

Simulation Interoperability Standards Organization

Spring Simulation Interoperability Workshop 2007

07 Spring SIW

March 25-30, 2007
Norfolk, Virginia, USA

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

ISBN: 978-1-60423-923-2

Some format issues inherent in the e-media version may also appear in this print version.

SISO Copyright Policy

SISO requires that a copy of the following SISO Copyright Form be completed and submitted along with the hardcopy version of each SIW paper. Our purpose in copyrighting SISO papers and presentations is to preserve our right to prevent people from misusing these materials in ways we may not even be able to foresee. We do not intend to limit the use of this material by its authors or their employers. We intend to grant blanket permission to anyone to use the material for non-commercial purposes by means of the following notice, which will be incorporated with all hardcopy, CD-ROM, and Web site representations of SISO copyrighted materials:

Copyright 2006, SISO, Inc. Permission is hereby granted to quote any of the material herein, or to make copies thereof, for non-commercial purposes, as long as proper attribution is made and this copyright notice is included. All other uses are prohibited without written permission from SISO, Inc.

View the [SISO Copyright Form](#). You may obtain additional copies of this material from SISO, Inc., P.O. Box 781238, Orlando, FL 32878-1238 or from [SISO's website](#).

If we *don't* include a copyright notice on SISO papers and proceedings, both in hardcopy and electronic form, then we are effectively placing them in the public domain, and neither SISO nor the original authors have any right to stop anyone from using (or misusing) these materials in any way they want to!

Finally, please note that US and British Commonwealth government employees are exempt from signing the copyright assignment; if all authors are exempt, one author merely needs to sign a statement to that effect.

Simulation Interoperability Standards Organization

Spring Simulation
Interoperability Workshop
2007

TABLE OF CONTENTS

VIZ : An Open-Source, Flexible Cross-Platform Solution for Diverse Visualization Needs.....	1
<i>Mario Espinosa, John Wilcox III, Fernando Cerezo</i>	
Simulating the Commander's Decision Process: Proactive Planning in Command Modules.....	16
<i>Dr Joseph G. Kovalchik, Jonathan W. Labin , Eric R. Rosenlof</i>	
An Analysis of the Effects of Position Sensing Errors on Geometric Pairing	23
<i>Bradley C. Schricker, Louis Ford, Matthew Janisz</i>	
An Analysis of the Effects of Earth Model Errors on Geometric Pairing	32
<i>Bradley C. Schricker, Louis Ford</i>	
Bridging the Virtual Divide: Modeling and Simulation in Liberal Arts Learning	40
<i>Dr. Catherine M. Banks, Dr. Michael McGinnis, Dr. Andreas Tolk</i>	
An Advanced Ontology Knowledge-Based Crisis Management System.....	48
<i>Johnny J. Garcia, Kate T. Nguyen, Cynthia Tavares</i>	
Joint Operation Logistics Transformation and Training	54
<i>Johnny Garcia, Kate Nguyen, Cynthia Tavares</i>	
Executable Architecture Analysis Modeling	66
<i>Johnny J. Garcia</i>	
OWL-S 101 for Clients and Servers.....	75
<i>Johnny J. Garcia, Chris Blancett</i>	
Design and Implementation of a Fine-Grained and FOM Dependent RTI Framework for Rapid Federate Development	89
<i>Hakan Savasan</i>	
Defining the Corps-Division Federation of Models for Land Forces	95
<i>Richard F (Dick) Brown, Michael L. Fraka, LTC Robert P. Hansen, Ph.D</i>	
Soldier/Hardware-in-the-loop Simulation-based Combat Vehicle Duty Cycle Measurement: Duty Cycle Experiment 2	107
<i>Mr. Mike Pozolo, Dr. Mark Brudnak, Mr. Victor Paul, Dr. Marc Compere, Mr. Wilford Smith, Mr. Jarrett Goodell, Mr. Todd Mortsfield, Mr. Andrey Shvartsman, Mr. Syed Mohammad, Dr. Dale Holtz</i>	
Enhancing the Simulation Based Acquisition Process Using a Spiral Lifecycle Model based Federation Development and Execution Process	123
<i>Dr. Katherine L. Morse, Paul N. Lowe, Dr. Mark E. Riecken, Gary W. Fuller</i>	
Research on Management and Scheduling of Event in the HLA-based Training System for Crisis Management	133
<i>YANG Qing, WANG Hong-wei, Hongliu Wan hu</i>	

