



# DOD M&S VV&A Resources

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# Drivers

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- For over a decade, the DoD has promoted the incorporation of Modeling and Simulation (M&S) into Acquisition.
    - Major M&S development efforts - JWARS, JSIMS, JMASS, etc.
    - Distributed Applications with DIS and HLA
    - Simulation Based Acquisition (SBA) effort.
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# Established Requirements

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- Multiple Requirements and Instructions have been established which deal with the management of M&S - including the necessity of Verification, Validation, and Accreditation (VV&A)
    - DoD Instruction 5000.59 requires weapons systems acquisition programs to develop and execute M&S accreditation plans
    - Service Instructions (AFI-16-01, AR 5-11, SECNAVINST 5200.40) require accreditation of M&S for uses specified in the instructions, justified by accreditation support information
    - Service Operational Test Agency policies require accreditation of M&S used to supplement OT&E, justified by accreditation support information
    - Many individual agencies have policies requiring accreditation of M&S, justified by accreditation support information
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# The Demand

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- This environment has created a demand for resources
  - to support the credible employment of VV&A.
  - Demand driven by requirement to accredit M&S for specific applications.
    - Program Managers must accredit all M&S they employ. They require credibility evidence to make that accreditation.
      - Model Limitations and Assumptions
      - Configuration Management
      - Usage History
      - V&V History
      - Model Documentation
      - Data Pedigree
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# The Supply

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- It has been JASA's experience that the Supply has not met the Demand.
  - Evidence of M&S Credibility is not often documented in the normal course of M&S development and usage. There is not a lot of data just waiting around for the review of the Program's Accreditation Authority.
  - Three major limiting factors:
    - Time - When the PO needs the info, it is often too late to generate it.
    - Money - This can be an expensive activity that many view as a sinkhole.
    - Expertise - It is surprising how few people know what information is required, and how to acquire it in an affordable and timely manner.
- THIS DRIVES THE REQUIREMENT FOR VV&A RELATED RESOURCES IN THE DOD.**
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# The Resources

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- DMSO
  - Service M&S Offices
  - Support Organizations
  - Conferences and Workshops
  - Defense Schools
  - SEI
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# Defense Modeling and Simulation Office



The Defense Modeling and Simulation Office (DMSO) is the **catalyst** organization for DoD modeling and simulation (M&S) and ensures that M&S technology development is consistent with other related initiatives – **including VV&A.**

Contact: VV&A Technical Director  
Ms. Simone Youngblood  
703-998-0660  
or e-mail at [vva@dmso.mil](mailto:vva@dmso.mil)  
URL: <https://www.dmso.mil/public/>

# DMSO VV&A Technical Working Group (TWG)

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The DoD VV&A Technical Working Group is a technical advisory panel established under the Modeling and Simulation Working Group (MSWG).

It was established

- to advance the credibility, cost-effectiveness and accuracy of the results of models and simulations (M&S) developed and used by DoD;
  - to advise and assist DMSO in developing VV&A policies, standards and procedures for DoD models and simulations, including Joint applications; and
  - to identify and encourage promising VV&A techniques, processes and tools.
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# DMSO VV&A Technical Working Group (TWG) cont.

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The scope of the TWG's activities encompass the following:

- Provide advice on the direction of the DoD VV&A program
- Maintain connectivity and insure relevance of ongoing DoD/DMSO VV&A activities (as well as major program activities)
- Monitor VV&A activities on joint programs (e.g., JWARS, JSIMS, JMASS). Provide technical review & expert advice as requested.
- Serve as an interface/advocate of the DoD VV&A program to other communities to include individual Services and DoD Components
- Help integrate state-of-the-art technologies in DoD VV&A program

Membership in the TWG is comprised of representatives from the following, each of which brings a unique contribution to the group:

- Service Representatives - help build consistent policy.
- Program Representatives - provide window into ongoing VV&A activities.
- Technical experts - help establish credible procedures and tools.
- Academicians - help build the educational foundation.
- Contractors - serve as V&V practitioners and build the tools

Meets quarterly

- Next meeting: 15 November 2002, DMSO HQ. Alexandria VA
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# DMSO VV&A Recommend Practices Guide (RPG)

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The RPG is a web based guide which is a good resource for VV&A related information, including:

**KEY CONCEPTS**

**SPECIAL TOPICS**

**TEMPLATES**

**GLOSSARY**

**CORE DOCUMENTS**

**REFERENCE DOCUMENTS**

**BIBLIOGRAPHY**

**ACRONYMS**

URL: <http://www.msiac.dmsomil/vva/default.htm>

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# Service M&S Offices

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- Each Service has an office dedicated to M&S related activities - including VV&A.
  - Air Force - XIWM
    - URL: <https://www.xo.hq.af.mil/xoc/>
  - Army - Army M&S Office (AMSO)
    - URL: <http://www.amso.army.mil/main.htm>
  - Navy - Navy M&S Management Office (NAVMSMO)
    - URL: <http://navmsmo.hq.navy.mil/>
- They provide similar services:
  - Repositories for M&S related information
  - Periodic VV&A Technical Working Groups (TWGs)
  - Guidance and Help Desks

