



### ***I3M Multiconference Program***

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## **I3M: The 14th International Multidisciplinary Modelling & Simulation Multiconference**

### ***General co-Chairs***

Agostino G. Bruzzone - DIME - University of Genoa, Italy  
Miquel Angel Piera - Autonomous University of Barcelona, Spain

### ***Program Co-Chairs***

Francesco Longo - MSC-LES, DIMEG, University of Calabria, Italy  
Yuri Merkurjev - Department of M&S, Riga TU, Latvia

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## **EMSS: The 29th European Modelling & Simulation Symposium,**

### ***EMSS General co-Chairs:***

Francesco Longo, MSC-LES, DIMEG, University of Calabria, Italy  
Emilio Jiménez, University of La Rioja, Spain

### ***EMSS Program Chair:***

Michael Affenzeller, Upper Austria University of Applied Sciences, Austria

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## **HMS: The 19th International Conference on Harbour, Maritime & Multimodal Logistics Modelling and Simulation**

### ***HMS General co-Chairs:***

Agostino Bruzzone, DIMEG, University of Genoa, Italy  
Yury Merkurjev, Riga Technical University, Latvia

### ***HMS Program co-Chairs:***

Eleonora Bottani, University of Parma, Italy  
Miquel Angel Piera - Autonomous University of Barcelona, Spain

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## **MAS: The 16th International Conference on Modelling & Applied Simulation**

### ***MAS General co-Chairs:***

Marina Massei, Liophant Simulation, Italy  
Adriano Solis, York University, Canada

### ***MAS Program Chair:***

Fabio De Felice, University of Cassino, Italy

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## **DHSS: The 7th International Defense and Homeland Security Simulation Workshop**

### ***DHSS General Chair:***

Agostino Bruzzone, MITIM DIME, University of Genoa, Italy

### ***DHSS Program Chair***

Robert Sottolare, Army Research Laboratory, USA

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## **I\_WISH: The 6th International Workshop on Innovative Simulation for Health Care**

### ***I\_WISH General Chair:***

Marco Frascio, University of Genoa, Italy

### ***I\_WISH Program Chair:***

Vera Novak, BIDMC, Harvard Medical School, USA

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## **SESDE: The 5th International Workshop on Simulation for Energy, Sustainable Development & Environment**

### ***SESDE General co-Chairs:***

Janos Sebestyén Janosy, MTA EK Centre for Energy Research Hungarian Academy of Sciences, Hungary  
Gregory Zacharewicz, IMS Université Bordeaux, France

### ***SESDE Program Chair:***

Letizia Nicoletti, CAL-TEK Srl, Italy

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## **FOODOPS: The 3rd International Food Operations and Processing Simulation Workshop**

### ***FOODOPS General Chair:***

Giuseppe Vignali, University of Parma, Italy

### ***FOODOPS Program co-Chairs:***

Francesco Longo, University of Calabria, Italy  
Miquel Angel Piera - Autonomous University of Barcelona, Spain

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***I3M: The International Multidisciplinary Modelling & Simulation Multiconference involves EMSS, MAS, HMS, IMAACA, DHSS, I\_WISH, SESDE, FOODOPS and related Workshops and Special Sessions; All Sessions are open to all I3M Attendees***

***EMSS: European Modelling & Simulation Symposium, 29th Edition, Part of I3M2017***

***MAS: The International Conference on Modelling & Applied Simulation, 16th Edition, Part of I3M2017***

***IMAACA: The International Conference on Integrated Modeling and Analysis in Applied Control and Automation, 10th Edition, Part of I3M2017***

***HMS: The International Conference on Harbour, Maritime & Multimodal Logistics Modelling and Simulation, 19th Edition, Part of I3M2017***

