

Army Regulation 5-11

Management

Management of Army Modeling and Simulation

**Headquarters
Department of the Army
Washington, DC
30 May 2014**

UNCLASSIFIED

SUMMARY of CHANGE

AR 5-11

Management of Army Modeling and Simulation

This major revision, dated 30 May 2014-

- o Changes the name of the regulation from Management of Army Models and Simulations to Management of Army Modeling and Simulation (cover).
- o Introduces the Army communities enabled by modeling and simulation. These communities are referred to by their functional alignment, such as the Acquisition Community, Analysis Community, Experimentation Community, Intelligence Community, Test and Evaluation Community, and Training Community (para 1-1).
- o Establishes the acronym M&S to mean only "modeling and simulation." Other uses of the terms model, models, simulation, or simulations are spelled out without abbreviation (para 1-3b).
- o Assigns the Deputy Chief of Staff, G-8 as the proponent for Army modeling and simulation (para 1-4b(1)).
- o Assigns responsibility to the Director, Center for Army Analysis to perform coordination and collaboration across Army communities and functional areas enabled by modeling and simulation (para 1-4b(3)(a)).
- o Prescribes the designation of a general officer/senior executive service "community lead" for each Army community enabled by modeling and simulation (paras 1-4a(1), 1-4b(4), 1-4d(1), 1-4e(1), 1-4h(1), and 1-4j(1)).
- o Introduces the Army modeling and simulation management framework and the three components of governance, guidance, and execution (para 2-1a).
- o Describes the concept of Army communities enabled by modeling and simulation (para 2-1b).
- o Describes the modeling and simulation governance (paras 2-2 through 2-4).
- o Prescribes the functions of Army Modeling and Simulation Office (paras 2-5a through 2-5g).
- o Introduces the concept of enterprise-level modeling and simulation guiding priorities and principles (para 2-6c).
- o Updates policies and processes (chaps 3 through 7).
- o Adds a section on releasing of Army models and simulations (app B).
- o Adds an internal control evaluation (app C).
- o Makes administrative changes (throughout).


Management

Management of Army Modeling and Simulation

By Order of the Secretary of the Army:

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General, United States Army
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Official:



GERALD B. O'KEEFE
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History. This publication is a major revision.

Summary. This regulation describes the management of Army modeling and simulation. It is revised to designate the Army modeling and simulation proponent, prescribes the change to the modeling and simulation management structure, and describes the integrated management framework for Army enterprise modeling and simulation. The framework supports management activities such as centralized information dissemination, integration of modeling and simulation needs and requirements, and coordination while recognizing and facilitating the decentralized execution of modeling and simulation activities throughout the Army. The concept of the designated functional communities enabled by modeling and simulation is introduced in this revision. The designation of communities enabled by modeling and simulation facilitates information exchange and coordination within each community.

Applicability. This regulation applies to the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve unless otherwise stated. During mobilization, the proponent may modify chapters and policies contained in this regulation.

Proponent and exception authority. The proponent of this regulation is the Deputy Chief of Staff, G-8. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field-operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25-30 for specific guidance.

Army internal control process. This regulation contains internal control provisions in accordance with AR 11-2 and identifies key internal controls that must be evaluated (see appendix C).

Supplementation. Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from the Deputy Chief of Staff, G-8, 700 Army Pentagon, Washington, DC 20310-0700.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to the Deputy Chief of Staff, G-8 (CSCA-MS), 700 Army Pentagon, Washington, DC 20310-0700.

Committee management. AR 15-1 requires the proponent to justify establishing/continuing committee(s), coordinate draft publications, and coordinate changes in committee status with the U.S. Army Resources and Programs Agency, Department of the Army Committee Management Office (AARP-ZA), 9301 Chapek Road, Building 1458, Fort Belvoir, VA 22060-5527. Further, if it is determined that an established "group" identified within this regulation, later takes on the characteristics of a committee, as found in the AR 15-1, then the proponent will follow all AR 15-1 requirements for establishing and continuing the group as a committee.

Distribution. This regulation is available in electronic media only and is intended for command levels C, D, and E for the Active Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

*This regulation supersedes AR 5-11, dated 1 February 2005.

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Glossary

Chapter 1 Introduction

1–1. Purpose

This regulation prescribes policy and assigns responsibilities for the management of Army modeling and simulation (M&S). This regulation establishes the Army M&S management framework structure that includes Army communities enabled by M&S. A designated Army community enabled by M&S is referred to by its functional alignment. The current communities are the Acquisition Community, Analysis Community, Experimentation Community, Intelligence Community, Test and Evaluation Community, and Training Community. Specific Army communities enabled by M&S may be added or removed based on the requests of community leaders and as approved by the M&S proponent.

1–2. References

Required and related publications and prescribed and referenced forms are in appendix A.

1–3. Explanation of abbreviations and terms

- a. Abbreviations and terms used in this regulation are in the glossary.
- b. In this regulation, the acronym M&S is the abbreviation for the term “modeling and simulation” only and does not convey multiple meanings. All other contextual uses of the terms or combination of the terms model, models, simulation, or simulations convey an application or activity related to an actual model or simulation. These terms or combination of terms are spelled out and are not abbreviated within this document.

1–4. Responsibilities

- a. The Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA (ALT)) will —
 - (1) Designate a one- or two-star general officer (GO)/senior executive service (SES) community lead for the Acquisition Community.
 - (2) Designate members to represent the Acquisition Community interests at the Army M&S General Officer Steering Committee (M&S GOSC), Army M&S Council of Colonels (M&S COC), and other M&S forums.
 - (3) Provide guidance to program executive officers (PEOs) and program managers (PMs) to plan, at the execution level, for the integrated use of M&S throughout the acquisition life cycle of their programs.
- b. The DCS, G–8 will —
 - (1) Serve as Department of the Army M&S proponent.
 - (a) Provide policy guidance for the management of Army M&S.
 - (b) Develop and publish Army M&S strategic guidance.
 - (c) Establish M&S management processes for M&S governance that facilitate coordination of M&S activities across the Army.
 - (d) Establish enterprise processes for coordination and integration of M&S standards, architectures, networks, and environments.
 - (e) Establish enterprise processes for coordination and integration of common M&S tools and common M&S data.
 - (f) Establish enterprise processes to further interoperability of models and simulations.
 - (g) Establish mechanisms to facilitate Army coordination with the appropriate Department of Defense (DOD), Joint Staff and Joint agencies, combatant commands, other Services, international agencies, academia, and private organizations.
 - (h) Designate the Army communities enabled by M&S.
 - (i) Serve as, or designate, the chairperson of the M&S GOSC.
 - (2) Conduct program integration of Army M&S capabilities.
 - (3) Designate the Director, Center for Army Analysis (CAA) to act on behalf of the DCS, G–8, when required, in the execution of M&S proponent responsibilities prescribed in this regulation. The Director, CAA will —
 - (a) Perform coordination and collaboration across Army communities and functional areas enabled by M&S.
 - (b) When designated, execute the M&S management responsibilities on behalf of the Army M&S proponent.
 - (c) Designate the M&S COC chairperson.
 - (d) Serve as M&S executive for FA57, CP36, and M&S professional training and education.
 - (e) Develop guidance for Army verification, validation and accreditation (VV&A) practices for models, simulations, and accreditation of associated data.
 - (f) Develop guidance that supports opportunities for cross-community efficiencies.
 - (g) Establish an Army M&S Standards Program informed by the Army Information Technology Standards Program and coordinate approval of Army M&S standards.
 - (4) Designate a one- or two-star GO/SES community lead for the Analysis Community.
 - (5) Designate members to represent Analysis Community interests at the M&S GOSC, M&S COC, and other forums, such as a DOD Analysis Community forum on M&S.