# M&S Information Analysis Center (MSIAC)

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- Their mission is to assist DoD activities in meeting their M&S needs by providing scientific, technical, and operational support information and services.
  - Sponsored by DTIC and DMSO
  - M&S University
    - **Verification, Validation and Accreditation (VV&A) Tutorial**
      - **2-4 hour** tailored presentation designed to familiarize Acquisition professionals with the planning and execution of VV&A for M&S applications
  - URL: <http://www.msiac.dmsso.mil/>
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# Joint Accreditation Support Activity (JASA)

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- **The Joint Accreditation Support Activity (JASA) is comprised of analysts and software engineers that provide VV&A-related services to the United States DoD**
    - **Development and implementation of VV&A programs for US and International Military Acquisition Programs**
    - **Training on practical VV&A principles, techniques and lessons learned - THE JASA TUTORIAL.**
    - **Developer of Standards for VV&A related documentation**
      - **The Accreditation Support Package (ASP)**
    - **Participation in US and International professional groups**
      - **Defense Modeling and Simulation Office (DMSO) Technical Support Group**
      - **Contributing author, DMSO VV&A Recommended Practices Guide (RPG)**
      - **Participation in International Test and Evaluation Steering Committee (ITESC) Working Group of Experts on V&V**
      - **Contributing author, International Test Operations Procedure on VV&A of M&S**
  - **Contact: Michele Kilikauskas, JASA Director (760)-939-8468**  
**URL: <http://www.nawcwpns.navy.mil/~jasa>**
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# Conferences and Workshops

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- There are a variety of M&S related Conferences and Workshops that provide valuable information and resources on VV&A related matters.
    - Foundations 02 - You are here.
    - The M&S Credibility Workshops
      - Sponsored by JTCG/AS, DMSO, NDIA
      - Past two Workshops in Reno available on CD
        - Contact Kathy Russell, JASA, (760)-939-4908
      - Effort now transitioning to joint DMSO - DOT&E effort to promote VV&A related educational opportunities.
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# Conferences and Workshops (cont.)

- Military Operations Research Society (MORS)
  - Variety of Symposiums and mini- Symposiums with VV&A tracks.
  - URL: <http://www.mors.org/index.htm>
- International Test and Evaluation Association (ITEA)
  - Hosts several events during the year. Some have VV&A related information,
  - Upcoming Events of interest:
    - Short Course Systems Validation and V&V
      - November 19-21, 2002, Fairfax VA
      - Contact: Jean Shivar (703)-631-6121
    - Model and Simulation Workshop
      - December 9-12, 2002 Las Cruces, NM
      - Annual event has VV&A tract and tutorials
      - Contact: Henry Newron, (505) 678-7450
  - URL: <http://www.itea.org/>

# Air Force Institute of Technology (AFIT)

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- The Air Force Institute of Technology (AFIT), located at Wright-Patterson AFB, Ohio, is the Air Force's graduate school and its premier professional continuing education institution.
    - URL: <http://www.afit.edu/>
    - On-site and Online courses are offered.
    - Some VV&A related offerings and content.
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# Defense Acquisition University (DAU)

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- The Defense Acquisition University (DAU) provides mandatory, assignment-specific, and continuing education courses for military and civilian acquisition personnel within the DoD. Its mission is to provide the acquisition community with the right learning products and services to make smart business decisions.
  - Course work includes M&S in acquisition.
  - URL: <http://www.dau.mil/>
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# Software Engineering Institute (SEI)

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- The DOD has sponsored the work of the Software Engineering Institute (SEI) at Carnegie-Mellon University in developing and improving the Capability Maturity Model (CMM).
    - Capability Maturity Model (CMM)
      - Used as a benchmark for the maturity of an organization's processes
      - Contain essential elements of effective processes
      - Applies to multiple disciplines and process levels
      - Describes an improvement path from an ad hoc, immature process to a disciplined, mature process
      - Not a process or process structure itself
    - Capability Maturity Model Integration
      - Integration of three related CMM "source models" into a single integrated process benchmark
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# Benefits of the CMM to M&S Credibility

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- DOD intentions for the CMM was to measure the maturity of a software development organization, in order to assess the ability of the organization in meeting cost and schedule requirements of software-intensive acquisitions.
    - The CMM was not intended to address the credibility of the M&S.
    - However, there have been several studies that indicate there is value in applying the CMM to assess and improve M&S credibility.
  - SEI sponsors conferences and formal training in many of the relevant aspects of the CMM.
  - URL: <http://www.sei.cmu.edu/>
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# Summary Remarks

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- There are many opportunities to network with other DOD professionals in VV&A to share experiences and information.
    - e.g. TWGs, Workshops, Conferences
  - The formal educational courses offered by the DOD VV&A community are minimal.
  - Supply does not meet demand and may be trending the wrong way.
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