***DHSS: The International Defense and Homeland Security Simulation Workshop, 7th Edition, Part of I3M2017***

***I\_WISH: The International Workshop on Innovative Simulation for Healthcare, 6th Edition, Part of I3M 2017***

***SESDE: The International Workshop on Simulation for Energy, Sustainable Development & Environment, 5th edition, Part of I3M2017***

***FOODOPS: The International Food Operations and Processing Simulation Workshop, 3rd Edition, Part of I3M 2017***

***Special Session: I3M Special Session freely open to all the attendees (i.e. Plenary Joint Opening, I3M 2017 Special session, etc.)***

***I3M Event: Special I3M Events (I3M Gala Dinner and I3M Welcome Ceremony) are open to I3M / DHSS/ EMSS/ HMS/ IMAACA/ MAS/IWISH/SESDE/FOODOPS Attendees***

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**Monday 2017-09-18 9:00-10:30**

***Joint I3M Opening, Room - Aula Magna***

**Welcome Address I3M, Prof. Agostino G. Bruzzone, DIME, University of Genoa, Italy**

**Conferences, Societies and Networks Welcome**

- Welcome to Barcelona - Prof. Miquel Angel Piera, UAB, Spain
- EMSS Conference - Prof. Francesco Longo, MSC-LES, University of Calabria, Italy
- EMSS Conference - Prof. Michael Affenzeller, Upper Austria University of Applied Sciences, Austria

- HMS Conference - Prof. Yuri Merkurjev, Riga Technical University, Latvia
- MAS Conference - Prof. Adriano Solis, York University, Canada
- IMAACA Conference - Sergio Junco, Universidad Nacional de Rosario, Argentina
- DHSS Workshop - Dr. Robert Sottolare, US Army Research Laboratory, USA
- I\_WISH Workshop - Prof. Marco Frascio, University of Genoa, Italy
- SESDE Workshop - Prof. Janos Sebestyen Janosy, Centre for Energy Research, Hungary
- FOODOPS Workshop - Prof. Giuseppe Vignali, University of Parma, Italy
- Liophant - Dr. Marina Massei, University of Genova, Italy
- M&S Societies (IMCS, Simulation Team, MISS, MSNet) - Prof. Emilio Jimenez, La Rioja University, Spain
- I3M 2018 and Conference Updates, Prof. Janos Sebestyen Janosy, Centre for Energy Research, Hungary

**Monday 2017-09-18 10:30-11:00**

***COFFEE BREAK Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE***

**Monday 2017-09-18 11:00-12:30**

***Joint I3M Opening, Room - Aula Magna***

**Plenary Speeches**

**Niki Popper, Director of Dexhelpp, Austria**

**Analysing Complex Systems: Healthcare – from Big Data to Deep Data via System Simulation**

**Emilio Jimenez, University of La Rioja, Spain**

**Industry 4.0, the forth revolution of industrial production: A Simulation perspective**

**Michael Affenzeller, Upper Austria University of Applied Sciences, Austria**

**The best of both worlds: Combining the Flexibility of Modeling & Simulation with Optimization by Evolutionary Algorithms**

**Monday 2017-09-18 12:30-14:00**

***LUNCHEON Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE***

**Monday 2017-09-18 14:00-15:30**

*Room: Room 18*

**EMSS: Industrial Processes and Engineering Modeling & Simulation - Session I**

***Chair(s): Michael Affenzeller, University of Applied Sciences Upper Austria***

EMSS\_86: A simulation tool for modelling and optimization of a job-shop production system

Eleonora Bottani, Marta Rinaldi, Roberto Montanari, Massimo Bertolini, Francesco Zammori

University of Parma - Italy

EMSS\_35: Investigations of a reconfigurable pressing setup for manufacturing blades of large francis turbines runners from very thick plates

Zhengkun Feng, Henri Champlaud, Louis Mathieu

Ecole de technologie superieure; GE Hydro - Canada

EMSS\_36: Risk management in jackets manufacturing projects using discrete events simulation  
Adolfo Lamas-Rodríguez, David Chas-Álvarez, José Antonio Muiña-Dono  
Universidade da Coruña - Spain

