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Establishing Confidence in Federations-of-Models

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Abstract
Development of advanced war-fighting capabilities depends on the successful integration of prototype or modified combat systems with those already in service. Initial exploration of the associated engineering trade space is often simulation-based, and necessitates the construction of a federation of models. The readiness of such a federation for use as a concept development tool is difficult to assess due to differences in the maturity of the constituent models and the fact that conceptual development of advanced capabilities precedes the generation of mature requirements and complex system architectures. A process for evaluating Federation-of-Models Readiness Levels (FMRLs) is presented, contrasted with existing "readiness level" rubrics and accreditation techniques, and considered as a stepping-stone in the development of a credibility assessment method for federations of models. that will add rigor to simulation-based concept development of complex systems and foster greater confidence in resultant findings and decisions.

Biography
BRYAN HERDLICK is a Ph.D. candidate at George Washington University in the Engineering Management and Systems Engineering curriculum. As a member of the senior professional staff at the Johns Hopkins University Applied Physics Laboratory, he assists the Naval Aviation Systems Command with the development of advanced capabilities and complex systems. Bryan is an INCOSE Certified Systems Engineering Professional with additional qualifications pursuant to the U.S. Department of Defense Acquisition process (CSEP-Acq.). Bryan's academic background includes a BS in Electrical Engineering from the University of Dayton and a MS in Applied Physics from the Naval Postgraduate School. He is also a graduate of the U.S. Navy Test Pilot School and a distinguished graduate of the Naval War College. His collateral activities include volunteering as a program evaluator with ABET and teaching Systems Engineering courses for the Johns Hopkins University Whiting School of Engineering.

THOMAS MAZZUCHI, D.Sc., is Chair and Professor at the School of Engineering Management and Systems Engineering (EMSE) at The George Washington University where he also previously served as the Chair of the Operations Research Department and as Interim Dean of the School of Engineering and Applied Science. Dr. Mazzuchi has been engaged in consulting and research in the area of reliability, risk analysis, and quality control for over twenty years. He served as a research mathematician with the Royal Dutch Shell Company, has held research contracts with numerous state and government agencies including NASA, the U.S. Army, the U.S. Air Force and the U.S. Postal Service.

SHAHRAM SARKANI, Ph.D., P.E., is Professor of Engineering Management and Systems Engineering (EMSE) at The George Washington University. Since joining the faculty in 1986, he has served as a Department Chair and Interim Associate Dean and was appointed as Faculty Adviser and Academic Director of EMSE Off-Campus Programs in 2001. In his current role, Professor Sarkani designs and administers off-campus MS and doctoral programs at over 20 locations world-wide that serve more than 1,000 students. As author of over 150 technical publications and presentations, he remains engaged with important ongoing research in the field of systems engineering.