Applying SOA Net-Centric Enterprise Security Services to Distributed M&S DRAFT v4	140
<i>Scott Holben</i>	
Tools for the Creation of Semantic Information for Modeling and Simulation	151
<i>Mr. Thomas Stanzione, Mr. Kevin Johnson</i>	
Rapid Scenario Generation through Scripts	165
<i>Mr David Macannuco, Mr Matthew LeVan</i>	
Joint Battle Management Language (JBML) - US Contribution to the C-BML PDG	171
<i>Dr. Andreas Tolk, Dr. J Mark Pullen, Dr. Michael R. Hieb, Curtis Blais, Dr. Stan Levine</i>	
Lessons Learned on NATO Experiments on C2/M&S Interoperability	181
<i>Dr. Andreas Tolk, Dr. James L. Boulet</i>	
A UK Process for Conducting VV&A for Synthetic Environments: A Progress Report	190
<i>Mr Jonathan Read</i>	
Research and Development towards Application of MSDL and C-BML in The Netherlands	198
<i>nico de Reus, Erik Borgers, Jeroen Voogd, Wim Huiskamp</i>	
What Should be in a Human Behavior Representation FOM	210
<i>Gurkan Haznedaroglu, Dr. Fredric (Rick) McKenzie</i>	
A Common M&S Credibility Criteria-set Supports Multiple Problem Domains	218
<i>Mr. Joe Hale, Mr. Danny Thomas, CMSP, Mr. Bobby Hartway, CMSP</i>	
Filling in the Ontology Space for Coalition Battle Management Language	227
<i>Dr. Andreas Tolk, Charles Turnitsa, Curtis Blais</i>	
Best Practices for the Design and Use of a Serious Game to Conduct Dynamic Target Cell Training	241
<i>James R. Lunsford</i>	
Federation V&VA in Support of the Urban Resolve 2015 Experiment	246
<i>Mr. Robert Lutz, Major Michael Babilot, Mr. Peter Eirich</i>	
Creating an HLA 1516 Data Encoding Library using C++ Template Metaprogramming Techniques	257
<i>Mr. Jay Graham</i>	
Battle Management Language: A Grammar for Specifying Reports	269
<i>Dr. Michael R. Hieb, Dr. Ulrich Schade</i>	
How Joint Architectures And Standards Enable The Global Joint Training Capability (GJTC) And Training Transformation (T2) On A Path Towards The Net Centric Environment (NCE)	282
<i>Edwin M. Wied, Michael C. Kassel</i>	
Using Realistic Weather to Add Realism to Exercises	294
<i>Mr Mark Webb, Mr Doug Brooks, Capt Scott Miller, Maj Dean Carter, Mr Steve Lowe</i>	
Design and Development of an Architecture for Demonstrating the Interplay of Emerging SISO Standards	302
<i>Per M. Gustavsson, Curtis Blais, Paul Gustavson, Steven Reichenthal</i>	
A Maritime Component for the Joint Battle Management Language	310
<i>Curtis Blais, LT Jimmie Jensen, USN</i>	
Airspace Management in JAMUS - a MATREX User's perspective	323
<i>Monte Porter, Michelle Herman, Lewis Harmon, John Hughes, Tim McKelvy, Charlie Derrick</i>	

