



DON VV&A PROGRAM

Meeting Minutes: VV&A TWG Workshop Number 6

Overview

The Department of the Navy (DON) Verification, Validation, and Accreditation (VV&A) Program, Technical Working Group (TWG) Workshop, Number 6, was held at the Naval Air Warfare Center, Weapons Division, Point Mugu, California on February 6, 2001. Twenty-eight DON and DON contractor personnel attended the all-day event.

The workshop agenda is presented in enclosure 2. The focus of Workshop 6 centered on M&S VV&A activities within the Naval Air Warfare Center Weapons Division (NAWCWD). In addition to the NAWC-WD M&S program presentations, the Joint Accreditation Support Activity (JASA) presented an accreditation risk assessment tool they are working on and Boeing presented the benefit of their experiences in obtaining a SEI CMM Level 5 rating.

Among the many discussions throughout the day, the following are some of the issues raised during the workshop.

1. The difficulty of maintaining/establishing accreditation authority when multiple agencies and organizations are involved with a particular M&S use.
2. The difficulty in maintaining continuity on VV&A activities can be difficult when program management changes mid-stream.
3. The difficulty of getting validated threat data from the M&S labs fed into training simulations/simulators to improve training realism?

Lessons Learned brought out during the workshop included:

1. "Get it in writing!" In working with accreditation authorities/agents, get them to specify their M&S use, M&S use-requirements, M&S acceptance criteria, and all user-required evidence and documentation not only IN WRITING but also SIGNED!
2. The VV&A Team must work with the M&S user to clearly define user needs. This is a difficult, but critical, process that may take several run-throughs before the user needs are clearly defined.



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3. When developing any type of process or standard, the practitioners of the standard or process should be involved throughout, and they should be encouraged to tailor the processes/standards to optimize their effectiveness.
4. Organizational process improvement starts at the top. It is a must to have top-level management's firm and continued support in order to evoke real change and progress.
5. Management must use performance metrics as a tool for process improvement and not for punishment. This will create the open atmosphere necessary to gain needed insights.

It should be noted that the individuals presenting in this workshop have done so voluntarily. And, as they are taking precious time from their schedule, we try not to place any undue burden on them, such as restricting their style of presentation. As such, we had presenters show up with PowerPoint slides on PC disks, CDs, and Iomega ZIP disks. Some presenters brought video on VHS tapes and others brought viewgraphs for overhead projectors.

Fortunately our host booked us in a conference room that could handle all these various presentation mediums and the workshop went off without a hitch. We would like to thank all the presenters for their time and effort in making this a successful workshop, and we would like to particularly thank the host for his invaluable help in organizing the workshop, arranging the M&S lab tour, and providing us with such a presenter-friendly conference room.

Presentations

1. An overview of the Advanced Medium-Range, Air-to-Air Missile (AMRAAM) Simulation was presented and the briefer spoke about the various verification and validation (V&V) activities they have been involved in. The presenter is the Lead Test Engineer, AMRAAM Integrated Product Team (IPT), NAVAIR TEAM. Hardware-in-the-loop simulations support F-15, F-16, and F-18 Operational Flight Test (OFT) and VX-9 Operational Test (OT). The simulation lab implements a formal V&V process that includes the documentation of V&V plans and reports, configuration management (CM) plans, and documented procedures. They use approximately 15-20 percent of available lab shifts for V&V activities (1 out of 6 shifts used for V&V, 1 out of 6 used for lab maintenance, and 4 out of six used for project work). They use Rational's ClearCase configuration management tool within their program. The simulation has not been accredited by any of its users to date.
2. The Deployed Product Support Lead for the TACAIR Electronic Warfare (EW) IPT at NAWCWD spoke about the Electronic Warfare Software Support Activity (EWSSA) Verification and Validation (V&V) activities. The threat simulator was



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accredited to support the Integrated Defensive Electronic Countermeasure (IDECM) Program and is starting an accreditation process to support an offensive weapon system program. It was noted mentioned that the organization would be hosting the EWOHE at Point Mugu in two weeks.

