

# **Winter Simulation Innovation Workshop 2018**

**Orlando, Florida, USA  
21 – 26 January 2018**

ISBN: 978-1-5108-7547-0

**Printed from e-media with permission by:**

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



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

Copyright© (2018) by SISO - Simulation Interoperability Standards Organization  
All rights reserved.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact SISO - Simulation Interoperability Standards Organization  
at the address below.

SISO - Simulation Interoperability Standards Organization  
3100 Technology Parkway  
Orlando, Florida 32826  
USA

Phone: (781) 271-9872  
Fax: (781) 271-9874

[Siso-help@sisostds.org](mailto:Siso-help@sisostds.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

<b>FRENCH IMPROVEMENT OF SIMULATION INTEROPERABILITY BY USING ABSTRACTION LAYER APPROACH.....</b>	1
<i>J. Ruiz, O. Verron, S. Ugolini</i>	
<b>PREDICTING PILOT PROFICIENCY WITH INTEROPERABLE HUMAN PERFORMANCE ASSESSMENT.....</b>	13
<i>P. Neubauer, M. Freiman, M. Schroeder, J. Starrett, B. Schreiber, E. Watz</i>	
<b>USING THE DISTRIBUTED SIMULATION ENGINEERING AND EXECUTION PROCESS (DSEEP) AS A GUIDE FOR RESEARCH AND PROTOTYPE CONCEPTUAL MODELING .....</b>	22
<i>E. Whittington, J. Bergenthal, R. Saunders, K. Horton</i>	
<b>MAKING FIXED GRID DDM HLA 4 COMPLIANT: THE BENEFITS OF A FIXED GRID DDM IMPLEMENTATION AND A WAY FORWARD IN HLA 4 .....</b>	30
<i>D. Wood, F. Rodriguez</i>	
<b>CONTAINER ORCHESTRATION ENVIRONMENTS FOR M&amp;S .....</b>	40
<i>T. Berg, A. Cramp</i>	
<b>SIMULATION INDEPENDENT MODEL CONFIGURATION.....</b>	60
<i>F. Wemeskerken, G. Ferdinandus, T. Berg, K. Bosch, R. Smelik, H. Henderson</i>	
<b>CONFIGURABLE ADVERSARY RESPONSE PREDICTION: BUILDING EFFICIENT EXPECTATION MODELS FROM HIGH-FIDELITY BEHAVIOR SIMULATIONS .....</b>	78
<i>R. Jones, R. Bechtel, B. Degrendel</i>	
<b>MULTI-NATIONAL AND JOINT FORCES LIVE, VIRTUAL, AND CONSTRUCTIVE DEMONSTRATION .....</b>	90
<i>R. Vickhouse, W. Bennett Jr, L. Rowe</i>	
<b>TACTICAL PILOT ASSISTANT AND DENIED ENVIRONMENTS: INCORPORATING SOCIO-TECHNICAL FACTORS IN SIMULATIONS.....</b>	96
<i>W. Clancey, B. Bell, W. Bennett Jr.</i>	
<b>SURVEY OF CYBER SECURITY FRAMEWORK ACROSS INDUSTRIES .....</b>	109
<i>A. Kam, T. Plummer, G. Falco, D. Whyte</i>	
<b>MODELING CYBER SECURITY .....</b>	117
<i>A. Kam, C. Hein, M. Stebnisky</i>	
<b>TOWARD A TACTICAL PILOT'S ASSISTANT: A FRAMEWORK FOR INTEGRATING MODELS OF INTELLIGENT BEHAVIOR .....</b>	129
<i>W. Warwick, M. Walsh, S. Rodgers, C. Lebriere, D. Morrison</i>	
<b>EXTENDING THE DEFENSE MODELING AND SIMULATION REFERENCE ARCHITECTURE THROUGH PATTERNS .....</b>	139
<i>K. Morse, B. Miller, M. Heaphy</i>	
<b>MODELLING AND SIMULATION AS A SERVICE: RAPID DEPLOYMENT OF INTEROPERABLE AND CREDIBLE SIMULATION ENVIRONMENTS – AN OVERVIEW OF NATO MSG-136 .....</b>	149
<i>T. Berg, W. Huiskamp, R. Siegfried, J. Lloyd, A. Grom, R. Phillips</i>	
<b>CREATING A TACTICAL PILOT'S ASSISTANT FOR COMBAT OPERATIONS IN CONTESTED DENIED ENVIRONMENTS: AN OVERVIEW OF THREE DIFFERENT APPROACHES.....</b>	166
<i>W. Bennett Jr., B. Bell, R. Jones, W. Warrick</i>	
<b>UNIVERSAL CPS ENVIRONMENT FOR FEDERATION (UCEF).....</b>	171
<i>M. Burns, T. Roth, E. Griffor, P. Boynton, J. Sztipanovits, H. Neema</i>	
<b>CHALLENGES OF DEVELOPING AND DEPLOYING ISR TRAINING TO THE FLEET .....</b>	181
<i>M. Thomas, R. Wright, S. Moore</i>	
<b>USING GAME ENGINES TO BUILD VIRTUAL TRAINING ENVIRONMENTS .....</b>	192
<i>T. Rodabaugh, J. Hu</i>	
<b>STATISTICAL TECHNIQUES FOR MODELING AND SIMULATION VALIDATION .....</b>	206
<i>K. Avery, L. Freeman</i>	
<b>LOW COST APPROACHES TO COMBAT HELO SIMULATIONS AND TRAINING.....</b>	218
<i>F. Webber, C. Faxon, W. Bennett</i>	
<b>EXECUTE SMARTER AND MANAGE RISK – APPLY PROVEN STANDARDS .....</b>	226
<i>K. Konwin, W. Oates, P. Gravitz</i>	
<b>GEN3: WHAT'S UP WITH DIS VERSION 8 .....</b>	233
<i>R. Murray</i>	

