



V&A

Verification, Validation & Accreditation Recommended Practices Guide

On-Line Version



Presentation to DMSO Industry Days

22 May 2000



The User and VV&A?

*The User is the driver for the overall application of the simulation, the one who **uses the simulation to solve a problem.***

*The intent of the V&V and Accreditation effort is to provide evidence to the User about the **credibility** of using the simulation to solve the User's specific problem.*



How Does the User Impact VV&A?

- **The User provides:**
 - problem domain requirements
 - application requirements, scenarios, and use cases, and
 - subject matter experts (SMEs) for the problem and use domains
- **The User:**
 - designates the Accreditation Agent,
 - approves accreditation requirements and acceptability criteria,
 - ensures funding is available for the accreditation assessment, and
 - makes the accreditation decision



How Does VV&A Impact the User?

- **The User is directly impacted by the quality, completeness, and timeliness of the VV&A effort.**
- **The User:**
 - **is critically concerned with the **credibility** of simulation outputs**
 - **must know how well the simulation can support the intended use**
 - **decides how much risk is acceptable for the intended use**
 - **decides how to deal with simulation constraints or limitations identified during the V&V effort and accreditation assessment**



What are the User's Responsibilities in **VV&A?**



- **The User makes the accreditation decision:**
 - monitors all VV&A activities to ensure complete and accurate information is generated so an informed decision can be made,
 - establishes boundaries for the overall VV&A program based on the critical elements that pertain to the intended use, and
 - guides the planning and resource allocation of the accreditation process, and monitors implementation.
- **The User is the representative for the specific use:**
 - provides the original problem and requirements,
 - serves as an authority for the user domain and problem domain,
 - provides subject matter expertise in these areas for both development and V&V activities, and
 - serves as the final decision maker on all issues that impact the ability of the simulation to address the intended use.



What Challenges does the User Face Relative to VV&A?



- **Defining success** – deciding how much evidence is needed to determine credibility
- **Profiling the application effort** – determining which situations, scenarios, use cases, etc., can best address the application
- **Analyzing risk and uncertainty** – identifying risks; establishing assessment priorities based on the risks
- **Tailoring** – finding cost-effective ways to assess the simulation; ensuring V&V activities are appropriate and adequate to meet the needs of the application



Specific User Responsibilities

Activity	Typical User Role
Define requirements	Provide requirements from problem use domains
Develop scenario	Provide use cases, environments, etc. describing how simulation entities, behaviors, and interactions should be represented
Select Accreditation Agent	Designate appropriately experienced Accreditation Agent to conduct the accreditation assessment
Select SMEs	Select user and problem domain SMEs to assist with problem definition, simulation development and V&V activities
Define metrics and acceptability criteria	Help select appropriate measures of merit and acceptability criteria each requirement must meet



Specific User Responsibilities (cont.)

Activity	Typical User Support
Identify data sources	Identify appropriate, authoritative sources for data needed by the simulation
Verify requirements	Serve as a SME for the user and problem domains
Validate conceptual model	Serve as a SME for the user and problem domains
Validate results	Serve as SME for the user and problem domains to prepare test cases, provide validation data, and participate in the evaluation of results
Review products	Review user manuals, documentation, etc.
Make decisions	Make decisions on problems that impact the ability of simulation to meet usage needs Make accreditation decision based on evidence provided by V&V effort and accreditation assessment