- (6) Serve as the proponent for FA57 and functional chief for CP36.
- (7) Serve as the final release authority for Army M&S by approving or denying requests for release of Army models and simulations to foreign governments or international organizations.
- (8) Establish an Army information resource repository, registry, or catalog of Army M&S assets.
- (9) Designate the Army Modeling and Simulation Office (AMSO) as the execution office to support the Army M&S proponent with the implementation of M&S proponent responsibilities.
 - c. The Chief Information Officer/G-6. The CIO/G-6 will—
 - (1) Designate members, as necessary, to represent information technology and Army Enterprise Architecture (AEA) functional areas at the M&S GOSC, M&S COC, and other forums.
 - (2) Establish policies and procedures to enable models and simulations to connect to the global information grid.
 - (3) Identify Network Mission Area requirements for M&S based analysis to support decisionmaking on network capability investments.
 - (4) Accredite all models, simulations, stimulators, and emulators used by the central technical support facility to support Army interoperability certification test execution or the Army interoperability certification determination process.
 - d. The Deputy Chief of Staff, G-2 (DCS, G-2) will —
 - (1) Designate a one- or two-Star GO/SES Community Lead for the Intelligence Community.
 - (2) Designate members to represent the Intelligence Community interests at the M&S GOSC, M&S COC, and other M&S forums, such as a DOD Intelligence Community forum on M&S.
 - e. The DCS, G-3/5/7 will—
 - (1) Designate a one- or two-star GO/SES community lead for the Training Community.
 - (2) Designate members to represent Training Community, and other organizational interests at the M&S GOSC, M&S COC, and other forums.
 - f. The Chief of Engineers will ensure the Commanding General, U.S. Corps of Engineers will —
 - (1) Integrate Army M&S geospatial standards into the Army Geospatial Enterprise (AGE) implementation plans, roadmaps, and timelines.
 - (2) Provide, through the Army Geospatial Center, geospatial data and information (map, imagery, elevation, and feature data) to Army M&S developers.
 - (3) Designate members to represent the geospatial crosscutting issues at the M&S GOSC, M&S COC, and other M&S forums.
 - g. Principal Officials, Headquarters, Department of the Army (HQDA), directors, and agency heads within the Army will —
 - (1) Serve as a steward of M&S program or activity and M&S resources within the organization or agency area of responsibility.
 - (2) Promote M&S interoperability and reuse with the goal of ensuring the efficient and effective use of Army models and simulations.
 - (3) Designate representatives, as necessary, to represent organization or agency interests at the M&S GOSC, M&S COC, and other M&S forums.
 - h. Commanding General, U.S. Army Training and Doctrine Command (TRADOC) will —
 - (1) Designate a one- or two-star GO/SES community lead for the Experimentation Community.
 - (2) Designate the TRADOC, G-2 to ensure requirements of the operational environment are represented across all communities.
 - (3) Designate members to represent the Experimentation Community interests at the M&S GOSC, M&S COC, and other M&S forums.
 - i. Commanding Generals, Army commands; commanders, Army service component commands; commanders, and direct reporting units will—
 - (1) Articulate priority M&S requirements and capability gaps via the existing Army capability development and integration processes, and inform the AMSO.
 - (2) Reuse M&S assets to the greatest practical extent, commensurate with execution of mission and tasks.
 - (3) Designate representatives, as necessary, to present organization or agency interests at the M&S GOSC, M&S COC, and other M&S forums.
 - j. Commanding General, U.S. Army Test and Evaluation Command (ATEC) will —
 - (1) Designate a one- or two-star GO/SES community lead for the Test and Evaluation Community.
 - (2) Designate members within the Test and Evaluation Community to represent testing and evaluation interests at the M&S GOSC, M&S COC, and other forums, such as a DOD Test and Evaluation Community forum on M&S.

Chapter 2 Army Modeling and Simulation Management Framework

2-1. Army modeling and simulation management framework

a. The three components of the Army M&S management framework are governance, guidance, and execution. This framework promotes enterprise information exchange, integration, coordination, synchronization, and collaboration on Army M&S capabilities and requirements.

(1) The governance component formulates and disseminates M&S policy for the enterprise M&S efforts that guide the decentralized execution of Army M&S programs and activities by leaders, managers, developers, and users of M&S tools, data, and services.

(2) The guidance component provides the Army with focus on broadly applicable M&S guiding priorities and principles such as Army M&S vision, strategy, policy, management processes, standards, architectures, environments, interoperability, common tools and data, and M&S workforce training and education. The guidance component serves to influence the decentralized execution of M&S programs and activities within the Army.

(3) The execution component represents the decentralized execution nature of Army M&S programs and activities across the Army. Army commanders, leaders, and managers use the existing Army processes and procedures for programming, budgeting, and articulating M&S requirements.

b. The Army communities provide the Army with a way to characterize common functions or related interests enabled by M&S. The Army communities are designated along functional lines, not organizational lines. An Army community is a collaborative grouping of Army functional activities with common or related M&S interests. The characterization of Army functions provides opportunities for the coordination, integration, and synchronization of related Army M&S activities that enable the functional area, sharing and reuse of M&S knowledge, and commonality of requirements and resources.

c. For the purpose of M&S management, the Army M&S proponent designates the Army communities enabled by M&S. The number of Army communities is not fixed and can increase or decrease over time, based on the need for enterprise oversight of the M&S programs or activities within a given functional area.

d. The current Army communities and community lead organizations are—

- (1) Acquisition - Office of the ASA (ALT).
- (2) Analysis - Office of the DCS, G-8.
- (3) Experimentation - TRADOC.
- (4) Intelligence - Office of the DCS, G-2.
- (5) Test and Evaluation - ATEC.
- (6) Training - Office of the DCS, G-3/5/7.

2-2. Governance-Army modeling and simulation proponent and community leads

a. The DCS, G-8, as the Army proponent for M&S, is responsible for formulating and implementing effective Army M&S policies, management processes and controls. The Director, CAA, designated by the DCS, G-8, has the delegated authority to provide coordination of functions and responsibilities pertaining to Army M&S management.

b. The Army M&S proponent may designate new communities enabled by M&S or discontinue an existing community. Requests for designation or discontinuance of an Army community are presented through the AMSO for consideration by the Army M&S proponent.

c. Army community leads coordinate M&S activities within a designated community. An Army community lead is a one- or two-star GO/SES leader of an Army functional area with the responsibility to coordinate the enabling M&S activities within the community. An Army community lead may come from the HQDA Secretariat or General Staff, an Army command (ACOM), an Army service component command (ASCC), or direct reporting unit (DRU). Community leads are designated by a three star GO/SES Army Staff (ARSTAF) principal, commander, or agency head. Army community leads—

- (1) Coordinate M&S activities within their specified Army Community enabled by M&S.
- (2) Serve as a central point of contact and represent all participating M&S activities within the designated Army community.
- (3) Identify and prioritize requirements for their individual community, which are informed by the needs of the M&S users and their customers within the community.
- (4) Coordinate and integrate resourcing, capability development, fielding, and sustainment for community requirements.
- (5) Routinely inform the Army M&S governance forums of initiatives, planned activities, and issues.
- (6) Leverage and share strategies and tools from other communities.
- (7) Serve as members of the M&S GOSC.
- (8) Designate a representative (Colonel/O-6 or civilian equivalent) to serve on the M&S COC.

(9) May designate any other officials within the respective Army community to assist with monitoring and coordination of M&S activities within that Army community.

2-3. Governance-Modeling and Simulation General Officer Steering Committee

a. M&S GOSC. The M&S GOSC is the principal GO forum to govern and integrate Army M&S capability. The M&S GOSC will—

(1) Focus on enterprise M&S guiding priorities and principles that cut across multiple communities and have potential to increase M&S efficiency and effectiveness.

(2) Inform and provide integrating recommendations to the Army M&S proponent.

(3) Provide recommendations to the Army M&S proponent for enterprise solutions to address the M&S crosscutting needs of Army commanders and ARSTAF principals.

(4) Shape the implementing solutions to enterprise M&S guiding priorities and principles that include-M&S policies; processes for M&S governance; standards, architectures, and environments; common tools, data, and interoperability; and the Army M&S workforce. Army M&S recommended solutions shaped by the M&S GOSC that require formal decision or implementing action will follow the formal HQDA staff action control processes for decision or action by the responsible commander or HQDA staff principal.

(5) Establish Army M&S science and technology investment vision and priorities.

b. Term. The M&S GOSC will terminate upon completion of its advisory and integrating functions or two years, whichever is sooner, unless extended by the Secretary of the Army or designee.

c. Direction and control.

(1) The M&S GOSC receives direction from the DCS, G-8 and may provide self-generated direction.

(2) The Assistant DCS, G-8 chairs the M&S GOSC.

(3) The M&S GOSC will meet semi-annually or as required by the chairperson.

d. Committee structure and membership.

(1) The chairperson of the M&S GOSC invites representatives in the rank of one- or two-star GO (or civilian equivalent) from the designated Army communities and representatives from ACOMs, ASCCs, DRUs and Army agencies, as appropriate, to ensure Army M&S interests are broadly represented.

(2) The primary membership will be from Army communities enabled by M&S, Army commands, agencies, and the Offices of the—

(a) DCS, G-8 (Chaired by Assistant DCS, G-8) (also includes the Center for Army Analysis representing the Analysis Community).

(b) ASA (ALT) (also represents the Acquisition Community) (also includes Program Executive Office for Simulation, Training, & Instrumentation for input on Training Community issues).

(c) CIO/G-6.

(d) Deputy Under Secretary of the Army, Test and Evaluation Office (also co-represents the Test and Evaluation Community).

(e) DCS, G-1.

(f) DCS, G-2 (also represents the Intelligence Community).

(g) DCS, G-3/5/7 (also represents the Training Community).

(h) DCS, G-4 (includes Logistics Innovation Agency).

(i) Assistant Chief of Staff for Installation Management.

(j) TRADOC (also presents the Experimentation Community. TRADOC includes the Army Capabilities Integration Center; the Combined Arms Center; TRADOC Analysis Center; TRADOC G-2; and the Centers of Excellence).

(k) Army Materiel Command (includes the Research, Development and Engineering Command and the Army Materiel Systems Analysis Activity).

(l) U.S. Army Forces Command.

(m) U.S. Army Reserve.

(n) Army National Guard.

(o) The Surgeon General.

(p) Army Test and Evaluation Command (also co-represents the Test and Evaluation Community).

(3) The chairperson may invite participants from other M&S user communities, commands, and agencies. This participation may include but is not limited to—

(a) The Office of the Congressional Liaison.

(b) The Office of the Chief of Chaplains.

(c) Office of The Judge Advocate General.

(d) Network Enterprise Technology Command.

(e) Medical Command.

(f) U.S. Army Corps of Engineers.

