

MODELING AND SIMULATION INTERNET SOURCES

U.S. DoD M&S RESOURCES

GENERAL RESOURCES

The Defense Modeling and Simulation Office (DMSO)

<https://www.dmsso.mil/public/>

The Defense Modeling and Simulation Office (DMSO) was established to serve as the executive secretariat for the Executive Council on Modeling & Simulation (EXCIMS). The DMSO is the catalyst organization for modeling and simulation (M&S) activities within the U.S. Department of Defense. They are a technology transition and support organization charged with maximizing the efficiency and effectiveness of M&S efforts across the Department and fostering interoperability and reuse among the DoD's models and simulations. DMSO projects include:

- HLA- High Level Architecture, a method for writing simulation communications standards
- MSRR- Modeling and Simulation Resources Repository
- MSIAC- Modeling and Simulation Information Analysis Center.

Defense Modeling, Simulation, and Tactical Technology Information Analysis Center (DMSTTIAC)

<http://dbweb.csie.ncu.edu.tw/~ljr/idbm/related-www/defense.html>

The Defense Modeling, Simulation, and Tactical Technology Information Analysis Center collects, analyzes and disseminates scientific and technical information in modeling, simulation and training; test and evaluation; tactical technology; and special operations.

DoD High Level Architecture Management Group (AMG)

<https://www.dmsso.mil/public/dod/amg/>

The Architecture Management Group (AMG) is chartered by the DOD Executive Council for Modeling and Simulation (EXCIMS) and is made up of representatives of major DOD simulation programs.

Modeling and Simulation Operational Support Activity (MSOSA)

<http://www.spawar.navy.mil/sti/publications/pubs/sd/007/sd007.html>

To improve coordination of U.S. DoD's M&S activities and to advance DoD M&S capabilities from within existing resources, the Executive Council on Modeling and Simulation (EXCIMS) established a prototype activity to provide expert operational assistance to the DoD M&S community. The MSOSA also provides assistance for the Modeling and Simulation Resource Repository (MSRR). The MSOSA is a contractor staffed activity operating under the direction of the Defense Modeling and Simulation Office (DMSO) Director of Operations. The M&S community can turn to the MSOSA for immediate assistance and information about the use of M&S assets, exercise and event schedules, models, simulations, and algorithms. MSOSA pulls together the existing DoD M&S infrastructure to focus initial support efforts in the Training community and quickly expand over time into support of selected Acquisition programs and Analysis projects.

Modeling and Simulation Information Analysis Center (MSIAC)

<http://www.msiac.dmsso.mil/>

MSIAC is a Department of Defense Information Analysis Center sponsored by the Defense Technical Information Center and the Defense Modeling and Simulation Office. Its mission is to access, acquire, collect, analyze, synthesize, generate, and disseminate scientific, technical, and operational support information in the area of modeling and simulation. The MSIAC is a single integrated modeling and simulation support activity with the following functions:

- Defense Modeling and Simulation Information Analysis Center (traditional IAC functions)
- Modeling and Simulation Operational Support Activity (operational support functions)
- Modeling and Simulation Resource Repository (re-use of M&S resources)

Functional Description of the Mission Space (FDMRS) Resource Center

<https://www.dmsso.mil/public/transition/fdms/>

This Resource Center has been developed to assist in the design, storage, and reuse of Mission Space (or Conceptual) Models. These models provide a basis for the development of consistent and authoritative simulation representations. The Defense Modeling and Simulation Office (DMSO) is leading a Department of Defense (DoD)-wide effort to provide an integrated framework for developing Functional Description of the Mission Space (FDMS). FDMS provides simulation-independent descriptions of real world processes, entities, and environment. The FDMS, High Level Architecture (HLA) and Data Standards programs constitute the three major components of DoD M&S Common Technical Framework. The FDMS provides the simulation developer with support for Functional Description creation, integration, and maintenance within DoD simulation programs, and interoperability across DoD simulation programs:

- Integration and interoperability standards
- Common Semantics and Syntax (CSS)
- Data Interchange Formats (DIFs)
- Closed-loop engineering process
- Operational infrastructure.

