



## IN THIS ISSUE

**02** Past SCS VP  
Publications

**03** SummerSIM 2016  
Award Winners

**03** New SCS  
Board & Committees

**04** Opening Panel at  
SIMULTECH 2016

**06** Upcoming SCS  
Conferences



## A REPORT FROM PAST SCS VP PUBLICATIONS



Dear SCS Member,

On Sunday, July 24, 2016, I passed the VP Publications baton to the incoming VP Publications Dr. Yiannis Papelis. During 2015-16, several important ideas were developed and achievements were made that I would like to share with you.

1. With help of Publication Advisory Board (PAB) members (Drs. Cellier, Obaidat, Oren, Karatza, and Zeigler), a set of goals and objectives were established to further enhance the existing stature of SCS journals in regard to their reputation, visibility, review process, and flow of high caliber submissions. Dr. Mikel Petty was recommended as the Editor-in-Chief of the *SIMULATION: Transactions*, and Drs. Jim Nutaro, Saurabh Mittal, Francesco Longo, and Ralph Huntsinger were recommended as the Associate Editors-in-Chief to the SCS Executive Committee and Board of Directors. This team has been in charge of *Transactions* since May 1, 2016. They have developed a concrete set of action plans and the steps necessary to achieve them in order to meet the above goals. Congratulations to Drs. Petty, Nutaro, Mittal, Longo, and Huntsinger! Very soon we will witness the results of their outstanding contributions to *Transactions*.
2. The current success of *SIMULATION: Transactions* would have not been possible without the hard work of earlier editors-in-chief, such as Drs. Helen Karatza and Pieter Mosterman, who led the journal during very tough times at SCS. I would like to acknowledge their contributions and thank them for their service to *Transactions* and the society, which I inadvertently omitted in my previous report.
3. *The Journal of Defense Modeling and Simulation*, under the leadership of Dr. Jerry Couretas (Editor-in-Chief), had its own share of successes this year. He took specific and measured steps and developed a clear path for indexing and is moving towards expanding the JDMS contributions to DOD and NATO. The articles in this journal are applicable to many nondefense-related research areas besides being very informative and useful.
4. Our *M&S Newsletter* also had its own share of achievements under the leadership of Dr. Yu Zhang, the *M&S Newsletter* editor. She has dynamically and consistently improved contents of the Newsletter and published 12 issues with timely news items. The range of the items included in the *M&S Newsletter* have been from upcoming M&S conferences and events, to news on publications, and to news from SCS networks. One of the highlights of last year's *Newsletter* was publication of a series of student chapter activities, where four student chapters presented their activities and achievements during the past three years.

I would like to acknowledge the contribution of our office staff, Ms. Oletha Darensburg and Ms. Aleah Hockridge as well as Ms. Vicki Pate, the managing editor. Ms. Pate's devotion and above-and-beyond contributions to the journals must be especially noted and acknowledged.

Last, but definitely not least, I would like to thank you, our members and authors, and encourage you to submit your research articles to either JDMS or *Transactions*. Together we will make our society strong and our publications the premier journals in the modeling and simulation area.

Sincerely,

Hamid Vakilzadian, PhD  
Past VP Publications

# SummerSim 2016

## AWARD WINNERS

The following awards were given out recently at the **2016 Summer Simulation Multi-Conference**, held July 24-27, 2016 in Montreal, Canada. Congratulations to the winners!

### Overall Best Paper

“Centroidal Particles for Interactive Crowd Simulation”  
by Omar Hesham and Gabriel Wainer

### Overall Best Paper Runner Up

“Meaningful Attack Graph Reconstruction Through Stochastic Marking Analysis”  
by Peppino Fazio, Mauro Tropea, Salvatore Marano, and Miroslav Voznak

### SCSC Best Paper

“Centroidal Particles for Interactive Crowd Simulation”  
by Omar Hesham and Gabriel Wainer

### SPECTS Best Paper

“Meaningful Attack Graph Reconstruction Through Stochastic Marking Analysis”  
by Peppino Fazio, Mauro Tropea, Salvatore Marano, and Miroslav Voznak

## SUMMERSIM'16 STUDENT COLLOQUIUM AWARDS

### Student Colloquium Winner

“Accelerating Influence Maximization on Social Networks in the Continuoustime Domain”  
by Ryan Berryhill, Zissis Poulos and Andreas Veneris.

### Honorable Mention

“Partitioned Scheduling of Full Mission Simulators on Heterogeneous Parallel Architectures using NSGAI1”  
by Rabeh Ayari, Imane Hafnaoui, Giovanni Beltrame and Gabriela Nicolescu.