EMSS\_7: Influence of manufacturing process in mechanical behavior of injected plastic components  
Manuel Muniesa, Isabel Clavería, Carlos Javierre, Daniel Elduque, Ángel Fernández  
Universidad de Zaragoza - Spain

EMSS\_70: Analysis of the manufacturing lead time in a Graphic Arts company  
J. Eduardo Morales López, Carlos Quintero Avilés, K. Karina Ramírez Mora, Leonardo J. Cureño Torres  
Technological University Fidel Velázquez - Mexico

**Monday 2017-09-18 14:00-15:30**

*Room: Room 16*

**EMSS: Simulation & Optimization in Aviation**

**Chair(s): Miguel Mujica Mota, Amsterdam University of Applied Sciences; Idalia Flores, University of Mexico**

EMSS\_49: Modelling dependence of arrival sequencing and metering area transit time on airport meteorological conditions  
Margarita Bagamanova, Juan José Ramos González, Miquel Àngel Piera Eroles, Jose Manuel Cordero Garcia, Alvaro Rodríguez Sanz  
Autonomous University of Barcelona ; CRIDA A.I.E; Technical University of Madrid - Spain

EMSS\_88: Model-based remote runway solution for a congested airport: Mexico City airport case  
Miguel Mujica Mota, Paolo Scala  
Amsterdam University of Applied Sciences - Holland

EMSS\_90: Downsizing the air freighter: simulation-based study of KLM cargo in Schiphol airport  
Miguel Mujica Mota, Abdel El Makhloufi, Pedro Gonzalez Hernandez  
Amsterdam University of Applied Sciences; National Autonomous University of Mexico - Holland/ Mexico

EMSS\_71: Simulation of the Mexican airport network for addressing a ground delay program  
Ann Wellens, Miguel Mujica Mota  
UNAM; Amsterdam University of Applied Sciences - Mexico/ Holland

**Monday 2017-09-18 14:00-15:30**

*Room: Room 10*

**MAS: Production, Internal Logistics and Warehouse Simulation - Session I**

**Chair(s): Adriano Solis, York University**

MAS\_11: The open architecture scheduling system for a single-armed cluster tool with PM cleaning operations  
Dong-Hyun Roh, Tae-Eog Lee  
Korea Advanced Institute of Science and Technology Daejeon - Republic of Korea

MAS\_17: Multi-class multi-server queueing networks for production systems design  
Pasquale Legato, Rina Mary Mazza  
University of Calabria - Italy

MAS\_23: Simulation-based optimization of a four stage hybrid flow shop with sequence-dependent setup times and availability constraints  
Paul Aurich, Abdulrahman Nahhas, Tobias Reggelin, Marco Krist  
Otto-von-Guericke University Magdeburg; Tectron GmbH - Germany

MAS\_24: A reinforcement learning approach to scheduling dual-armed cluster tools with time variations  
Ji-Eun Roh, Tae-Eog Lee  
Korea Advanced Institute of Science and Technology - Republic of Korea

MAS\_32: Metaheuristic and hybrid simulation-based optimization for solving scheduling problems with major and minor setup times  
Abdulrahman Nahhas, Paul Aurich, Sascha Bosse, Tobias Reggelin, Klaus Turowski  
Otto-von-Guericke University Magdeburg - Germany

**Monday 2017-09-18 14:00-15:30**

*Room: Room 12*

**HMS-EMSS: Logistics & Manufacturing**

**Chair(s): Yuri Merkuryev, Riga Technical University**

HMS\_20: Forecast models and hierarchical combined discrete-rate/discrete-event simulation models for parcel service networks  
Sebastian Lang, Tobias Reggelin, Horst Manner-Romberg  
Otto-von-Guericke-University; MRU GmbH - Germany