Directed Energy Modeling and Simulation Experiment Results	333
<i>Mr. Joe Sorroche</i>	
TADIL TALES:Modeling Tactical Data Links for Command and Control Training.....	346
<i>Mr. Joe Sorroche</i>	
Using SysML to Create a Simulation Conceptual Model of Basic ISR Survivability Test Thread.....	356
<i>Mr James Globe</i>	
Modeling, Simulation, and the Social Sciences: An Agenda for Integration.....	364
<i>Kurt Taylor Gaubatz, David C. Earnest</i>	
A Framework for Distributed Simulation Based on AJAX Model	374
<i>Dong-Min Choi, Prof. Chang-Sung Jeong</i>	
The Role of Architecture in Developing the United Kingdom.s Network Enabled Training Capability (Land).....	380
<i>John Kent, Major Kevin E. Galvin, Dr. Richard Randel</i>	
Effects-Based Approach to Operations (EBAO) Experimentation for Validating Human Behavior Representation (HBR) in Simulated Environments	389
<i>Randall Garrett, B.</i>	
Towards successful multifunctional reuse of simulation components	393
<i>Dr. Klaas Jan de Kraker, Dr. Martijn van Emmerik, Peter Langeslag, Wim Huiskamp</i>	
CAB: The Cognitive Architecture Bridge.....	402
<i>Wayne Zachary, Donald Benton, Larry Rosenzweig, Thomas Santarelli</i>	
Developing Conceptual Models of the Mission Space (CMMS) A Metamodel Based Approach.....	410
<i>N Alpay Karagoz, Onur Demirors</i>	
Transport and Dispersion of Obscurants in a Distributed Simulation Environment using the Dugway Smoke and Obscurant Model (DSOM)	418
<i>Jason C. Esteve, Dr. Leonard N. Carter</i>	
An Overview of the Distributed Space Exploration Simulation (DSES) Project.....	423
<i>Dr. Edwin Z. Crues, Mike G. Blum, Victoria L. Chung, James D. (Dan) Bowman</i>	
A Coordinated Initialization Process for the Distributed Space Exploration Simulation (DSES).....	433
<i>David Hasan, Dr. Edwin Z. Crues, Robert Phillips, Dan Dexter</i>	
Instructional design based approach for simulation and instruction interoperability	445
<i>Ohad Bukai, Dr. Jacqueline Haynes, Dr. Robert Pokorny, Dr. Kevin C. Ruess</i>	
Common Ground Vehicle Route Planning for Army Simulations.....	457
<i>Dr. Paul W. Richmond, Dr. Randy K. Scoggins, Burhman Q. Gates, Harold Yamauchi</i>	
Incorporating a Weapon Effects Injury Model into the Crowd Federate	465
<i>Dr. Fredric (Rick) McKenzie , Herbie H. Piland, III, Quynh-Anh (Mimi) Nguyen</i>	
Closing in on a Human Representation Reference Model.....	469
<i>Christopher Chadbourne, Donna W. Blake</i>	
DIS: Does Interoperability Suffice? A Need to Set a Higher Standard	476
<i>Brian T. Schreiber, Eric A. Watz, Winston Bennett, Jr.</i>	
Adding Medical Simulation to the One Tactical Engagement Simulation System	483
<i>Bradley C. Schricker, Mr. Paul Kelly, Mr. Patrick Driggett</i>	