# New SCS Board of Directors & Committees

## SCS WELCOMES OUR NEW BOD MEMBERS

### 2016-2017 BOARD OF DIRECTORS AND COMMITTEE MEMBERS:

**PRESIDENT** – John Sokolowski

**PRESIDENT-ELECT** – Bjorn Johansson

**PAST PRESIDENT** – Lin Zhang

**TREASURER** – Andrew Collins

**SECRETARY** – Oletha Darensburg

**EXECUTIVE DIRECTOR** – Oletha Darensburg

**CHAIRMAN OF THE BOARD** – Yiannis Papelis

**VF OF CONFERENCES** – Saikou Diallo

**VP OF MEMBERSHIP** – Saurabh Mittal

**VP OF PUBLICATIONS** – Yiannis Papelis

**VP OF EDUCATION** – Eric Weisel

**DIRECTORS AT LARGE** – Yu Zhang, Kaj Juslin, Yiannis Papelis, Saikou Diallo, Andrew Collins, Mike McGinnis, Andreas Tolk, Helena Szczerbicka, Gabriel Wainer

**SCS HISTORIAN** – Ralph Huntsinger



# Opening Panel at SIMULTECH 2016

## “INCREASING IMPORTANCE OF SIMULATION AND RISE OF SIMULATION-BASED DISCIPLINES”

This year, 6th edition of the International Conference on Simulation and Modeling Methodologies, Technologies and Applications ([SIMULTECH 2016](#)) was held in Lisbon, Portugal, during July 29-31. One of the characteristics of SIMULTECH has been to start with an opening panel. This year, I had the privilege of chairing the opening session that I would like to share its highlights. (A journal article is also being prepared.)



From the opening session of SIMULTECH 2016 (from right to left): Prof. Mohammad Obaidat, Fordham University, USA (Conference Chair), Emeritus Prof. [Tuncer Ören](#), University of Ottawa, Canada (Program honorary co-chair and the moderator of the panel). The panelists (who were also keynote speakers of the conference): Prof. Catholijn Jonker, Delft University of Technology, Netherlands, Prof. Francesco Casella, Politecnico di Milano, Italy, Prof. Yaman Barlas, Bogaziçi University, Turkey

Four of us covered different aspects of the theme. The highlights follow:

### BY PROFESSOR YAMAN BARLAS

After the micro computer revolution, simulation has quickly become ‘the’ modeling methodology that enjoys the widest implementation in almost all fields that make use of models. A quick internet search will quickly reveal this. There are also many methods these days with different names that are actually based on simulation (neural nets, social networks, games, virtual labs, agent-based modeling, business analytics, big data modeling/estimation, solutions of most complex optimization or estimation problems...) Simulation used to be mainly in IE/OR and computer engineering departments as a general method, now it is everywhere, albeit under many different names.

So why do we still have a panel called: Increasing Importance of Simulation and Rise of Simulation-based Disciplines? What is still lacking? In my view, what needs to be developed now is much wider application and impact on important real-life socio-economic policy problems (Environmental, ecological, social, economic, health, political...). Such problems are much harder to model than classical engineering problems, but we now have various modeling methodologies and computer software to face the challenge.

#### What must our main focus be?

- Concentrating on and modeling important socio-economic policy problems that society at large is truly concerned about
- More emphasis and research on model credibility
- Better model communication tools
- Better skills (of simulation teams) for dissemination in policy making circles
- Some observations/recommendations related to the above items:
- Emphasize model credibility as a process, rather than a static outcome
- Integrate model credibility testing, policy design and policy credibility as a whole
- Move away from the concept of model ‘validity’ toward the concept of model ‘quality’...
- Involve stakeholders in modeling process (group model building, interactive simulation, games, virtual laboratories, learning with simulation, organizational learning...)
- Write articles for society at large, in public magazines, newspapers, internet, etc.

## Opening Panel at SIMULTECH 2016, continued...

### BY PROFESSOR FRANCESCO CASELLA

The design of complex systems such as smart grids, cyber-physical systems, Internet of Things (and of their controllers!) are based on abstractions: at each level, the designer assumes the correct behaviour of lower levels and builds on top of it. What if something goes wrong at the physical level, e.g., there's oil on the road when breaking a car?

Simulation with appropriate physical models allows to test and verify the behaviour of such systems in off-design conditions, catching design flaws early on in the design process and allowing to choose the best design alternative, which is particularly important for safety-critical applications. Significant innovation is needed in modelling and simulation tools to be able to address problems of this scale efficiently.

Dynamic simulation is also rapidly gaining importance in the field of Energy Systems, a rather conservative industry which will be facing disruptive change and innovation in the next 10-20 years, due to the

need of curtailing and eventually stopping CO2 emissions, and to the extreme variability injected in power system by distributed renewable energy sources. This will require a profound cultural change among the practitioners in that field, whose traditional design work-flows used to focus mainly on steady-state efficiency and cost management, as they will need to include dynamics and control at the core of their design processes.