HMS\_8: Heuristic optimisation and simulation as decision support for operation and maintenance of offshore wind farms  
Fariba Mostajeran, Philip Joschko, Johannes Göbel  
University of Hamburg - Germany

HMS\_22: Simulation-based training modules for independent training of employees in the automotive industry  
Alexander Friedrichs, Tobias Reggelin, Sebastian Lang, Toralf Wunder  
Otto-von-Guericke-University; BMW Group - Germany

EMSS\_25: Simulation and optimization with GRASP in supply fuel in the north of Mexico City  
Daniel Tello Gaete, Esther Segura Pérez  
Universidad Austral de Chile; Universidad Anáhuac México - Chile/ Mexico

HMS\_25: Application of discrete-rate based mesoscopic simulation models for production and logistics planning  
Tobias Reggelin, Christian Schauf, Sebastian Lang, David Weigert  
Otto von Guericke University Magdeburg; Volkswagen AG - Germany

**Monday 2017-09-18 14:00-15:30**

*Room: Room 14*

**IWISH: Modeling & Simulation in Healthcare - Session I**

**Chair(s): Werner Backfrieder, Upper Austria University of Applied Sciences**

IWISH\_4: Hemodynamically non-significant coronary artery stenosis: a predictive model  
Lina Teresa Gaudio, Salvatore De Rosa, Ciro Indolfi, Maria Vittoria Caruso, Gionata Fragomeni  
Magna Graecia University - Italy

IWISH\_5: Hemodynamic comparison of thin vs standard intra-aortic balloon using a patient-specific CFD modeling  
Maria Vittoria Caruso, Gionata Fragomeni  
Magna Graecia University - Italy

IWISH\_11: Simulation of new-borns behaviours during cardio-pulmonary resuscitation  
Jean-Marc Mercantini  
Aix-Marseille Université - France

IWISH\_2: Closed-loop verification approach for the identification of motion-based action potentials in neural bundles using a continuous symbiotic system  
Volkhard Klinger, Sebastian Bohlmann  
Universität Hannover - Germany

IWISH\_7: Adapted ICP algorithm for surface based registration in image guided surgery  
Werner Backfrieder, Gerald Zwettler, Berthold Kerschbaumer  
University of Applied Sciences Upper Austria; Johannes Kepler University - Austria

**Monday 2017-09-18 15:30-16:00**

***COFFEE BREAK Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE***

**Monday 2017-09-18 16:00-17:30**

*Room: Room 18*

**EMSS: Industrial Processes and Engineering Modeling & Simulation - Session II**

***Chair(s): Michael Affenzeller, University of Applied Sciences Upper Austria***

EMSS\_17: Efficient product representations for automotive logistics  
Daniel Fruhner, Konrad Pawlikowski, Katja Klingebiel, Michael Toth  
Dortmund University of Applied Sciences and Arts; Bochum University of Applied Sciences; Dortmund University of Applied Sciences and Arts - Germany

EMSS\_91: Mathematical models to simulate the process induced stress in silicon nitride thin film coatings and its positive effects on solar cells  
Abderrazzak El Boukili  
Al Akhawayn University in Ifrane - Morocco

EMSS\_13: Validation of design solutions and materials for a high performance bearing cage  
Isabel Claveria, Aleida Lostalé, Manuel Muniesa, Ángel Fernández, Carlos Javierre, Daniel Elduque, Sergio Santodomingo  
University of Zaragoza - Spain

EMSS\_8: The role of Reduced Order Models in Industry 4.0  
Alberto Ortega, Salvador Izquierdo, Ángel Fernández, Emilio Jiménez  
ItaInnova; University of La Rioja - Spain

**Monday 2017-09-18 16:00-17:30**

*Room: Room 16*

**EMSS: Business, Financial and Security Simulation**

***Chair(s): Edgar Alonso Lopez-Rojas, Norwegian University of Science and Technology; Joni A. Amorim, University of Skövde***