JOINT RESOURCES

Joint National Integration Center (JNIC)

<http://www.jntf.osd.mil/>

The Joint National Integration Center (JNIC) provides missile defense related analysis, system level engineering, integration, and test and evaluation support for the development, acquisition and deployment of air and missile defense systems and architectures. It supports the development of joint and combined missile defense doctrine, requirements, and concept of operations (CONOPS). Supports combatant commands by integrating missile defense concepts, space asset exploitation, battle management/command, control, communications, computers, and intelligence (BM/C4I) and by conducting joint and combined simulations, war games and participating in exercises as directed.

Joint Training Analysis and Simulation Center (JTASC)

<http://www.jtasc.jfcom.mil/>

United States Atlantic Command Joint Training Directorate - Joint Training Analysis & Simulation Center (JTASC). The JTASC represents a state-of-the-art technology center that supports joint training simulations for the Joint Warfighting Center, interoperability testing by the requirements and integration director's Joint C4ISR Battle Center, and joint experiments by the joint experimentation director.

Joint Interoperability Test Command (JITC)

<http://jitic.fhu.disa.mil/>

The Joint Interoperability Test Command (JITC) is part of the Defense Information Systems Agency. Its missions are joint interoperability testing, evaluation and certification of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems; testing of DISA's acquisition programs; and support of war fighters on operating and troubleshooting C4ISR systems. JITC will strengthen the test and evaluation (T&E) process by applying modeling and simulation (M&S) technology.

These baseline capabilities are currently available at the JITC:

- Joint Tactical Data Link (JTDL) Network
- Modeling Environments
- Communication System Stimulators
- Sensor Signal Emulators
- Joint Distributed Engineering Plant (JDEP).

Joint National Test Facility (JNTF)

<http://www.jntf.osd.mil>

The Joint National Test Facility provides missile defense related analysis, system level engineering, integration, and test and evaluation support for the development, acquisition and deployment of missile defense systems and architectures.

ARMY RESOURCES

Army Model & Simulation Office (AMSO)

<http://www.amso.army.mil/>

The Army Model and Simulation Office (AMSO) provides the vision, strategy, oversight, integration, training and management of Model and Simulation activities across all M&S domains and environments

National Simulation Center (NSC)

<http://leav-www.army.mil/nsc/>

The National Simulation Center provides simulation support to major military training exercises throughout the world. The NSC, through its TEMO, TPIO-STE and TPO functions, serves as the Combat Developer and Integrator of Live, Virtual, Constructive and STOW M&S requirements to ensure the Warfighter is provided with state-of-the-art training and mission rehearsal models, simulations and simulators that interface with operational C4ISR Battle Command Systems.

Logistics Exercise and Simulation Directorate (LESDD)

<http://www-leav.army.mil/nsc/lesd/>

The mission of the Logistics Exercise and Simulation Directorate of the National Simulation Center (NSC) is to plan, prepare, and provide Combat Service Support (CSS) simulation support for stand alone CSS exercises and CSS simulation support for linked WARFIGHTER, Commander-in-Chief (CINC), and Joint exercises.

Center for Strategic Leadership (CSL), at U.S. Army War College

<http://carlisle-www.army.mil/usacsl/index.asp>

The mission of the Center for Strategic Leadership is to serve as an educational center and high technology laboratory, focused on the decision-making process at the interagency, strategic, and operational levels – in support of the Army War College, the combatant commanders, and the senior Army leadership. The center's objectives are to expand and refine the study of strategic use of land power and its application in joint and combined operations, and to help senior leaders solve strategic problems with information-age technology.

The Army War College's Center for Strategic Leadership (CSL) has its genesis in the CSA's decision to increase use of simulation and war-gaming at the strategic level.

CSL competencies include: Joint operations, educational gaming, Army's Title 10 roles, political-military interfaces, mobilization and deployment, theater logistics, joint and multinational war-fighting, worldwide threats and operations other than war (OOTW) such as, humanitarian assistance and support to civil authorities, peacemaking and peacekeeping.