- (g) Military District of Washington.
 - (h) U.S Army Intelligence and Security Command.
 - (i) Space and Missile Defense Command/Army Strategic Command.
 - (j) Army Research Institute.
 - (k) Human Resources Command.
 - (l) U.S. Army Recruiting Command.
 - (m) U.S. Army Cyber Command.
 - (n) U.S. Army Installation Management Command.
 - (o) U.S. Army Nuclear and Combating Weapons of Mass Destruction Agency.
- e. *Subcommittees.* The M&S GOSC may establish subcommittees as required. The M&S COC supports the M&S GOSC.

2-4. Governance-Modeling and Simulation Council of Colonels

- a. The M&S COC is a subcommittee to the M&S GOSC. It serves as an advisory forum to the M&S GOSC and Army M&S proponent.
- b. The M&S COC is chaired by a member of the AMSO. The M&S COC membership is aligned with the M&S GOSC membership; provides for a Colonel/GS-15 level subcommittee to work on behalf of the M&S GOSC. The M&S COC membership will include representatives from the Army communities enabled by M&S and may include interested representatives from the Army Staff, ACOMs, ASCCs, DRUs, and other Army agencies.
- c. The M&S COC will meet quarterly or as required to support the M&S GOSC and Army M&S proponent.

2-5. Army Modeling and Simulation Office

- a. The AMSO is the Army's focal office for facilitating cross-Army M&S information flow, integration, coordination, synchronization, and monitoring of Army M&S activities. The AMSO functions as the execution office supporting the Army M&S proponent with the execution of the M&S proponent responsibilities.
- b. The AMSO also serves as the Army organization for coordinating and communicating with the Office of the Secretary of Defense, Joint community, international organizations, and academia on M&S issues.
- c. The AMSO will provide support to the DCS, G-8 for program integration of Army M&S capabilities and initiatives.
- d. The AMSO will maintain visibility on Army M&S requirements, capabilities, and shortfalls or gaps. These M&S requirements, capabilities and gaps may range from those impacting Army wide activity to more specific requirements or shortfalls in individual models or simulations to represent their objects or artifacts or systems accurately in the operational environment or state appropriate to the M&S program or activity.
- e. Annually, the AMSO will submit to DCS, G-8, Program Analysis and Evaluation Directorate a request for collection of information on Army M&S investments. The request will require ACOMs, ASCCs, DRUs, PEOs, program management offices, and other operating agencies to submit Army M&S investment information, in support of Army program and budget formulation.
- f. The AMSO will coordinate with commands, organizations, and communities to ensure model improvement requirements address a current or future Army M&S need.
- g. The AMSO provides administrative support for the M&S GOSC and the M&S COC.
- h. The AMSO conducts M&S professional workforce development for FA57 career field and provides resources for training and education for civilian professionals in CP36.

2-6. Guidance

- a. Army M&S vision, strategy, and policy are coordinated through AMSO and distributed to the Army by or on behalf of the Army M&S proponent.
- b. Enterprise M&S guiding priorities and principles are areas that cut across multiple communities enabled by M&S. Enterprise management of these areas will significantly increase M&S efficiency or effectiveness.
- c. M&S guiding priorities and principles include, but may not be limited to—
 - (1) Army M&S policies that leverage and synchronize M&S capabilities across the Army.
 - (2) Management processes for models, simulations, and data that enable discoverability, accessibility, and reuse.
 - (3) M&S standards, architectures, networks, and environments that promote the sharing of M&S tools, data, and information across the Army and support interoperability among M&S capabilities and operational capabilities.
 - (4) Common M&S tools and data that provide timely and credible results to enhance effective decision-making.
 - (5) An Army M&S workforce that is trained, educated, and able to meet the Army's operational and institutional requirements.

2-7. Execution

- a. Army enterprise level prioritization and resourcing of Army M&S requirements are the purview of the appropriate

HQDA program evaluation group. At the execution level, prioritization and allocation of resources are tasks for the appropriate commander, program manager, or agency leader.

b. Army M&S policy and strategic guidance are centrally formulated; however, the actual execution of M&S programs and activities across the Army is decentralized.

c. The decentralized execution by commanders, leaders, managers, developers, and users of M&S is primarily guided by Army and organizational priorities. The execution of M&S programs or activities in the Army is influenced by the Army M&S vision, M&S strategy, and M&S implementation plans.

d. Although Army M&S programs or activities are executed and implemented at command and organizational level, the effective and efficient development and use of M&S requires coordination and collaboration across the Army.

Chapter 3 Policy

3–1. General

a. Army M&S policy is influenced by DODD 5000.59.

b. Army policies for the development and use of models and simulations will clarify or supplement DOD directives and instructions to satisfy Army requirements.

3–2. Standards

a. The Army will ensure the effective use of standards as enablers for tools, data, and services, leading to increased interoperability and reuse of models and simulations.

b. With a specific focus on the standardization of common and crosscutting M&S tools, data, and services, the Army M&S standards program will facilitate the cost effective use, reuse, sharing, credibility, and interoperability of models, simulations, and their associated data.

c. M&S standards include common M&S methods, procedures, techniques, algorithms, representations, and best practices.

d. Also considered are the AGE standards for the geospatial products used to promote M&S interoperability and reuse. Agencies developing models and simulations that require geospatial products will design the models and simulations to use standard products and formats that are compliant with the AGE.

e. Army M&S standards activities will include participation in DOD, Joint, North Atlantic Treaty Organization, international and civilian standards bodies and organizations.

3–3. Reuse

a. Army commands and organizations will reuse data, models, and simulations to the greatest extent practical.

b. Army commands and organizations will promote the use, and reuse, of government off-the-shelf (GOTS), non-proprietary M&S assets (that is, GOTS First). GOTS First includes government-sponsored development of M&S assets. Army commands and organizations may develop new government-owned or use proprietary M&S assets only when task or mission requirements dictate this course of action is appropriate.

c. Army M&S developers will coordinate with the CIO/G–6 Army Architecture Integration Center to ensure data definitions (for example schemes, taxonomies, and tagging) allow the maximum sharing of information between communities, commands, and organizations.

d. Army models and simulations that interface to the Army Enterprise infrastructure will comply with the provisions of the Army Networthiness Process in accordance with AR 25–1.

e. Army models and simulations that are a part of or interface to a DOD owned or controlled information system will comply with the provisions of the DODI 8510.01.

3–4. Modeling and simulation repositories, registries and catalogs

a. The AMSO will maintain an Army M&S repository. This Army M&S repository will promote visibility, interoperability, reuse, and commonality through information sharing and discoverability.

b. The information in the Army M&S repository will be available to Army M&S users, developers, program managers, and other authorized registered users. The Army M&S repository will contain descriptive metadata about Army M&S assets and contact information for the proponent of the Army M&S asset; the Army M&S repository will not contain executable M&S code. The information in the Army M&S repository will be shareable with other Department of Defense M&S (DOD M&S) discovery metadata capabilities.

(1) M&S assets in the repository will include descriptions and metadata of models, simulations, datasets, databases, algorithms, M&S tools, reports, and documents.

(2) Commands or organizations that have their own internal M&S repositories will inform the AMSO of the

repository's existence and will work with AMSO to provide identifying information about the repository so that it may be referenced in the Army M&S repository or linked to directly by others.

c. Army commands and organizations will input descriptive information about their models, simulations, and M&S assets to the Army M&S repository. Exceptions to this policy are those models and simulations developed for one-time application or a limited scope of application with no reasonable expectation of reusability by other M&S developers or users.

d. Developers and owners of Army models, simulations, and other M&S assets will enter the M&S asset in the Army M&S repository, for visibility.

(1) Owners of registered products in the Army M&S repository will maintain current metadata on their models, simulations, or other M&S assets and will annually verify the currency of their registered products.

(2) All resources in the Army M&S repository are subject to the specific releasability policies of the providing organization.

e. The Army M&S repository will only contain unclassified information about an M&S asset. Developers and owners of classified M&S assets will maintain the classified M&S asset and metadata in accordance with Army and local information assurance policies.

f. The information fields in any Army repository, registry, or catalog will conform to the DOD Discovery Metadata Specification (DDMS). The DDMS supports the DOD Net-Centric Data Strategy goal of visibility. It provides a baseline for metadata structure that supports visibility, interoperability, and reuse of Army models, simulations, and M&S assets.

3-5. Modeling and simulation life-cycle management

a. Life cycle management guidance for the integrated use of M&S throughout the acquisition life cycle of programs is in AR 70-1, DODD 5000.01, and DODI 5000.02.

b. Exceptions to this policy are—

(1) Models and simulations developed for non-system training devices for education and training.

(2) Models and simulations developed at engineering and scientific levels for mission applications and corporate business practice models, such as those focused on personnel planning and industrial operations.

c. Life-cycle management guidance for models and simulations developed for use in test and evaluation is according to the responsibilities defined in AR 73-1 and AR 70-1.

3-6. Modeling and simulation support planning

a. M&S must be an integral component of a PM's plans and planning activity. As described in AR 70-1, modeling and simulation should be used throughout the system acquisition process in a robust, collaborative manner to address system development.

b. In accordance with AR 70-1, PMs will incorporate M&S in their acquisition strategies to reduce cost and accelerate decision cycles in system engineering, and test and evaluation activities throughout the acquisition process. The PM should document the M&S planning in the system-engineering plan, the test and evaluation strategy, and the test and evaluation master plan. The PM should consider M&S solutions as options to support training requirements when deemed appropriate.

c. During planning, PMs will consider the M&S expertise and M&S assets available at the Army's battle labs and research, development and engineering centers.

