



# **SIMUL 2018**

The Tenth International Conference on Advances in System Simulation

October 14 - 18, 2018

Nice, France

**SIMUL 2018 Editors**

Arash Ramezani, The Helmut Schmidt University, Germany

**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© (423: ) by International Academy, Research, and Industry Association (IARIA)  
Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (423: )

International Academy, Research, and Industry Association (IARIA)  
412 Derby Way  
Wilmington, DE 19810

Phone: (408) 893-6407  
Fax: (408) 527-6351

[petre@iaria.org](mailto:petre@iaria.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

Application of Complex Systems Architecting Approach to Develop a Digital Twin <i>Makouar Kaltoum, Deshayes Laurent, Mouchtachi Ahmed, and Aitelmahjoub Abdelhafid</i>	1
Thermal Softening Effects on Simulation Models of Fiber-Reinforced Plastics Under High-Velocity Impact <i>Arash Ramezani and Hendrik Rothe</i>	6
Utilizing Timber Harvest Simulation as a Tool for Education <i>Daniel Losch and Jurgen Rossmann</i>	17
Sensitivity Analysis of Simulation Study Results on Safety Stock Relaxation in Material Requirement Planning <i>Sonja Strasser, Klaus Altendorfer, and Andreas Peirleitner</i>	23
Shader-Based Realtime Simulation of High-Definition Automotive Headlamps <i>Nico Ruddenklau, Patrick Biemelt, Sven Henning, Sandra Gausemeier, and Ansgar Trachtler</i>	29
Simulation and Long Term (Military) Manpower Planning: a Custom Generic Simulation Tool <i>Johan Van Kerckhoven, Oussama Mazari-Abdessameud, and Filip Van Utterbeeck</i>	35
AMOSS: A Bespoke Stochastic Simulation Environment Built On Open Source Software <i>Edgar Whyte, Carl Sandrock, Greg Laycock, Deon Pretorius, Gerrit Streicher, and Jean-Pierre Cronje</i>	40
Development of Flexible and Lightweight Ballistic Body Armor Constructional Contributions for Ballistic Components out of Ultra-High-Molecular-Weight Polyethylene <i>Henrik Seeber and Arash Ramezani</i>	46
Improved FSI Method for Blast Simulations <i>Arash Ramezani, Daniel Huber, and Hendrik Rothe</i>	53
Generation of a Geodetic Line on Any Given Surface <i>Anna von Pestalozza, Stefan Weichert, Arash Ramezani, and Hendrik Rothe</i>	61