U.S. Army Simulation, Training, and Instrumentation Command (STRICOM)

<http://www.stricom.army.mil/>

STRICOM is the Army's leading provider of training devices, simulations, simulators and instrumentation for both training and testing. Uses large scale simulation exercises with the Distributed Interactive Simulation tools.

The Ballistic Missile Defense System (BMDS) Integration Data Center

<http://bmdssc.jntf.osd.mil/>

The Ballistic Missile Defense System (BMDS) Integration Data Center is a Center of Excellence in web-based modeling and simulation expertise, services, and information. The BMDS Data Integration Center places BMD information (M&S, Exercises, Flight and Ground Test, Wargames) on the BMD analyst's desktop.

Foundation Initiative 2010 (FI 2010)

<http://www.stricom.army.mil/PRODUCTS/FI2010/>

The Foundation Initiative 2010 (FI 2010) project is an interoperability initiative of the Director, Test, Systems Engineering and Evaluation, Office of the Under Secretary of Defense (Acquisition and Technology), funded through the Central Test and Evaluation Investment Program (CTEIP). The Army is the lead service for execution, with Navy and Air Force support. The FI 2010 effort is postured to improve systems development, testing, training and fielding through the application of object-oriented systems interoperability between simulations, hardware-in-the-loop (HITL) test laboratories, live/operational tests, and training systems.

NAVY AND MARINE CORPS RESOURCES

Navy Modeling & Simulation Management Office (NAVMSMO)

<http://navmsmo.hq.navy.mil/>

This is the web site of the Navy Modeling and Simulation Management Office (NAVMSMO). It serves as the web-enabled single point of public access to the

Navy's Modeling & Simulation Information Service (NMSIS). The NMSIS is a central repository for collecting, maintaining, and distributing information about Navy Modeling and Simulation to Navy program managers, engineers, model builders, and others in the M&S community.

Modeling, Virtual Environments and Simulation (MOVES) Institute, Naval Postgraduate School

<http://www.movesinstitute.org/>

The mission of the Modeling, Virtual Environments and Simulation Institute is research, application and education in modeling, virtual environments and simulation. The MOVES' research directions include 3D visual simulation, networked virtual environments, computer-generated autonomy, human-performance engineering, technologies for immersion, defense and entertainment collaboration, and combat modeling and analysis.

AIR FORCE RESOURCES

Air Force Agency for Modeling and Simulation (AFAMS)

<http://www.afams.af.mil/>

http://www.afams.af.mil/links/individual_cat.cfm?cat_id=2

The Air Force Agency for Modeling and Simulation (AFAMS) was created in June 1996 to coordinate growing requirement of the Air Force for modeling and simulation. The agency's mission is to support implementation and use of the Joint Synthetic Battlespace by: implementing AF/DOD M&S policy and standards; managing, coordinating, and integrating major AF M&S programs and initiatives; supporting corporate Air Force M&S operations; and promoting and supporting technology improvements.

Air Force Modeling and Simulation Master Plan

<http://www.afams.af.mil/webdocs/afmsmp/>

Air Force Modeling and Simulation Master Plan, 1 December 1995, Prepared by Directorate of Modeling, Simulation, & Analysis (HQ USAF/XOM)

M&S RELATED ORGANIZATIONS

U.S. National Center for Simulation (NCS)

<http://simulationinformation.com/index2.html>

The National Center for Simulation (NCS) is composed of governmental agencies, defense contractors and educational institutions. NCS members design and develop commercial interactive instructional tools utilizing computer technology, virtual reality, simulation, artificial intelligence and multimedia technologies. NCS is headquartered in Orlando, Florida which is home to 140 simulation and training companies, the Institute for Simulation and Training at the University of Central Florida, two major military simulation and training commands, and the Air Force Agency for Modeling & Simulation.