3-7. Embedded models and simulations

a. Models and simulations developed as an integral part of a weapon system or other Army operational system may be managed in accordance with the prescribed policies and regulatory requirements covering the larger system.

b. The management and security of sensitive algorithms, data and processes of embedded models and simulations will be in accordance with appropriate regulatory guidance, particularly regarding sales to foreign governments or international organizations, and other military technology exchanges (refer to para 7-1b).

3-8. Professional workforce

a. The Army develops uniformed modeling and simulation professionals through the FA57 career field. DA Pam 600-3 provides professional development guidance for FA57 officers. CP36 provides resourcing for the education and training for civilian professionals in the career program for analysis, modeling and simulation. The CP36 Army Civilian Training, Education and Development System provides guidance on the professional development of Army modeling and simulation civilians.

b. The DCS, G-8 (as the FA57 proponent and CP36 functional chief), in conjunction with the Army Simulation Proponent and School, will determine requirements and methods to educate and train the Army's modeling and simulation careerists in the development, application, and management of Army models and simulations.

c. Commands and organizations should use these resources and other appropriate policies and regulations for the professional development of their modeling and simulation workforce.

Chapter 4 Verification, Validation, and Accreditation

4-1. General

- a. VV&A establishes the credibility of M&S to effectively support Army decisions and processes.
- b. All models, simulations, and associated data developed, made available, managed, or used by the Army to support Army or DOD processes, products, and decisions will undergo verification and validation (V&V) throughout their lifecycles and be accredited for the intended use.

4-2. Implementation

- a. VV&A of Army models and simulations must comply with DODI 5000.61. Army VV&A implementation guidelines are provided in DA Pam 5-11. The Military Standard (MIL-STD) 3022 provides a recommended format for documenting the results of VV&A.
- b. The results and applicability of VV&A of Army models and simulations and associated data will be documented and made accessible to all Army commands, organizations, communities, and other authorized users in the DOD except where limited by law, policy or security classification.
- c. Army commands and organizations using M&S will develop and document a VV&A policy tailored to their mission requirements and will document the accreditation authorities.
- d. M&S developers and users of federations must conduct V&V for the federation as a whole as well as for its component federates, sub-federations, individual components, and combinations of components.
- e. Legacy, commercial off-the-shelf models and simulations, or models and simulations from other government sources intended for use in Army applications are subject to VV&A. The Army M&S application sponsor should not assume that the commercial off-the-shelf or processes of other organizations outside the Army are configuration-controlled to the same extent required by the Army.
- f. A model or simulation accredited for a generic set of applications will be subject to reaccreditation when—
 - (1) The proposed use of the model or simulation is for a new type of application.
 - (2) A new reference version of the model or simulation is released.
 - (3) A period of three years has passed since the last accreditation.

4-3. Verification, validation, and accreditation coordination external to the Army

- a. The Army is the final authority over VV&A assessments of Army representations of concepts, tactics, forces, processes, doctrine, and capabilities in models, simulations, and associated data for joint, coalition, general, and community use applications for both friendly and opposing force perspectives.
- b. The Army performs VV&A of opposing forces (for example, threat portrayal) in coordination with the appropriate intelligence authority to ensure compliance with established intelligence positions and assessments.
- c. The Army coordinates with the other Services and defense agencies to ensure that representation of the other Services' forces and capabilities in Army models and simulations are appropriate.
- d. Developers of Army models and simulations that include representation of other DOD component entities or activities will coordinate the VV&A of the representation with the appropriate DOD component.

Chapter 5 Configuration Management for Models and Simulations

5-1. General

- a. The objective of configuration management (CM) is to improve the consistency and reliability of models and simulations. The practice of CM applies throughout the life cycle of Army models and simulations.
- b. The CM process is an integrated process encompassing hardware, software, and firmware.
- c. The CM process defines the model or simulation baseline configuration. Alterations to the baseline configuration require a formal change control procedure. Included in the CM of the model or simulation are the pre- and post-processors that are considered part of the baseline for the model or simulation.
- d. The CM process—
 - (1) Enables the identification of the status of the model or simulation and eliminates questions as to the current version.

- (2) Enables all authorized users to maintain or obtain the current model or simulation and associated documents.
- (3) Ensures that no changes occur to the model or simulation baseline without proper review and approval.
- (4) Provides an audit trail for the model or simulation life cycle history and ensures compliance with regulations and record keeping requirements.

5–2. Implementation

a. The materiel developer of the Army model or simulation or the proponent of the Army model or simulation performs configuration management. The model or simulation materiel developer or proponent—

- (1) Executes CM and may delegate the authority for selected CM activities.
- (2) Applies CM to models and simulations developed wholly or partly with Army funding.
- (3) Tailors the degree of CM to the complexity, size, quantity, intended use, mission, and life cycle phase of the model or simulation.

b. Refer to DODD 5000.01, DODI 5000.02 and the Defense Acquisition Guidebook for procedural information on CM activities. Refer to MIL–HDBK–61A Systems Engineering (SE) for information and guidance on CM activities.

c. Use commercial standards comparable to J–STD–016–1998 and International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC) 12207 for software development and documentation.

Chapter 6 Modeling and Simulation Data Management

6–1. General

The Army CIO/G–6 is responsible for the AEA. CIO/G–6 disseminates AEA policies, plans, and responsibilities in AR 25–1 and separate guidance documents.

6–2. Implementation

a. DODI 8320.02 and AR 25–1 inform the management of Army M&S data. The guidance in these references—

- (1) Establishes a framework for identifying, organizing, and managing Army data.
- (2) Provides verified, validated, and certified data that can be shared by Army M&S activities.
- (3) Facilitates internal, joint, and combined interoperability through the standardization and use of common data.
- (4) Seeks to improve data visibility, accessibility, and interoperability.

b. M&S data and information will conform to the policies and standards outlined in the DOD Information Technology Standards Registry.

c. Coordination between the Army community and the CIO/G–6 Army Architecture Integration Center is required for cross-function understanding of data definitions and standards for information exchange to maximize data sharing.

d. AR 115–11 informs the use of geospatial information and services in the Army. The U.S. Army must be capable of exploiting and sharing a wide-range of geospatial data, to include sources from the National Geospatial-Intelligence Agency, U.S. Army Geospatial Center, Army units, as well as commercial and international sources. Army commands, PEOs and PMs will design models and simulations in order to achieve geospatial interoperability of current and emerging systems.

6–3. Department of Defense Architecture Framework

a. The Department of Defense Architecture Framework (DODAF) provides a foundational framework for developing and representing architecture descriptions that ensure a common denominator for understanding, comparing, and integrating architectures across organizational, joint, and multinational boundaries. It establishes data element definitions, rules, and relationships and a baseline set of products for consistent development of systems, integrated or federated architectures.

b. Army M&S architectures, if described in Joint Capabilities Integration and Development System documents, will be compliant with the DODAF. The Defense Information Systems Agency maintains the DODAF. The DODAF is available electronically via the Defense Information Systems Agency On-line Standards Library.

6–4. Stand-alone simulation enclave information assurance

a. When agency or mission requires simulation architectures to operate as stand-alone simulation enclave or closed restricted network they must follow the governing DOD and Army risk management or information assurance policies that are in effect.

b. Operators of stand-alone simulation enclaves or closed restricted networks must ensure their designated authorizing official is knowledgeable of their operation and grants an approval to operate.

Chapter 7

Release of Army Models and Simulations

7-1. General

a. It is U.S. Government law and policy to transfer defense articles (including model or simulation software) and provide services when such transfers will strengthen the security of the United States, help allies and coalition partners deter or defend themselves against aggression while promoting interoperability with U.S. forces, and ensure that U.S. military forces continue to enjoy technological advantage over potential adversaries. M&S is an integral and virtually ubiquitous part of U.S. military capabilities. Consequently, M&S software may contain national security information ranging from the routine to highly sensitive.

b. The Army examines each requested release from a security, a legal, and a fiscal aspect. Many of today's models and simulations have weapon system performance and force structure information directly embedded, as well as the models and simulations themselves directly embedded in a weapon system; therefore, a release request will be analyzed by numerous agencies (for example, the appropriate PM, U.S. Army Security Assistance Command (USASAC), Deputy Assistant Secretary of the Army for Defense Exports and Cooperation (DASA(DE&C)), Office of The General Counsel (OGC) to determine if the requester has a valid requirement and if the information is releasable.

c. As software techniques become more sophisticated, the need to safeguard the Army's investment in emerging technologies increases. For models and simulations that contain proprietary software, contracting officers and supporting legal offices are contacted regarding the legality of such a release.

d. Appendix B contains information on M&S release approval authority, release to other U.S. government agencies, release to U.S. contractors and federally funded research and development centers (FFRDC), and the factors to determine releasability (for example, requirement, technical competence, and security) and the levels of release (for example, intra-service, inter-service, intra-governmental, commercial, and international). It also provides information on the release of model and simulation data, release to the media, release to foreign governments and international organizations, transfer via foreign military sales and transfer through other than foreign military sales.