Integrating Planning and Experimentation	492
<i>Alok Chaturvedi, Brian Armstrong, Daniel Snyder, Paul Everson, Michael Cibulskis, Chee Mun Foong</i>	
Collaborative Simulation Development	502
<i>Gary Thomas, Paul Gustavson</i>	
DMO today and tomorrow: Science and Technology Support for Competency-Base Training and Ops	511
<i>Brian T. Schreiber, Antoinette M. Portrey, Winston Bennett, Jr., Charles M. Colegrove</i>	
Development Life Cycle of a Virtual Training Environment	521
<i>Mr Aaron Johnson, Mr Ryan Miller</i>	
Conceptual Modeling for the Probability of Raid Annihilation (PRA) Testbed	526
<i>Sarah Trbovich, Shala Malone, Richard Reading</i>	
Distributed Simulation Run Automation Capability for the Navy PRA Testbed	534
<i>Sarah Trbovich, Shala Malone, Richard Reading, Mr. William Photinos</i>	
Planning for an Integrated M&S Framework for Catastrophic Event Response	540
<i>Dr. James E. Coolahan</i>	
Injecting High-Fidelity Environmental Effects into Distributed Testing	547
<i>Ryan Norman, Bill Barber, Daniel Bell, Karl A. King, Mike Greene</i>	
Initialization of Simulations with Standardized Battle Management Data	555
<i>Gary J. Farmer, Bruce W. Carlton, Kevin Guppton, Carolyn Hare</i>	
A Dynamic Routing Structure for RTIs Taking an Evolutionary Approach for Optimization	568
<i>Matthew R. Davis</i>	
Standardized TENA Logging and Playback using the Reflect Suite of Tools	576
<i>Ryan Norman, Mr Ken Allred, Mr Mike Caruso, Mr Razak Arunaogun</i>	
Testing the Test: Distributed Testing in support of System of Systems Integration	583
<i>Mr Jason Bolin, Ryan Norman, Mr Scott Wolfson, Mr Josh Sells, Mr Adam Troupe</i>	
CATHIE: The Implementation and Evaluation of an Interview Simulation Module for Distance Education Students	594
<i>Dr. Lee A. Belfore, II, Dr. Molly H. Duggan, Dr. Amy B. Adcock</i>	
Transitioning From Training Simulations to Instructional Games	602
<i>Dr. Lee A. Belfore, II, Dr. Amy B. Adcock, Dr. Gary Morrison</i>	
Increasing Importance of Modeling & Simulation in Defense Life Cycle Engineering	607
<i>Donald P. Cox</i>	
Data, Functionality, and Collaboration: Identifying and Evaluating Briefing and After-Action-Review Capabilities	618
<i>Winston Bennett, Jr., Capt. Kristen M. Barrera, Lt. Brenda E. Blueggel, Capt. Michelle Nash</i>	
Advancing a Joint Federation Object Model	626
<i>Kevin Brandt, Andy Bowers, Dannie Cutts</i>	
How to Play Fairly: Agents and Web Services Can Help	635
<i>Dr. Andreas Tolk, Robert D. King, Saikou Diallo</i>	
Simulation-based Command and Control Applications in a Service-Oriented Environment	644
<i>John J. Daly</i>	

Adaptive Generative Grammar for JC3IEDM Web Services	656
<i>Dr. Andreas Tolk, Saikou Y. Diallo</i>	
Command, Control, Communications, Computer Intelligence, Surveillance and Reconnaissance (C4ISR) System Modeling	669
<i>Michael W. Garrambone, Thomas C. Hughes, Bret R. Givens</i>	
Live Virtual Constructive (LVC) Architecture Roadmap	678
<i>Dannie E. Cutts, Warren Bizub, Dr. Amy Henninger, Jeffrey W. Wallace</i>	
RD&E Training: The use of M&S to Teach M&S for RD&E Professionals	689
<i>Michael W. Garrambone, Bret Givens, Thomas Hughes</i>	
Graphical Abstract Representation of Design (GARD): Better M&S Through Earlier Visualization & Better Design Through M&S	698
<i>Paul Gustavson, Ben Sisson, Tram Chase, Glenn Racine</i>	
Developing Web Centric Federates and Federations Using the HLA Evolved Web Services API	714
<i>Bjorn Moller, Clarence Dahlin, Mikael Karlsson</i>	
An Overview of the HLA Evolved Modular FOMs	721
<i>Bjorn Moller, Mikael Karlsson, Bjorn Lofstrand</i>	
Joint Event Data Initialization Services (JEDIS) - Implementing a Service Oriented Architecture for Initialization	730
<i>Dr. Andreas Tolk, Saikou Y. Diallo, Mr David Perme, Huong Tran, Bryan Tesesco, Cynthia Pandolfo</i>	
Distributed Simulation for Space Exploration: The Coming Diaspora into Space - Using Game Technology to Help Us Move Off the Planet	741
<i>Dr. David Mann, Michael P. Conroy, Priscilla Elfrey</i>	
Truly a Picture is Worth a Thousand Words: Developing Simulationfor Crew Exploration Vehicle (CEV) Assembly	747
<i>Michael P. Conroy, Priscilla Elfrey, Mathew Verdier</i>	
Author Index	