoD M&S discovery metadata search capability for reuse opportunities prior to initiating development of M&S assets.

c. Advise the USD(AT&L) on key M&S capabilities and uses across the Component and the DoD.

7. SECRETARY OF THE ARMY. The Secretary of the Army, in addition to the responsibilities in section 6 of this enclosure, shall provide an executive-level representative to the M&S SC, as defined in Reference (a), to advise and assist the USD(AT&L) on all matters of M&S associated with the Army.

8. SECRETARY OF THE NAVY. The Secretary of the Navy, in addition to the responsibilities in section 6 of this enclosure, shall provide two executive-level representatives to the M&S SC as defined in Reference (a), one from the Navy and one from the Marine Corps, to advise and assist the USD(AT&L) on all matters of M&S associated with the Navy and the Marine Corps.

9. SECRETARY OF THE AIR FORCE. The Secretary of the Air Force, in addition to the responsibilities in section 6 of this enclosure, shall provide an executive-level representative to the M&S SC, as defined in Reference (a), to advise and assist the USD(AT&L) on all matters of M&S associated with the Air Force.

10. CHAIRMAN OF THE JOINT CHIEFS OF STAFF. The Chairman of the Joint Chiefs of Staff, in addition to the responsibilities in section 6 of this enclosure, shall:

a. In coordination with the Commanders of the Combatant Commands, represent the Combatant Commanders on the M&S SC, to advise and assist the USD(AT&L) on all matters of M&S associated with the Combatant Commands.

b. In coordination with the Heads of the DoD Components, represent the DoD Planning Community on the M&S SC to advise and assist the USD(AT&L) on all matters of M&S associated with the Planning Community.

c. In coordination with the Heads of the DoD Components, represent the DoD Experimentation Community on the M&S SC to advise and assist the USD(AT&L) on all matters of M&S associated with the Experimentation Community.

d. Develop and publish, in consultation with the Heads of the DoD Components, the Planning Community and Experimentation Community M&S Strategic Plans.

ENCLOSURE 3

M&S SC

1. The M&S SC shall:
 - a. Advise and assist the USD(AT&L) in all matters related to DoD M&S.
 - b. Oversee the development and periodic review of DoD's M&S Strategic Vision to guide the M&S activities of the DoD Components and DoD Communities.
 - c. Provide oversight and strategic governance of DoD M&S capabilities and resources.
 - d. Develop, periodically review, and submit for USD(AT&L) approval the DoD M&S Enterprise Implementation Plan.
 - e. Oversee the development and implementation of policies, plans, procedures, and DoD issuances to manage M&S and the implementation of best practices of how models and simulations are effectively acquired, developed, managed, and used by DoD Components (e.g., verification, validation, and accreditation; standards; and protocols).
 - f. Establish standard operating procedures, to include the establishment of working groups; and other activities determined by the M&S SC as necessary to implement the responsibilities in this Instruction.
 - g. Advise and assist the USD(AT&L) in governance and configuration management for the DoD M&S discovery metadata search capability.
 - h. Meet at least semiannually, and additionally as determined by the M&S SC Chair.
2. Each member of the M&S SC shall represent the interests of the Head of their DoD Component or their DoD Community.

GLOSSARY

PART I. ABBREVIATIONS AND ACRONYMS

DCAPE	Director, Cost Assessment and Program Evaluation
DDMS	DoD Discovery Metadata Specification
LSA	lead standardization activity
M&S	modeling and simulation
M&SCO	Modeling and Simulation Coordination Office
M&S SC	Modeling and Simulation Steering Committee
MSSM	M&S standards and methodologies
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
USD(I)	Under Secretary of Defense for Intelligence
USD(P&R)	Under Secretary of Defense for Personnel and Readiness

PART II. DEFINITIONS

Unless otherwise noted, these terms and their definitions are for the purpose of this Instruction.

architectures. The structure of components in a program or system, their interrelationships, and the principles and guidelines governing their design and evolution over time.

data asset. Defined in Reference (c).

discovery metadata. A type of metadata that describes or summarizes key attributes and concepts, and allows assets (e.g., a model, simulation, or data) to be found using enterprise-level search capabilities.

DoD Community. Defined in Reference (a).

DoD Community M&S Strategic Plan. A high-level DoD plan created and published by a DoD Community to facilitate and achieve the DoD M&S Strategic Vision, goals, and objectives for that DoD Community.

DoD M&S discovery metadata search capability. An enterprise-level capability that enables the discovery of metadata about M&S assets to facilitate visibility into the resources available across the DoD and within other Federal and non-Federal agencies engaged in M&S, and federated with DoD M&S. Sources of the M&S assets described by the discovery metadata are maintained by DoD Components and other authoritative data and software repositories. Visibility into the

discovery metadata enables a user or developer of M&S assets to identify potential reuse opportunities relative to their requirements.

Enterprise. An arbitrarily defined functional and administrative entity that exists to perform a specific, integrated set of missions and achieve associated goals and objectives, encompassing all of the primary functions necessary to perform those missions.

federated. The ability to search across multiple archives, data collections, or multiple content aggregator services.

intellectual property. Intangible property that is the result of creativity, such as patents, trademarks, or copyrights.

key M&S asset. An M&S tool, data set, or service, including models, simulations, or data assets, that either exceeds \$5M in annual expenditures, or is less than \$5M but determined by the DoD Component to be “key.” The total annual expenditure will be determined using standard justification documentation for DoD appropriations, such as RDT&E (R-docs), Procurement (P-docs), and O&M (O&M exhibits), which are provided to Congress pursuant to DoD 7000.14-R (Reference (h)).

M&S. Defined in Reference (a).

M&S assets. M&S tools, data, and services, including models and simulations, and data assets.

M&SCO. A USD(AT&L) organization that serves as the DoD focal point for coordinating all matters related to DoD M&S and performs key DoD M&S enterprise-level coordination functions necessary to encourage cooperation, synergism, and cost-effectiveness among the M&S activities of the DoD Components.

M&S data. Defined in Reference (a).

M&S Enterprise Implementation Plan. A DoD plan coordinated with the DoD Components and published under the authority of the USD(AT&L) to achieve the vision, goals, and objectives for corporate and crosscutting M&S within the DoD.

M&S SC. An executive-level DoD committee that advises and assists the USD(AT&L) in all matters pertaining to DoD M&S.

M&S services. Defined in Reference (a). Examples include M&S standards development and promulgation, interoperability, Verification, Validation, and Accreditation (VV&A) process development, and workforce development.

M&S Strategic Vision. A high-level document, describing the strategic overview and goals for DoD M&S.

M&S tools. Defined in Reference (a).

metadata. Searchable information describing the characteristics of data; data or information about data; or descriptive information about an object's data, data activities, systems, and holdings. For example, metadata for a model or simulation will include keywords and a description of the capabilities along with developer and user information.

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

proprietary. A technological design or architecture that may not be duplicated without permission from the designer or architect.

reuse. Defined in Reference (a).

simulation. A method for implementing a model over time.