7-2. Implementation

a. Requests for Army models and simulations are considered within the requirements of the U.S. laws, regulations, or international agreements or arrangements to which the United States is a party.

b. A government organization, whether foreign or domestic, will initiate requests for release of Army models and simulations. Information on the release process is in appendix B.

c. Requests for release of models and simulations to other U.S. Government agencies, including inter- and intra-service, must be made directly to the Army model or simulation proponent organization.

d. Requests for release of models and simulations to a U.S. contractor or FFRDC must be made by the government agency sponsoring the work of the U.S. contractor or FFRDC.

e. Requests by the media for information about an Army model or simulation must be made to the command or installation public affairs office for applicable agency and subject-matter expert coordination, evaluation, and release as appropriate.

7-3. Model and simulation release approval authority

a. For release of models and simulations to other U.S. Government agencies, U.S. contractors, and FFRDCs, the release authority is the commander or agency head of the organization that is the proponent for the model or simulation. Release authority may be delegated to lower levels as prescribed in appendix B-9; refer to the intra-Army, inter-service, intra-governmental, and commercial release levels.

b. Requests for release of Army models and simulations to foreign governments or international organizations are processed through established channels and forwarded through the AMSO for final review and recommendation of either approval or denial for final adjudication by the DCS, G-8. The DCS, G-8 may delegate approval authority one level lower. Requests by foreign governments or international organizations for release of models and simulations that involve multi-Service proponentcy, must be coordinated with each concerned Service prior to final adjudication by the Army approval authority.

c. Requests for release of classified Army models and simulations to foreign governments or international organizations are processed through established channels and forwarded through the AMSO for final review and a recommendation for approval or denial for final adjudication by the DCS, G-2, and in accordance with AR 380-10.

Appendix A References

Section I Required Publications

AR 25-1

Army Information Technology (Cited in paras 3-3d, 6-1, and 6-2a.)

AR 70-1

Army Acquisition Policy (Cited in paras 3-5a, 3-5c, 3-6a, and 3-6b.)

AR 73-1

Test and Evaluation Policy (Cited in para 3-5c.)

AR 380-10

Foreign Disclosure and Contacts with Foreign Representatives (Cited in para 7-3c.)

AR 381-11

Intelligence Support to Capability Development (Cited in para B-3b(2)(a) and B-3c(3).)

DA Pam 5-11

Verification, Validation, and Accreditation of Army Models and Simulations (Cited in para 4-2a.)

DDMS

DOD Discovery Metadata Specification (Cited in para 3-4f.) (Available at <http://metadata.ces.mil/dse/irs/DDMS/index.html>.)

Defense Acquisition Guidebook

Your Acquisition Policy and Discretionary Best Practice Guide (Cited in para 5-2b.) (Available at <https://dag.dau.mil>.)

DODD 5000.01

The Defense Acquisition System (Cited in para 3-5a and 5-2b.)

DODD 5000.59

DOD Modeling and Simulation (M&S) Management (Cited in para 3-1a.)

DODI 5000.02

Operation of the Defense Acquisition System (Cited in paras 3-5a, 5-2b.)

DODI 5000.61

DOD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (W&A) (Cited in para 4-2a.)

DODI 8320.02

Sharing Data, Information, and Information Technology (IT) Services in the Department of Defense (Cited in para 6-2a.)

DODI 8510.01

DOD Risk Management Framework (RMF) for DOD Information Technology (IT) (Cited in para 3-3e.)

ISO/IEC 12207

Standard for Information Technology Software Life Cycle Processes (Cited in para 5-2c.) (Available at <http://ieeexplore.ieee.org/Xplore/guesthome.jsp>.)

J-STD-016-1998

Software Life Cycle Processes, Software Development (Cited in para 5-2c.) (Available at <https://acc.dau.mil/CommunityBrowser.aspx?id=474328>.)

MIL-HDBK-61A Systems Engineering (SE)

Configuration Management Guidance (Cited in para 5-2b.) (Available at <https://acc.dau.mil/CommunityBrowser.aspx?id=142238>.)

Section II

Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this regulation.

AR 5-5

Army Studies and Analyses

AR 11-2

Managers' Internal Control Program

AR 11-18

The Cost and Economic Analysis Program

AR 25-2

Information Assurance

AR 25-30

The Army Publishing Program

AR 25-400-2

The Army Records Information Management System (ARIMS)

AR 70-41

International Cooperative Research, Development, and Acquisition

AR 115-11

Geospatial Information and Services

AR 350-38

Policies and Management for Training Aids, Devices, Simulators, and Simulations

AR 600-3

The Army Personnel Development System

AR 690-950

Career Management

DA Pam 600-3

Commissioned Officer Professional Development and Career Management

DOD 8320.02-G

Guidance For Implementing Net-Centric Data Sharing (Available at www.dtic.mil/whs/directives.)

DODI 5000.70

Management of DOD Modeling and Simulation (M&S) Activities (Available at www.dtic.mil/whs/directives.)

IEEE 1278

Institute of Electrical and Electronic Engineers - Standard for Interactive Simulation Protocols for Distributed Interactive Simulation (DIS) Application (Available at <http://ieeexplore.ieee.org/Xplore/guesthome.jsp>)

M&S Glossary

DOD Modeling and Simulation Glossary (Available at <http://msco.mil/MSGlossary.html>.)

MIL-STD-3022

DOD Standard Practice Documentation of Verification, Validation, and Accreditation (VV&A) for Models and Simulations, with change 1, 05 April 2012 (Available at http://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=275961.)

VV&A Recommended Practices Guide

Recommended VV&A practices for DOD models and simulations (Available at http://www.msco.mil/VVA_RPG.html)

Section III

Prescribed Forms

This section contains no entries.

Section IV

Referenced Forms

Unless otherwise indicated, DA forms are available on the Army Publishing Directorate (APD) Web site (<http://www.apd.army.mil/>).

DA Form 11-2

Internal Control Evaluation Certification

DA Form 2028

Recommended Changes to Publications and Blank Forms

Appendix B

Release of Army Models and Simulations

B-1. Model or simulation release to other U.S. Government agencies

a. Requests to release Army models and simulations to other U.S. Government agencies, including inter- and intra-Service, are made directly to the proponent organization of that model or simulation. The model or simulation proponent and the receiving organization will negotiate conditions of release. If the requesting government agency is unable to negotiate release from the model or simulation proponent, they may appeal to the DCS, G-8 for adjudication. This authority can be delegated one level lower.

b. The model or simulation proponent organization will obtain approval from the ACOM, ASCC, or DRU release approval authority.

c. After approval for release, the model or simulation proponent organization will prepare a memorandum of agreement (MOA) stating, at a minimum, that the U.S. Government organization receiving the model or simulation will

-
- (1) Not release it to third parties without written approval from the release authority.
 - (2) Use the model or simulation only for the purpose(s) stated in the MOA.
 - (3) Abide by all configuration control procedures established by the configuration manager.
 - (4) Provide copies to the model or simulation proponent of any modifications or enhancements made or proposed.
 - (5) Return the model or simulation to the configuration manager or otherwise erase all code associated with the model or simulation upon completion of the work for which the model or simulation was requested.

B-2. Model and simulation release to U.S. contractors and federally-funded research and development centers

a. Requests to release Army models and simulations to a U.S. contractor or FFRDC must be made by the government agency sponsoring the work of the U.S. contractor or FFRDC. Requests for Army models and simulations will not be accepted directly from a contractor or FFRDC. In the event the requesting organization is the same as the proponent organization, the same procedures are followed. Each request will state the specific requirement for the contractor to have access to the model or simulation and an assessment or impact of not releasing the model or simulation. If the model or simulation proponent requires reimbursement of costs or fees associated with the release or transfer, these will be negotiated with the requesting organization prior to requesting ACOM, ASCC, or DRU approval for transfer and will be identified as government-furnished material in the contract under which the contractor or FFRDC is engaged.

b. The model or simulation proponent organization will obtain approval from the ACOM, ASCC, or DRU release approval authority.

c. After approval for release, the U.S. Government organization sponsoring the contractor or FFRDC work will execute one of the following:

- (1) A modification to the original contract stating the conditions under which the model or simulation is released.
- (2) An MOA with the model or simulation proponent stating the following minimum conditions that the contractor or FFRDC receiving the model or simulation will —
 - (a) Not release it to third parties without written approval from the release authority.
 - (b) Use the model or simulation only for the purpose(s) stated in the MOA.
 - (c) Abide by all configuration control procedures established by the configuration manager.
 - (d) Provide copies to the configuration manager of any modifications or enhancements made or proposed.
 - (e) Return the model or simulation to the configuration manager or otherwise erase all code associated with the model or simulation upon completion of the work for which the model or simulation was requested.
 - (f) Acknowledge the U.S. Government retains the rights to any model or simulation provided and to modifications or enhancements developed by the contractor or FFRDC. The extent of these rights will be specifically described in the agreement and reviewed by the supporting legal offices including contractor or FFRDC, proponent, and OGC.

