



OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE SYSTEMS ENGINEERING

System of Systems Engineering Collaborators Information Exchange (SoSECIE)

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System of Systems and Product Line Best Practices from the Modeling and Simulation Industry

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Abstract

The US Army Operational Test Command (OTC) envisions a capability comprised of networked transport, applications, platforms, and services to provide evaluators, planners, testers, analysts, and leaders the information they need, when they need it, in any environment to manage the OTC test and evaluation (T&E) mission. To achieve this vision, OTC and the US Army Program Executive Office for Simulation, Training, and Instrumentation (PEO STRI) are collaborating on development of the Integrated Live Virtual Constructive Test Environment (ILTE).

ILTE is an integrated enterprise architecture approach for acquiring, integrating and managing test instrumentation and simulation capabilities as well as a family of test support tools and systems to enhance and streamline T&E from concept planning to final reports. ILTE will include the architecture, standards, common components, infrastructure, systems engineering and systems engineering tools that support this effort. In order to implement and manage ILTE successfully, the project team must establish a system engineering approach, architecture management framework, and governance structure for the enterprise.

As a precursor to this effort, the team conducted a benchmarking study to gather best practices and other information on a wide variety of programs that represent the breadth of successful systems of systems and product line implementation across the simulation and training domains. The projects examined for this effort were: Live Training Transformation (LT2), One Semi-Automated Forces (OneSAF), Joint Land Component Constructive Training Capability (JLCCCTC), Live, Virtual, Constructive – Integrated Architecture (LVC-IA), Modeling Architecture for Technology, Research and Experimentation (MATREX), and the Test and Training Enabling Architecture (TENA). Key program characteristics were identified as a means to compare the programs. Similarities and differences between the programs were identified as well as the program characteristics that drove the different organizational and management paradigms observed across the programs. Best practices were identified in a number of areas from programs that shared common characteristics. The information gathered, conclusions generated, and best practices identified during this benchmarking study will inform the ILTE project team as they develop an organizational structure and the management processes necessary to implement ILTE. The results of this study also provide a basis which any program can use during its initial planning phase.

Biographies

Mr. David L. Prochnow is a Principal Simulation Engineer at the MITRE Corporation, where he has worked on distributed simulation efforts for over 20 years. His experience has included roles as project lead, technical lead, systems engineer, and hands-on developer, while working in the training, experimentation, test and evaluation, and analysis domains. Mr. Prochnow holds a BS in Computer Science from the University of Virginia.

For more information: <http://www.acq.osd.mil/se/outreach/sosecollab.html>



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Ms. Cynthia T. Harrison is the Chief Software Architect for the U.S Army Program Executive Office Simulation, Training and Instrumentation (PEO STRI) and is responsible for enterprise wide system, software, and architecture standards and initiatives for the PEO. Since 1985 she has held a wide variety of engineering and program management jobs in the Live, Virtual and Constructive simulation and training domains for the Navy and Army. Ms. Harrison holds Bachelor and Master of Science degrees in Computer Science from the University of Central Florida.

Ms. Laura G. Hinton is a Principal Simulation and Modeling Engineer at the MITRE Corporation. She has focused her career in the area of computer modeling and simulation within the military community. Most recently she has been actively involved with the Army Test and Evaluation research area. Previous simulation experience has been with constructive simulations used to train Army unit commanders and staff. She has worked on numerous other simulation-based projects with focus areas of Naval simulation experimentation, Joint time sensitive targeting, Joint countermine technology, and fleet battle experimentation. She received her BS and MS degrees in Engineering from Purdue University.

Mr. Michael Willoughby is the Chief Engineer of the Project Manager for Instrumentation, Targets, and Threat Simulators (PM ITTS) Instrumentation Management Office. Previous assignments include PM for Rapid Data Generation and Deputy Director for the Joint Training Integration and Evaluation Center. Mr. Willoughby holds engineering degrees from Auburn University and Texas A&M University.

Ms. Anita Adams Zabek is a Senior Principal Simulation Engineer for the MITRE Corporation. Her experience in distributed simulation includes early distributed exercises using DARPA prototypes, the Joint Training Confederation, JSIMS, and HLA proto-federations for the Defense Modeling and Simulation Office. Ms. Zabek has a BS and an ME in Systems Engineering from the University of Virginia.