### BY EMERITUS PROFESSOR TUNCER ÖREN

Indeed, last fifty years of progress of simulation from art and craftsmanship to theory-based knowledge generation activity for experimentation and gaining experience has been phenomenal. Simulation is already a vital infrastructure for many scientific and engineering disciplines. ([presentation](#))

### BY PROFESSOR CATHOLIJN JONKER

- Interdisciplinary & diversity: Simulation is typically an interdisciplinary problem, rather than a multi-disciplinary problem. By this I mean that for multi-disciplinary problems, the tasks are divided over the disciplines, and there is someone to integrate the parts. For interdisciplinary problems, you have a common task where each discipline has an opinion of how best to approach the problem. Those approach seem to be rather conflicting at the start, so that you need good communication skills, an open attitude, and the capacity to learn from other disciplines to bring the project to a satisfactory result. Having stated that simulation is typically an interdisciplinary problem, I would like to add that the diversity that each discipline brings to the team is a bonus, in that it contributes to the quality of the simulation. Likewise, I state that bringing also diversity in gender, personality and other characteristics is, in principle, beneficiary for the team (unless the differences are so great that one really can't work together).
- Complexity and interactivity: relevant simulations are characterized by the intrinsic complexity of the domain and the interactivity of interdependent sub-problems studied by the simulation. This holds both for simulations of social phenomena (i.e., human behaviour involving cognitive, affective, and cultural phenomena), and for simulations of complex systems not involving human (or animal) interactions. Running the simulations will bring essential insights that were not seen during the construction of the simulation. This refers to the emergent properties of the domain.
- Just building the simulating system without running simulations already brings advantages in insights that make it worth the trouble of building the simulation.
- Unknown Unknown: be aware that your simulation will never show you anything about the unknown unknowns. To tackle this, you will have to bring in creativity and new knowledge. As I told in my invited lecture, I propose for this Human in the Simulation (what I called SimHulation during the invited lecture). See my slides for more info on this.
- Responsible innovation & penetration grade simulations: in order to do responsible innovation of technology one might & should use simulation to test how the penetration of the new technology might go in relation to the existing state of the art. For example, simulations can be used to see what might happen at different stages of penetration of self-driving cars in our traffic, varying e.g., from 0% through 10%, 40%, 60%, 90% and 100% of self-driving cars versus human-driven cars. Which risks are greatest at what penetration grade? What type of accidents happen?
- Distributed design & implementation: problems of the future will not be solved by the technical solution of one team. For example, for self-driving cars, all major car manufacturers are developing their own variant, new players (e.g., Google) will bring one to the market. These teams will work independently from each other, base their work on different assumptions, using different sensor technology and different Artificial Intelligence techniques for decision making. However, all of these will have to function correctly in the same traffic environment. This will cause different types of accidents than if you simulate only with one type of self-driving car.

## Upcoming SCS Conferences

### 2017 POWER PLANT SIMULATION CONFERENCE

January 16-19, 2017

Wyndham San Diego Bayside; San Diego, CA

The 2017 Power Plant Simulation Conference (PowerPlantSim'17) is an annual conference sponsored by The Society for Modeling and Simulation International. This conference focuses on the special needs of the nuclear and fossil power plant simulation community and includes presentations by technology and industry leaders, technical sessions, panel and roundtable discussions, and vendor exhibits. The primary goal of the conference is to promote open exchange of simulator related information between all attendees.

For more information, please visit <http://scs.org/powerplant/>



### 2017 SPRING SIMULATION MULTI-CONFERENCE

April 23-26, 2017

Virginia Beach Convention Center; Virginia Beach, VA

Co-Located with MODSIM World

The 2017 Spring Simulation Multi-conference (SpringSim'17) is an annual conference sponsored by The Society for Modeling and Simulation International which covers state-of-the-art developments in computer simulation technologies, as well as scientific, industrial, and business applications. Areas covered include high-performance computing technologies, models and algorithms, GUI visualization technologies, communications and much more. Application disciplines covered include advanced telecommunication; computer systems; aviation and aerospace; environment, energy, and other industries.

#### Symposia featured at the conference include:

- Annual Simulation Symposium (ANSS)
- Communications and Networking Symposium (CNS)
- High Performance Computing Symposium (HPC)
- Theory of Modeling and Simulation (TMS/DIEVS)
- Agent-Directed Simulation (ADS)
- Modeling and Simulation of Complexity in Intelligent, Adaptive and Autonomous Systems (MSCIAAS)
- Modeling and Simulation in Medicine (MSM)
- Model-driven Approaches for Simulation Engineering (Mod4Sim)
- Tutorial Track
- WIP Track
- Posters/Student Colloquium
- Student M&S Mobile App Competition

#### DEADLINES:

**Workshop Proposal:** September 30, 2016

**Abstract Submission:** October 15, 2016

**Abstract Feedback:** October 30, 2016

**Full paper submission:** December 15, 2016

**Notification of Acceptance:** January 31, 2017

**Camera-ready Paper:** February 20, 2017

For more information, include full Call for Papers for each symposia and how to submit a paper, visit <http://scs.org/springsim/>

### COMING SOON

**SCS CONFERENCES DOI AND EXPANDED  
CONFERENCE ARCHIVING - STAY TUNED!**