U.S. Conflict Simulation Laboratory (CSL)

<http://www.llnl.gov/nai/technologies/techmod3.html>

CSL is at Lawrence Livermore National Laboratory. The researchers at the Conflict Simulation Laboratory exploit advances in computers and computing science to develop large-scale, high-resolution simulations for realistically modeling combat scenarios. Their conflict simulation models are used by the U.S. military commands and services and by various U.S. security forces for training, tactical analysis, and mission planning. The models are also useful for planning law enforcement operations, fire fighting and disaster relief coordination, drug interdiction actions, and similar activities. Over the past 20 years, the CSL has developed increasingly capable multisided, interactive, entity-level conflict simulation models. The Conflict Simulation Laboratory developed and supports Joint Conflict Simulation (JCS), Joint Tactical Simulation (JTS), and Joint Conflict and Tactical Simulation (JCATS). The Joint WarFighting Center and the US Marine Corps used one of the CSL Simulations, Joint Conflict Model (JCM), successfully in Operation Just Cause in Panama and Operation Desert Storm in the Persian Gulf. The Urban Combat Computer Assisted Training System (UCCATS), a predecessor to the Joint Tactical Simulation (JTS), was used for operational planning in Somalia and Bosnia as well as to simulate other international incidents.

Simulation Interoperability Standards Organization (SISO)

<http://www.sisostds.org/>

<http://siso.sc.ist.ucf.edu/>

The Simulation Interoperability Standards Organization (SISO) focuses on facilitating simulation interoperability and component reuse across the U.S. DoD, other government, and non-government applications. SISO provides forums, educates the M&S community on implementation, and supports standards development.

Team Orlando

http://www.stricom.army.mil/TEAM_ORLANDO/

Team Orlando and the Center for Excellence for Simulation and Training, a triad of government, industry, and academia, was chartered in 1985. Team Orlando Objectives are: to prepare Army, Navy, Marine Corps and Air Force warriors to meet the challenges of the future battlespace; to emphasize effective employment of new simulation technologies, dual use technologies, and leveraging between services, other Government agencies, academia and industry to minimize costs to the taxpayer; and to support continued growth of the global synthetic environment to include our Reserve Component forces and multinational partners.

Military Operations Research Society (MORS)

<http://www.mors.org/>

The web site for the Military Operations Research Society (MORS)

MITRE

<http://www.mitre.org/>

MITRE is a not-for-profit corporation working in the public interest. It addresses issues of critical national importance, combining systems engineering and information technology to develop innovative solutions that make a difference.

Institute for Defense Analyses (IDA)

<http://www.ida.org/>

IDA's mission is to bring the best scientific and analytic minds to bear on the most important issues of national security while maintaining rigorous objectivity and professional excellence.

Arizona Center of Integrative Modeling and Simulation (ACIMS)

<http://www.acims.arizona.edu/>

Arizona Center of Integrative Modeling and Simulation actively collaborates with the M&S community in expanding and contributing to research, education, and outreach supporting leaders of M&S in government, industry, and universities. ACIMS fosters research into M&S methodologies and environments that contribute to a broad range of technologies being sought under such comprehensive initiatives such as Simulation Based Acquisition.

Society for Computer Simulation International (SCS)

<http://www.scs.org/>

The international, multidisciplinary forum dedicated to applications, development, education and research in modeling and simulation.

EUROSIM Federation of European Simulation Societies

<http://eurosim.tuwien.ac.at/eurosim/>

EUROSIM, the Federation of European Simulation Societies, was set up in 1989. The purpose of EUROSIM is to provide a European forum for regional and national simulation societies to promote the advancement of modeling and simulation in industry, research and development.

NASA AMES Research Center Simulation Laboratories

http://www.msiac.dmsi.mil/journal/nasa_44_1.html

The National Aeronautics and Space Administration's Simulation Laboratories at Ames Research Center is a leading research and development facility offering capabilities for conducting exciting and challenging research experiments involving aeronautics and aerospace disciplines. The entire collection of simulation components, support equipment, associated facilities and buildings are known as SimLabs.

Institute for Simulation & Training (IST), University of Central Florida (UCF)

<http://www.ist.ucf.edu/>

IST is an internationally recognized research institute associated with University of Central Florida. IST focuses on advancing modeling and simulation technology and increasing the understanding of simulation's role in training and education.

The World Game Institute

<http://www.worldgame.org/>

The World Game Institute is a 25-year-old not-for-profit education and research organization whose mission is to supply the perspective and information needed to solve the critical problems facing global society.