B-3. Release of model and simulation data

a. Model or simulation data requests will be made directly to the data proponent organization. Requests for data made to organizations other than the data proponent should be forwarded to the data proponent for action.

b. For release of model or simulation data to other U.S. Government agencies, U.S. contractors, FFRDCs, foreign governments, and international organizations through other than foreign military sales (FMS), the release approval authority is the commander of an ACOM, ASCC, DRU, or the agency head of the organization that is the data proponent for either data or sets of data. Designation or release approval authority is defined in appendix B of this regulation. The data request must, at a minimum—

(1) State the specific requirements and intended use of the data. The requester may also be asked to provide an assessment of the impact of not releasing the data.

(2) Cite the international cooperative research and development (R&D) agreement or the Information Exchange Program (IEP) annex if a foreign government or a foreign or international organization is making the request. Upon receipt of the request, the data proponent will, at a minimum—

(a) Ensure the data requester has a "need to know," the proper security clearances if the data is classified, and the ability to safeguard the data according to AR 381-11.

(b) Verify, validate, and certify the data, providing to the requester, in writing, any constraints and caveats placed on the data.

(c) Make data available for transmission in a machine-readable format per the Army policy for an open systems environment.

(d) Ensure release is in accordance with the delegation of disclosure authority letter.

(e) Forward an information copy of the request and the disposition to the Deputy Chief of Staff, G-8 (CSCA-MS), 700 Army Pentagon, Washington, DC 20310-0700.

c. If the data is being released to a U.S. contractor or FFRDC to support a specific government effort, the requesting organization will prepare an MOA stating—

(1) The receiving U.S. contractor or FFRDC will use the data only for the purpose stated in the request and will not release the data to third parties.

(2) Upon completion of the contract work calling for its use, the data will be returned to the data proponent unless otherwise provided for in approved contracting documents.

(3) All data will be protected per AR 381-11.

(4) The contract under which the U.S. contractor or FFRDC is engaged and state that the data is government-furnished material.

B-4. Model and simulation release to media

a. Media requests for Army model or simulation information are referred to the command or installation public affairs office for applicable agency and subject-matter expert coordination, evaluation, and release as appropriate.

b. Release of information will be approved at the lowest appropriate level. If the level of release authority is in doubt, the request will be coordinated with the next higher headquarters.

c. Local commanders have maximum flexibility in releasing information. However, commands will inform HQDA, Office of the Chief of Public Affairs, through command channels as soon as possible, when national news media requests are received or situations concerning their commands exist that have the potential for national media exposure.

B-5. Model and simulation release to foreign governments and international organizations

a. Release of Army models and simulations to foreign governments and international organizations can be accomplished through one of the following:

- (1) A FMS.
 - (2) An international cooperative research and development agreement.
 - (3) A project agreement or arrangement under a memorandum of understanding (MOU) or MOA.
 - (4) An equipment & material transfer agreement under a master MOU or MOA.
 - (5) A Stand-alone loan agreement.
 - (6) An IEP annex unless any of the following have been accomplished:
 - (a) The M&S has been fielded.
 - (b) The M&S has been put into practical use.
 - (c) The M&S has met initial operational capability.
 - (d) The M&S has been sold via FMS.
- b. No Army model or simulation will be released directly to foreign contractors. Requests for release to foreign contractors must be initiated by the government or organizations requiring the Army model or simulation, and must include a description of the existing effort to be supported.
- c. Requests will be submitted to the Deputy Chief of Staff, G-8 (CSCA-MS), 700 Army Pentagon, Washington, DC 20310-0700. .

B-6. Model and simulation procedures for international transfer via foreign military sales

a. A foreign government or international organization interested in purchasing an Army model or simulation through FMS submits a letter of request via their Embassy to the USASAC, Redstone Arsenal, AL. The USASAC will —

(1) Obtain a recommendation or position paper concerning the release of the requested model or simulation from the proponent that includes input from both the materiel developer and the capability developer even if they are in the same agency. The capability developer must ensure that all integral platforms and systems, behaviors, munitions, algorithms, data, or anything that could affect national security is approved for international release. This recommendation or position paper must identify other countries or international organizations to which this model or simulation has previously been released; include a system description of the requested model or simulation, and a sensitivity of technology statement. The sensitivity of technology statement will include the requested model or simulation version number and classification level; position statement from the model or simulation proponent's foreign disclosure and or security office is also required.

(2) Provide this recommendation to the DASA(DE&C) Directorate for Security Cooperation Integration (SAAL-NI) requesting concurrence from the DCS, G-8, the final release authority for Army models and simulations.

b. The SAAL-NI will coordinate the recommended sale with other appropriate HQDA elements, to include at a minimum, the DCS, G-2, and the OGC and provide their recommendation, as well as documentation showing the person and date the release was coordinated with, to the AMSO.

c. The AMSO will prepare a staffing package, with recommendation for approval or denial to release the model or simulation, for signature by the final release authority, the DCS, G-8. If the DCS, G-8 approves the release of the model or simulation to the foreign purchaser, USASAC will be advised by SAAL-NI that the price & availability data or letter of offer and acceptance may be developed and provided to the foreign purchaser. A letter of offer and acceptance must include notes that specify the following minimum conditions:

- (1) That the model or simulation will be used only for the approved purpose.
- (2) That the foreign purchaser will abide by all configuration control procedures established by the configuration manager.
- (3) That the U.S. Government will be provided copies of any modifications or enhancements made or proposed to the configuration manager.
- (4) That the model or simulation will not be released to anyone who is not an officer, employee, or agent of the purchaser, without the prior written consent of the U.S. Government.

B-7. Model and simulation release procedures for international transfer through other than foreign military sales

a. All requests for release of Army models and simulations through other than FMS should be initiated by the foreign government or international organization and submitted directly to the Deputy Chief of Staff, G-8 (CSCA-MS), 700 Army Pentagon, Washington, DC 20310-0700.

b. Upon receipt by the DCS, G-8, the request will be forwarded to the AMSO for action.

c. If the request is made under an existing international cooperative R&D agreement or project agreement under an MOU or MOA, the AMSO will —

(1) Obtain a recommendation or position paper concerning the release of the requested model or simulation from the proponent that includes input from both the materiel developer and the capability developer even if they are in the same agency. The capability developer must ensure that all integral platforms and systems, behaviors, munitions, algorithms, data, or anything that could affect national security is approved for international release. The recommendation or position paper will include a sensitivity of technology statement to include the version number and classification

level of the model or simulation. A recommendation or position paper must also be obtained from the proponent's foreign disclosure and or security office.

(2) Coordinate with the project officer or appropriate action officer of the agreement to provide written concurrence that the model or simulation is releasable under the international cooperative R&D agreement or project agreement under an MOU or MOA, and is in accordance with national procedures and with the delegation of disclosure authority letter.

(3) Provide these recommendations to the DASA(DE&C), Directorate for Armaments Cooperation (SAAL-NC), which will further coordinate the request with other appropriate HQDA elements, to include at a minimum the DCS, G-2, and the OGC, and provide their recommendation, as well as documentation showing person and date the release was coordinated with, to the AMSO.

(4) Prepare a staffing package, with recommendation for approval or denial to release the model or simulation, for signature by the final release authority, the DCS, G-8. The final release authority can be delegated one level lower.

(5) Advise the agreement project officer of the DCS, G-8's position on release of the model or simulation to the foreign government; if approved, the proponent can then arrange for proper transfer of the model or simulation.

d. Release of a model or simulation is allowable under an IEP annex for information and evaluation purposes only. A model or simulation is no longer "information" and is considered a defense article and thus outside the scope of an information exchange agreement if any of the following have been accomplished: the M&S has been fielded; the M&S has been put into practical use; the M&S has met initial operational capability; the M&S has been sold via FMS. If the request is made under an existing IEP annex, the AMSO will—

(1) Ascertain from the proponent that the intended use of the model or simulation is for information and evaluation purposes only.

(2) Obtain a recommendation or position paper concerning the release of the requested model or simulation from the proponent that includes input from both the materiel developer and the capability developer even if they are in the same agency. The capability developer must ensure that all integral platforms and systems, behaviors, munitions, algorithms, data, or anything that could affect national security is approved for international release. A recommendation or position paper must also be obtained from the proponent's foreign disclosure and or security office.

(3) Provide these recommendations to the technical project officer (TPO) of the agreement and request a recommendation or position paper that release of the model or simulation will be used for information and evaluation purposes only and is within the intent and scope of the IEP annex.

(4) Provide all recommendations for further coordination with other appropriate HQDA elements, to include at a minimum the DCS, G-2; OGC; and DASA(DE&C) SAAL-NC.

(5) Prepare a staffing package, with recommendation for approval or denial to release the model or simulation, for signature by the final release authority, the DCS, G-8. The final release authority can be delegated one level lower.

(6) Advise the IEP annex TPO and the proponent of the DCS, G-8's position to release the model or simulation to the foreign government; if approved, the proponent can then arrange for proper transfer of the model or simulation.

e. If the request is made under an equipment & material transfer agreement, an MOU or MOA, or under a stand-alone loan agreement (Section 65), the AMSO will —

(1) Obtain a recommendation or position paper concerning the release of the requested model or simulation from the proponent that includes input from both the materiel developer and the capability developer even if they are in the same agency. The capability developer must ensure that all integral platforms and systems, behaviors, munitions, algorithms, data, or anything that could affect national security, is approved for international release. A recommendation or position paper must also be obtained from the proponent's foreign disclosure and or security office.