3. An Embedded Software Engineer for Boeing Space and Communications Group in Huntington Beach, CA spoke about the benefits of an SEI CMM Level 5 Organization and is a member of the Software Engineering Process Group that supports programs in the Human Space Flight and Exploration, Expendable Launch Systems, and Navigation Programs business units. She was significantly involved in the CMM-based Appraisal for Internal Process Improvement (CBA-IPI) in September of 1999, which resulted in the organization receiving a Software Engineering Institute (SEI) Level 5 rating for software process maturity. Her presentation included suggested metrics and working solutions for sensibly applying structured processes to software organizations. This guidance is directly applicable to M&S organizations trying to improve their development and maintenance processes.
4. A senior accreditation support analyst with JASA and is the accreditation support lead for the Evolved SEASPARROW Missile (ESSM) and the Rolling Airframe Missile (RAM) Programs spoke about the accreditation support the Joint Accreditation Support Activity (JASA) provided to the Rolling Airframe Missile (RAM) and Evolved Sea Sparrow Missile (ESSM) Programs. Her talk included many lessons learned which could benefit all VV&A practitioners.
5. The Navy Threat/Simulation Validation Coordinator and Head of the Navy Threat /Simulation Validation Office spoke about the Navy Threat Validation and Simulation Program and described the Threat Validation Reports produced by his office. The program has produced many validation reports on a variety of threats and simulations used in support of DT/OT&E and training. The presenter described both the validation process and the validation report content in his presentation.
6. The head of the Electro-Optical Simulation Lab (EOSIM Lab) spoke about the V&V process used for IR modeling. Several of their M&S associated with the Spectral In-band Radiometric Imaging of Targets and Scenes (SPIRITS) have been accredited to support OT&E. The presenter is responsible for developing, validating, and testing Infrared (IR) and ultraviolet (UV) models and is an Electronics Engineer for the Electronic Warfare Division. A reference paper on SPIRITS development and operation was provided in hardcopy format at the workshop and can be made available upon request.



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7. The Head of the Radar Reflectivity Laboratory (RRL) and the Missile Engagement Simulation Arena (MESA) spoke about Radar Cross Section (RCS) Data Verification. He works for NAWCWD and manages laboratories at both China Lake and Point Mugu. The presenter provided many military and non-military use examples of the RRL and the MESA.
8. The V&V of ECM Models was presented. The briefer discussed the type of V&V methodologies used with ECM models and described their current processes for documenting V&V activities and pointed out that formalizing their V&V processes is fairly new in the airborne EW warfare systems he is dealing with, but they are making headway in that area.
9. Computer Sciences Corporation is a support contractor for JASA and the CSC representative spoke on the JASA Accreditation Process and on the accreditation tool set that JASA is developing. The suggestion was made that the two organizations (JASA and DON VV&A Program) combine their VV&A tool development to produce a comprehensive suite of tools.
10. Titian Systems Corporation spoke about the EA-6B Simulation program. The simulation is used primarily to support development and initial hardware and software integration testing. While it maintains an on-going V&V effort, there have been no formal attempts at accreditation by the simulation users.
11. The Lead Test Engineer for Advanced T&E Concepts led us on a tour of three of the Modeling and Simulation (M&S) Labs at Point Mugu. The first tour stop was at the Radar Reflectivity Laboratory referring back to his presentation (7).

The second stop on the tour was the SPARROW, SEA SPARROW, or Evolved SEA SPARROW Missile (ESSM) Hardware-in-the-Loop (HIL) Laboratory. The locals usually refer to it as the SPARROW HIL. It is mainly an RF lab. This simulation emulates the RF environment for a mounted missile and the simulation can, and has been, linked with other simulations and real systems.

The final stop on the tour was the Visioneering Laboratory. In this lab they demonstrated several terrain generation and display capabilities being developed there. The realism, and the ability to change viewing resolutions so quickly, was inspiring.