<b>DEAD RECKONING IN GEODETIC COORDINATES FOR IMPROVED LVC INTEROPERABILITY</b>	242
<i>R. Murray</i>	
<b>CLOUD-BASED MODELING AND SIMULATION</b>	253
<i>R. Kewley, R. Siegfried, C. Sanders, S. Mittal, J. Wallace, S. Kambouris</i>	
<b>A CALL FOR A NEW ARMY MODELING FRAMEWORK</b>	265
<i>C. Sanders</i>	
<b>BALANCING TECHNOLOGY WITH CYBERSECURITY FOR MODELING AND SIMULATION IN THE CLOUD</b>	275
<i>M. Rodriguez, R. Kewley</i>	
<b>ENABLING THE FUTURE OF SIMULATION W/ DATA CENTER TECHNOLOGIES &amp; HYBRID CLOUD</b>	283
<i>C. Louisell</i>	
<b>FUTURE IMPROVEMENTS TO COMBAT AIRCRAFT SIMULATION TRAINING: MTDS AS MEANS FOR MORE REALISM.</b>	290
<i>S. Pink, A. Lemmers, O. Mevassvik</i>	
<b>A NEW PARADIGM FOR ASSESSING ENVIRONMENTAL DATA GENERATION AND MANAGEMENT</b>	301
<i>D. Maxwell, J. Cruz, J. Lyons</i>	
<b>TOWARDS A STANDARDIZED FEDERATE PROTOCOL FOR HLA 4</b>	310
<i>B. Moller, F. Antelius, M. Karlsson</i>	
<b>DESIGN AND PRINCIPLES ENABLING THE SPACE REFERENCE FOM</b>	319
<i>B. Moller, D. Dexter, M. Madden, E. Crues, A. Garro, A. Skuratovskiy</i>	
<b>IMPROVING TACTICAL DATA LINK SIMULATION STANDARDS TO BETTER SUPPORT LVC EXERCISES</b>	330
<i>P. Svensson, S. Sandberg, J. Lindqvist, R. Hammargqvist</i>	
<b>AUTOMATING HUMAN FACTORS CONSIDERATIONS FOR ACQUISITION DECISION MAKING</b>	339
<i>M. Abrams, J. Bachman, M. O'Neal</i>	
<b>AN ONTOLOGY-DRIVEN FRAMEWORK FOR ENABLING ADAPTIVE TRAINING APPLICATION INTEGRATION</b>	350
<i>P. Benjamin, A. Stephenson, C. Wu, R. Fernandes, B. Li, R. Long</i>	
<b>LESSONS LEARNED FROM IMPLEMENTING A COMMON IMAGE GENERATOR INTERFACE (CIGI) V4.0 COTS BASED IMAGE GENERATOR (IG) FOR DRIVER TRAINING</b>	363
<i>R. Humphries</i>	
<b>AUGMENTED REALITY TOOL FOR DEPOT-LEVEL VISUALIZATION, LOGGING, AND TRACKING</b>	377
<i>A. Brown, C. Eviston, S. Enochian, T. Rodabaugh, X. Hu, T. Zicht</i>	
<b>EVALUATION OF SUPPLEMENTAL ELECTROMAGNETIC DATA IN DIS</b>	388
<i>F. Lehmann</i>	
<b>Author Index</b>	