(2) Provide these recommendations to the DASA(DE&C), SAAL-NC, which will further coordinate the request with other appropriate HQDA elements, to include at a minimum the DCS, G-2 and the OGC, and provide their recommendation, as well as documentation showing person and date with whom release has been coordinated with, to the AMSO.

(3) Prepare a staffing package, with recommendation for approval or denial to release the model or simulation, for signature by the final release authority, the DCS, G-8. The final release authority can be delegated one level lower.

(4) Advise the agreement TPO and the proponent of the DCS, G-8's position to release the model or simulation to the foreign government; if approved, the proponent can then arrange for proper transfer of the model or simulation.

B-8. Model and simulation and data releasability-factors

Releasability refers to the release of models, simulations, and related data. There are several major factors that must be considered in assessing releasability.

a. Requirement. Determining whether the requested model or simulation is appropriate for the intended application. If the decision is not to release, alternatives should be suggested or provided that meet the requester's information needs.

b. Technical competence. Determining whether the recipient has the technical ability and training to support running the model or simulation and using the data properly. An alternative to release in this category is implementing and or executing the model or simulation for the requester and assisting in interpretation of the results.

c. Security. Determining if both personnel security and system security requirements, to include multi-level security requirements, can be met for classified applications. This also covers national security implications governing the release of otherwise unclassified models and simulations to non-U.S. requesters.

B-9. Model and simulation and data releasability-release levels

The authority to release may be granted to differing levels of command depending upon the ultimate recipient. Release requirements are specified in chapter 7. The levels to which models, simulations, and data may be released and the associated release authority are grouped below. If authority is redelegated within the command or agency, the command or agency will maintain an appropriate level awareness of the models, simulations, and data that are released.

a. Intra-service. Delegated to ACOM or ASCC commanders and agency heads and may be redelegated lower.

b. Inter-service. Delegated to ACOM or ASCC commanders and agency heads and may be redelegated one level lower.

c. Intra-governmental. Delegated to ACOM or ASCC commanders and agency heads and not subject to redelegation.

d. Commercial. Delegated to ACOM or ASCC commanders and agency heads, but must include contracting considerations.

e. International.

(1) For model or simulation release through FMS—Retained at HQDA by the DCS, G-8, in coordination with other government agencies. This can be delegated one level lower.

(2) For data release through FMS—In coordination with other government agencies, delegated to ACOM or ASCC commanders and agency heads.

(3) For model or simulation release through other than FMS—Retained at HQDA by the DCS, G-8. This can be delegated one level lower.

(4) For data release through Non-FMS—Delegated to ACOM or ASCC commanders and agency heads.

Appendix C Internal Control Evaluation

C-1. Function

The function covered by this regulation is the management of Army modeling and simulation.

C-2. Purpose

The purpose of this appendix is to assist the M&S policy proponent and internal control administrators in evaluating the key internal controls via the assessment questions listed below. It is not intended to cover all controls. Refer to AR 11-2 for responsibilities and execution of the Army Managers' Internal Control Program. The test questions in paragraph C-4 are intended for assessable unit commanders or managers in accordance with AR 11-2 to conduct internal control evaluations.

C-3. Instructions

Answers should be based on the actual testing of key internal controls (for example, document analysis, direct observation, sampling, simulation, and other). Answers that indicate deficiencies must be explained and corrective action indicated in supporting documentation. These internal controls must be formally evaluated at least once every five years. Certification that this evaluation has been conducted should be accomplished on DA Form 11-2 (Internal Control Evaluation Certification).

C-4. Test questions

a. Are Army developed or owned models, simulations, and other M&S assets such as datasets, reports, tools, and utilities registered in the Army M&S repository?

b. Are the results and applicability of VV&A of Army models and simulations and accreditation of the associated data documented, visible and accessible in the Army M&S repository?

c. Do the Army commands and organizations that use M&S have a documented VV&A policy tailored to their mission requirements?

d. Does the model or simulation proponent (responsible for life cycle management), the PM, or the materiel developer maintain and execute a configuration management plan?

e. Does the USASAC coordinate and staff all FMS cases regarding release of Army M&S through DASA(DE&C) and the DCS G-8?

f. Do the PEO/PM shops know of and follow guidelines and procedures for international release of Army M&S?

g. Are all requests for Army M&S by coalition partners released in accordance with AR 5-11?

C-5. Supersession

There is no previous evaluation for this functional area.

C-6. Comments

Help to make this a better tool for evaluating internal controls. Submit comments to Deputy Chief of Staff, G-8 (CSCA-MS), 700 Army Pentagon, Washington, DC 20310-0700.

Glossary

Section I Abbreviations

ACOM

Army Command

AEA

Army Enterprise Architecture

AGE

Army Geospatial Enterprise

AMSO

Army Modeling and Simulation Office

AR

Army Regulation

ARSTAF

Army Staff

ASCC

Army service component command

ATEC

U.S. Army Test and Evaluation Command

CAA

Center for Army Analysis

CIO/G-6

Chief Information Officer/ G-6

CM

configuration management

CP

Career Program

DASA(DE&C)

Deputy Assistant Secretary of the Army for Defense Exports and Cooperation

DCS

Deputy Chief of Staff

DDMS

DOD Discovery Metadata Specification

DOD

Department of Defense

DODAF

Department of Defense Architecture Framework

DODD

Department of Defense Directive

DODI

Department of Defense Instruction

DRU

direct reporting unit

FA

Functional Area

FFRDC

Federally Funded Research and Development Center

FMS

foreign military sales

GO

general officer

GOTS

government off-the-shelf

HQDA

Headquarters, Department of Army

IEP

Information Exchange Program

M&S

modeling and simulation

M&S COC

Modeling and Simulation Council of Colonels

M&S GOSC

Modeling and Simulation General Officer Steering Committee

MOA

memorandum of agreement

MOU

memorandum of understanding

OGC

Office of The General Counsel

PEO

program executive officer

PM

program manager

R&D

research and development

SES

senior executive service

TPO

Technical Project Officer

TRADOC

U.S. Army Training and Doctrine Command

USASAC

U.S. Army Security Assistance Command

V&V

verification and validation

VV&A

verification, validation, and accreditation

Section II

Terms

Accreditation

The official certification that a model, simulation, or federation of models and simulations and associated data is acceptable for use for a specific purpose.

Algorithm

A computable set of steps to achieve a desired result approved by the appropriate source to be reused in models and simulations.

Application

A specific, individual project session that requires or uses a model or simulation to achieve its purpose.

Application sponsor

The organization that accredits and uses the results or products from a specific application of a model or simulation.

Army community

An Army community is a designated Army activity area that is enabled by M&S. It is a collaborative grouping of Army functional activities, with common or related M&S interests. In concept, it provides opportunities for broad participation by related Army M&S activities, M&S knowledge sharing and M&S reuse, and external-Army M&S coordination. An Army community is aligned under an Army community senior leader (GO/SES). The Army community lead serves as a central point of contact and represents all participating M&S activities within the designated Army community. The Army community lead does not exercise command authority in this role. The authority to designate an Army community enabled by M&S is the Army M&S proponent. Examples of such functional communities include Acquisition, Analysis, Experimentation, Intelligence, Test and Evaluation, and Training.

Army enterprise architecture

A disciplined, structured, comprehensive, and integrated methodology and framework that encompasses all Army information requirements, technical standards, and systems descriptions regardless of the information system's use. AEA transforms operational visions and associated required capabilities of the warfighters into a blueprint for an integrated and interoperable set of information systems that implements horizontal information technology insertion, cutting across functional stovepipes and Service boundaries. The AEA is the combined total of all the Army's operational, technical, and system architectures.

Army enterprise infrastructure

The systems and networks that comprise the LandWarNet.

Army modeling and simulation enterprise

Consists of the strategies, plans, policies, processes, decision makers, users, developers, tools, data products, associated infrastructure, and facilities that support the development and functional uses of M&S that enable mission execution throughout the Army.

Army Modeling and Simulation Office

The Army's focal office for facilitating cross-Army M&S information flow, integration, coordination, synchronization and monitoring of Army M&S activities. Functions as the execution office supporting the Army M&S proponent with the execution of the M&S proponent responsibilities. Serves as the Army organization for coordinating and communicating with the Office of the Secretary of Defense, Joint community, and international organizations on M&S issues.

Army M&S Proponent

The DCS, G-8 is the Army M&S proponent. The Army M&S proponent is responsible for formulating and implementing effective Army M&S policies, management processes, and controls.

Army M&S standards program

Fosters and facilitates the cost effective use, reuse, sharing, credibility, and interoperability of models, simulations, and their associated data through the use of standards, to include common M&S methods, procedures, techniques, algorithms, representations, and best practices. Specific focus is on the standardization of common and crosscutting M&S tools, data, and services. It includes nominating, vetting, approving, storing, and promoting M&S standards.

Army Simulation Proponent and School

A division within the DCS, G-8, CAA is responsible for the entire life cycle management (structure, acquisition, distribution, development, deployment, compensation, sustainment, and transition) of the Army's modeling and simulation workforce. Operates the U.S Army Simulation and Modeling School. Provides strategic focus, direction, and conducts daily life cycle operations concerning the Army's Career Program 36 (Analysis, Modeling and Simulation) and Functional Area 57 (Simulation Operations) Officers. Synchronizes Army efforts to manage M&S resources by developing, sustaining, and fully utilizing a qualified and certified Modeling & Simulation workforce.