ACM Special Interest Group on Simulation (SIGSIM)

<http://www.acm.org/sigsim/main/frame.html>

SIGSIM is the ACM Special Interest Group on Simulation. Its mission is to promote and disseminate the advancement of the state-of-the-art in simulation and modeling. SIGSIM is committed to provide new exceptional electronic services.

Association for Business Simulation and Experiential Learning (ABSEL)

<http://www.towson.edu/~absel/>

ABSEL is a professional association whose purpose is to develop and promote the use of experiential techniques and simulations in the field of business education and development. The association was organized in Oklahoma City in 1974. Currently the organization is on the leading edge of developing and assessing business simulations and experiential exercises. ABSEL's annual conferences are a meeting place for professionals to exchange information and network with colleagues working in related areas. ABSEL also has an interdisciplinary and global membership and associations with ISAGA, JASAG, and NASAGA.

International Simulation and Gaming Association (ISAGA)

<http://www.isaga.info>

ISAGA is an international virtual organization for scientists and practitioners developing and using gaming, simulations and related methodologies (policy exercises, role-play, experiential exercises, play, case studies, structured experiences,

game theory, operational gaming, active learning, virtual reality, and debriefing). The aim of the association is to enhance and stimulate the development, application and use of these methods in the social, human and technological domains throughout the world.

North American Simulation and Gaming Association (NASAGA)

<http://www.nasaga.org/>

The North American Simulation and Gaming Association is a growing network of professionals working on the design, implementation, and evaluation of games and simulations to improve learning results in all types of organizations. Started in North America, NASAGA has members from more than 50 countries from around the globe. Membership is open to all.

Modelling and Simulation Society of Australia and New Zealand (MSSANZ) Inc.

<http://mssanz.org.au/index.html>

The Modelling and Simulation Society of Australia and New Zealand Inc. (MSSANZ), formerly the Modelling and Simulation Society of Australia (MSSA), and the Simulation Society of Australia Inc. (SSA), is an affiliate of the International Association for Mathematics and Computers in Simulation (IMACS), and the Society for Computer Simulation (SCS). The aims of the Society are to promote, develop and assist in the study of all areas of modeling and simulation. The Society has more than 500 members from 50 countries, including Australia, Canada, China, France, Germany, Japan, New Zealand, the Netherlands, South Africa, Spain, Switzerland, the United Kingdom and the United States. Members are from a wide range of professional disciplines including hydrology, agricultural science, economics, engineering, atmospheric science, ecology and many others.

M&S RELATED COMPANIES

Distributed Simulation Technology Inc. (DiSTI)

<http://www.simulation.com/>

DiSTI is an engineering and software development company in Orlando that can provide a wide range of services to support development of distributed simulation

and real time visual applications. It is also a training company that specializes in distributed simulation training.

Advanced Simulation Technology Inc. (ASTi)

<http://www.asti-usa.com/>

ASTi specializes in all aspects of communication and aural cueing for military simulation production programs. Stand-alone simulators, complex networked training suites, command and control facilities, long-haul communications network installations, and live-to-simulation integrations all benefit from ASTi's extensive experience in the military training and simulation industry.

ASTi's experience also reaches the commercial training and simulation market with applications including: FAA level "D" certified full flight simulators, air traffic control facilities, emergency response training, civilian ground vehicle simulation, and even nuclear power training simulators.

Teledyne Brown Engineering

http://www.tbe.com/technologies/model_sim.asp

Teledyne Brown Engineering has provided modeling and simulation and applications for a wide spectrum of defense programs including strategic missile defense, extended air defense, theater and tactical weapons, anti-satellite, and ground combat. The company has developed a large and versatile set of analytical tools and applications. The scope of these applications includes top-level operations research and system-level analysis tools; minutely detailed, high-fidelity analysis codes; and integrated analysis utilizing distributed simulation protocols and hardware-in-the-loop exercise and training testbeds. The Extended Air Defense Simulation, developed and maintained by Teledyne Brown, is used worldwide by friendly nations for assessing effectiveness of defense systems against extended threats.

Bissada Management Simulations (BMS)

<http://www.bissada.com/>

Bissada Management Simulations (BMS) is a company specialized in the design and delivery of business simulations for management education.

