Modeling and Simulation CMMI: A Conceptual View

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There is a lack of guidelines for determining an organization's modeling and simulation (M&S) competency level such as maturity or capability. This makes it difficult for a customer to identify innovative companies who successfully deliver M&S-intensive products better, faster, and cheaper than the competition. This article advocates inclusion of M&S as a discipline into the Software Engineering Institute’s Capability Maturity Model® IntegrationSM. This enhancement should provide the most efficient and cost effective means to identify and improve a company’s capability to manage the development, acquisition, and maintenance of M&S products and services.

Should Modeling and Simulation be an Integrated Component?

The Capability Maturity Model Integration provides:
- An ordered collection of best practices.
- A description of "WHAT" is required, not "WHO" or "HOW."
- A road map for the technical discipline and management process improvement.

M&S Industry Standards and Best Practices

An industry standard provides an accepted technical approach for the design and development of communication systems, system architectures, and information systems. Industry standards for the life-cycle development of M&S systems do not yet exist. By conforming to an international standard for M&S design and development, organizations are confident that their M&S system modifications for enhancements, interface definitions, and interoperability can be realized more easily, cohesively, and cost effectively.

SEI states that its “Product Suite represents a consensus-based approach to identifying and describing best practices in a variety of disciplines.” We cannot think of a more convenient and appropriate vehicle to house and provide reference material for M&S industry best practices and standards.

M&S CMMI Activities

The Defense Modeling and Simulation Office (DMSO) has established an XMSO M&S CMMI Steering Group whose charter is to represent the M&S community in determining the feasibility of adding M&S as a discipline to the CMMI. It will also establish the
strategic direction and plan for the evolution and development of M&S process areas, practices, and amplifications for the CMMI Product Suite. The steering group will review and propose industry standards for M&S development, maintain the M&S CMMI requirements baseline (A-Specification) and Concept of Operations (ConOps), and ensure satisfaction of these requirements.

The plan is to extend the M&S CMMI Steering Group beyond the Defense Services Modeling and Simulation Offices (Defense Modeling and Simulation Office, Army Modeling and Simulation Office, Marine Corps Modeling and Simulation Management Office, Navy Modeling and Simulation Management Office, and Air Force Agency for Modeling and Simulation) to include the M&S DoD government, non-DoD government, and commercial communities. Any organizations with comments, ideas, or interest in participating in the steering group meetings may contact the author directly.

About the Author

Frank Richey is a senior software engineer for Illinois Institute of Technology (IIT) Research Institute, Alexandria, Va., providing a broad spectrum of experiences at the senior Systems and Software Engineering level. Currently, he is exploring the feasibility of defining an industry benchmark for assessing the credentials, capabilities, and organizational maturity of companies that provide modeling and simulation products and services for the Defense Modeling and Simulation Office. He is a member of the Institute of Electrical and Electronics Engineers and the Washington, D.C., area Software Process Improvement Network. He recently presented his white paper, “Modeling and Simulation Capability Maturity Model Exploration,” at the fall 2001 Simulation Interoperability Workshop. Richey’s experience includes the Internal Revenue Service modernization and 13 years of continuous Department of Defense experience. He has a bachelor’s degree in computer and information science from Temple University.

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