Community lead

Army community leads coordinate M&S activities within a designated community. An Army community lead is a one- or two-star GO/SES leader of an Army functional area with the responsibility to coordinate the enabling M&S activities within the community. An Army community lead may come from the HQDA Secretariat or General Staff, an ACOM, ASCC, or DRU. Community leads are designated by a three star GO/SES ARSTAF principal, commander, or agency head. They also serve as members of the M&S GOSC.

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.

Configuration manager

The organization responsible for the execution of configuration management.

Data

A representation of real-world facts or concepts that is in a format usable by models and simulations.

Data proponent

The agency or organization that develops the requirement for a data collection or database and retains primary responsibility for it.

Discovery

The ability to locate data assets through a consistent and flexible search. Visibility, accessibility, and understandability are the high priority goals of the DOD Net-Centric Data Strategy. Of these goals, visibility and discovery are intimately linked. Visibility of a resource is, in a practical sense, useless if the resource is not easily discoverable.

DOD discovery metadata specification (DDMS)

The DDMS defines discovery metadata elements for resources posted to community and organizational shared spaces. With the express purpose of supporting the visibility goal of the DOD Net-Centric Data Strategy, the DDMS specifies a set of information fields that are to be used to describe any data or service asset, for example resource, that is to be made discoverable to the Enterprise, and serves as a reference for developers, architects, and engineers by laying a foundation for Discovery Services. The DDMS will be employed consistently across the DOD's disciplines, domains, and data formats. The DDMS elements as specified in this document, however, should provide a basis for organizations to begin planning, transitioning, and implementing metadata tagging initiatives that support the DOD's goal of increased data visibility and Enterprise Discovery. The current version of the DOD Discovery Metadata Specification and the current Extensible Markup Language implementation can be downloaded from <http://metadata.ces.mil/dse/irs/DDMS/index.html>

Federation of models and simulations

A system of interacting models and simulations with supporting infrastructure, based on a common understanding of the objects portrayed in the system.

Firmware

Computer instructions or data loaded on hardware as read-only software. The software cannot be readily modified under program control.

Geospatial information and services

The concept for collection, information extraction, storage, dissemination, and exploitation of geodetic, geomagnetic, imagery, gravimetric, aeronautical, topographic, hydrographic, littoral, cultural, and toponymic data accurately referenced to a precise location on the earth's surface. These data are used for military planning, training, and operations including navigation, mission planning, mission rehearsal, modeling, simulation, and precise targeting. Geospatial information provides the basic framework for battlespace visualization. It is information produced by multiple sources to common interoperable data standards. It may be presented in the form of printed maps, charts and publications; in digital simulations and modeling databases; in photographic form; or in the form of digitized maps and charts or attributed centerline data. Geospatial services include tools that enable users to access and manipulate data, and includes instruction, training, laboratory support, and guidance for the use of geospatial data.

Government-owned off-the-shelf first

The practice of first use and reuse of GOTS, non-proprietary M&S assets. GOTS First includes government-sponsored development of M&S assets. Army commands and organizations may develop new government-owned or use proprietary M&S assets only when task or mission requirements dictate this course of action is appropriate.

Information exchange program annex

An annex to an IEP agreement that provides details pertinent to the exchange of information in a specific area or field of interest. The provisions of an IEP agreement apply to all IEP annexes with the concerned country. There is no limit to the number of IEP annexes an IEP agreement may have. Under IEP agreements with selected countries, these annexes are called data exchange annexes or information exchange annexes.

Independent verification and validation

The conduct of verification and validation of a model or simulation by individuals or agencies that did not develop the model or simulation. Independent V&V does not require complete organizational independence, but does imply a reasonable degree of organizational separation to assure unbiased analysis.

Information technology

Any equipment or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency. For purposes of the preceding sentence, equipment is used by an executive agency if the equipment is used directly or is used by a contractor under a contract with the executive agency which 1) requires the use of such equipment, or 2) requires the use, to a significant extent, of such equipment in the performance of a service or the furnishing of a product. The term "information technology" also includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources. The term "information technology" does not include any equipment that is acquired by a Federal contractor incidental to a Federal contract.

Interoperability

The ability of a set of models and or simulations to provide services to and accept services from other models and or simulations and to use these exchanged services to enable them to operate effectively together.

Management framework

An Army construct for the management of Army M&S. The three components of the Army M&S management framework are governance, guidance, and execution. The governance component formulates and disseminates M&S policy and guidance for the enterprise M&S efforts that guides and influences the decentralized execution of Army M&S programs and activities by myriad commanders, leaders, managers, developers and users of M&S tools, data, and services. The guidance component provides the Army with focus on broadly applicable M&S guiding priorities and principles such as Army M&S vision, strategy, policy, management processes, standards, architectures, environments, interoperability, common tools and data, and M&S workforce training and education. The guidance component serves to guide and influence the decentralized execution of M&S programs and activities within the Army. The execution component acknowledges the fact of decentralized execution of Army M&S programs and activities by myriad commanders, leaders, developers and user of M&S tools, data, and services.

Mission command

The conduct of military operations through decentralized execution based on mission orders for effective mission

accomplishment. Successful mission command results from subordinate leaders at all echelons exercising disciplined initiative within the commander's intent to accomplish missions.

Model

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

Modeling

The application of a standard, rigorous, structured methodology to create and validate a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process.

Modeling and simulation

The discipline that comprises the development and or use of models and simulations.

Modeling and simulation activity

The development and maintenance of a computer-based M&S capability by or for organizations of the U.S. Army.

Modeling and simulation asset

M&S tools, data, services, models, simulations, datasets, databases, algorithms, reports and documents.

Modeling and simulation data

Data used to develop models or simulations, data used as input to models and simulations, and data produced by models and simulations.

Modeling and simulation developer

The organization responsible for developing, managing, or overseeing models and or simulations developed by a DOD component, contractor, or FFRDC. The developer may be the same agency as the proponent agency.

Modeling and simulation guiding priorities and principles

Basic requirements for Army M&S that cut across multiple communities, for which enterprise management will significantly increase efficiency or effectiveness. Examples of guiding priorities and principles are: M&S policy, management processes, standards, architectures, networks, environments, common M&S tools, common M&S data, interoperability and M&S workforce training and education.

Modeling and simulation services

An activity that enhances the ability to effectively and efficiently use M&S to accomplish a mission.

Modeling and simulation tools

Software that implements a model or simulation or an adjunct tool, for example, software and or hardware that is either used to provide part of a simulation environment (for example to manage the execution of the environment) or to transform and manage data used by or produced by a model or simulation. Adjunct tools are differentiated from simulation software in that they do not provide a virtual or constructive representation as part of a simulation environment.

Net-Centric data strategy

This refers to data being accessible, visible, discoverable, institutionalized (common DOD processes), understandable, interoperable, trusted, and responsive to the user's needs.

Non-system training device

A training device or simulation, which is not directly identified with a unique weapons system or platform, but rather has application over a wide spectrum of potential users.

Open systems environment

The fielding of hardware and software products that is interoperable and portable. The objective is to promote competition by allowing systems developed by multiple vendors and nations to interoperate through a common set of computer and communications protocols.

Post-processor

A software (and sometimes hardware) unit that conditions data after it is output by a model or simulation, in order to adapt it to a human analyst or observer or to another model. Example: A code that converts streams of metric

measurement data from a simulation into a graphic representation of a scene as viewed from the perspective of an aircraft or missile.

Pre-processor

A software (and sometimes hardware) unit that conditions or prepares data before the data is input into a model or simulation. Example: A code that converts metric data from Cartesian (rectangular) coordinates to flight coordinates (Euler angles) prior to its being input into an aircraft or guided missile model.

Proponent

The Army organization that has primary responsibility for development and life-cycle management of the reference version of one or more models or simulations.

Reference version

The most recent version of a model or simulation that has been released for community use by, and under configuration management of, the model or simulation user group executive committee.

Reuse

The practice of using again, in whole or part, existing M&S tools, data, or services.

Simulation

A method for implementing a model over time.

Simulation operations

The art and science of applying live, virtual, constructive, and gaming simulation technologies in support of military operations, training and acquisition activities which include, testing, experimentation and analysis.

Sponsoring agency

The agency, which sponsors the development or use of a model or simulation; utilizing either in-house, other government agency, or contract resources.

Standard

A rule, principle, best practice or measurement established by authority, custom, or general consent as a representation or example.

Technical project officer

An expert in the technical area covered by the IEP Annex, specifically authorized to implement, conduct and otherwise manage the exchange of information under the IEP Annex.

U.S. Army Modeling and Simulation School

A Department of the Army School organizationally assigned to the DCS, G-8, Center for Army Analysis. The school is operated by the Simulation Proponent and School Division and is located at Fort Belvoir, VA. The Army Modeling and Simulation School provides FA57, CP36, and the modeling and simulation workforce with qualification, certification, education, and training courses. The school is listed in the Army Training Requirements and Resource System as Army School Code 136.

Validation

The process of determining the degree to which a model or simulation and its associated data are an accurate representation of the real world from the perspective of the intended uses of the model. Validation methods include expert consensus, comparison with historical results, comparison with test data, peer review, and independent review.

Verification

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

Section III

Special Abbreviations and Terms

This section contains no entries.

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