M&S RELATED JOURNALS

DEFENSE RELATED M&S JOURNALS

The MSIAC's M&S Journal Online

<http://www.msiac.dmsomil.com/journal/>

The M&S Journal Online is released quarterly to the M&S community. It is sponsored by DTIC and DMSO as part of the Modeling and Simulation Information Analysis Center (MSIAC).

JDMS: The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology

<http://www.scs.org/pubs/jdms/jdms.html>

The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology is a quarterly refereed archival journal devoted to advancing the practice, science, and art of modeling and simulation as it relates to the military and defense. It has been established by the U.S. Army Model and Simulation Office and the Society for Modeling and Simulation International (SCS). The journal covers all areas of the military/ defense mission, maintaining a focus on the practical side of systems simulation.

GENERAL M&S JOURNALS

SIMULATION: Transactions of the Society for Modeling and Simulation International

<http://www.scs.org/pubs/simulation/simulation.html>

The monthly refereed journal SIMULATION: Transactions of The Society for Modeling and Simulation International is devoted to providing information on the developments in the field of computer-based modeling and simulation. The journal presents both theoretical and application oriented papers, with clear relevance to general modeling and simulation issues.

Modeling & Simulation

<http://www.modelingandsimulation.org/>

The general interest publication of the Society for Modeling and Simulation International.

Simulation & Gaming: An Interdisciplinary Journal of Theory, Practice and Research

<http://www.unice.fr/sg/>

Simulation & Gaming: An Interdisciplinary Journal of Theory, Practice and Research is the official journal of ABSEL, NASAGA, JASAG, and ISAGA. Simulation & Gaming, edited by David Crookall, serves as a leading international forum for the study and discussion of simulation/gaming methodologies used in education, training, consultation, and research. This quarterly journal publishes theoretical and empirical papers related to man, man-machine, and machine simulations of social processes. Featured are theoretical papers about simulations in research and teaching, empirical studies, and technical papers on new gaming techniques. Published by Sage Publications, Inc., Thousand Oaks, CA.

M&S RELATED CONFERENCES, WORKSHOPS AND COURSES

SISO Conferences and Workshops

<http://www.sisostds.org/confandwork.cfm>

This is the official web page with information about various SISO organized events.

Simulation Interoperability Workshop

<http://www.sisostds.org/siw/>

The Simulation Interoperability Workshop is a semiannual event encompassing a broad range of modeling and simulation issues, applications and communities. The Workshop consists of a series of forums and special sessions addressing interoperability issues and proposed solutions; tutorials on state-of-the-art methodologies, tools and techniques; and exhibits displaying the latest technological advances.

European Simulation Interoperability Workshop

<http://www.sisostds.org/siw/eurosiw.htm>

The European Simulation Interoperability Workshop is an annual event, consisting of tutorials on the state-of-the-art methodologies, tools and techniques; topical survey sessions as well as a series of forums addressing interoperability issues and proposed solutions.

Conference on Behavior Representation in Modeling and Simulation

<http://www.sisostds.org/cgf-br/>

The Conference on Behavior Representation in Modeling and Simulation is an annual event that provides a forum for the exchange of information on the application of leading-edge cognitive science to the behavior representation challenges faced by the modeling and simulation community.

Workshop on Ultra Large Networks: New Research Directions in Modeling and Simulation-based Security

<http://www.acims.arizona.edu/EVENTS/ULN03/ULN03MainPage.htm>

The workshop brings together users of cyberspace networks and researchers in networking, modeling, and simulation. Their task is to identify key user requirements for network security and to translate these requirements into definitive simulation-based design approaches for future robust and secure ultra-large networks.

ACIMS Modeling & Simulation Conferences

<http://www.acims.arizona.edu/EVENTS/events.shtml>

This is the list of the M&S events of the Arizona Center for Integrative Modeling and Simulation

U.S. DoD M&S Education Project

<http://www.education.dmsso.mil/>

The site of the U.S. DoD M&S Education Initiative includes information on DMSO's Modeling & Simulation Staff Officer's Course.