EMSS\_40: Analysis of profitability through with the generation of I-scenarios from a hybrid method between artificial neural network and Monte Carlo simulation  
Juan Bermeo, Hilda Castillo, Santiago Serrano, Diana Arce, Henry Bermeo  
Universidad Politécnica Salesiana; Universidad de Cuenca - Ecuador

EMSS\_54: Identifying sentiments on hotels in Tenerife published on social media by English-speaking tourists

C. A. Martin, R. M. Aguilar, J. M. Torres, A. Garcia-Aguilar  
University of La Laguna - Spain

EMSS\_45: Implementation of a business plan for a small software developer enterprise using discrete events simulation

Joali Evelyn Pérez Bonilla, Aida Huerta-Barrientos, Jazmin Dillarza Andrade, Héctor Bautista Martínez  
National Autonomous Mexico University - Mexico

EMSS\_62: MultiMAuS: A multimodal authentication simulator for fraud detection research

Luisa M. Zintgraf, Edgar A. Lopez-Rojas, Diederik M. Roijers, Ann Nowé  
Vrije Universiteit Brussel; Norwegian University of Science and Technology - Belgium/ Norway

EMSS\_50: Bootstrapping the PaySim financial simulator for open source

Edgar Alonso Lopez-Rojas, Katrin Franke  
NTNU - Norway

**Monday 2017-09-18 16:00-17:30**

*Room: Room 10*

**MAS-EMSS: Production, Internal Logistics and Warehouse Simulation - Session II**

***Chair(s): Tobias Reggelin, Otto von Guericke University Magdeburg***

MAS\_25: Holistic planning of production and intralogistics systems through automated modeling within and among the tools of the digital factory

David Weigert, Paul Aurich, Tobias Reggelin  
Otto-von-Guericke University Magdeburg - Germany

MAS\_27: Optimization of the logistics process in warehouse of automotive company based on simulation study

Bronislav Chramcov, Milan Jemelka  
Tomas Bata University - Czech Republic

MAS\_22: A stochastic risk analysis through Monte Carlo simulation applied to the construction phase of a 600 MW gas turbine plant

Fahimeh Allahi, Lucia Cassettari, Marco Mosca  
University of Genoa - Italy

EMSS\_63: Sugar plant simulator for energy management purposes

Cristian Pablos, Luis Felipe Acebes, Alejandro Merino  
University of Valladolid; University of Burgos - Spain

EMSS\_74: Comparison of a microscopic discrete-event and a mesoscopic discrete-rate simulation model for planning a production line

F. Gleye, T. Reggelin, S. Lang  
Salzgitter Mannesmann Großrohr GmbH; Otto von Guericke University Magdeburg



**Monday 2017-09-18 16:00-17:30***Room: Room 12***HMS: Ports and Terminals Modeling & Simulation****Chair(s): Eleonora Bottani, University of Parma**

HMS\_16: Simulation study on dynamic variable gate setting condition of container port

Zijian Guo, Qi Zhang, Wenyuan Wang

Dalian University of Technology - China

HMS\_17: Bunching index for bulk cargo ports

Hai-Yan Xu, Xiuju Fu, Ruthu Shree Ragavan, Lee Jek Suen, Xiao Feng Yin, Rick Siow Mong Goh

Institute of High Performance Computing; Jurong Port Pte Ltd, Singapore - Singapore

HMS\_18: A branch-and-bound algorithm for the block relocation problem to minimize total crane operation time

Yuki Inaoka, Shunji Tanaka

Kyoto University - Japan

HMS\_3: A simulation approach for the transshipment operations at maritime container terminals

Iván Castilla-Rodríguez, Christopher Expósito-Izquierdo, Rosa M. Aguilar-Chinea, Belén Melián-Batista, J.

Marcos Moreno-Vega

Universidad de La Laguna - Spain

**Monday 2017-09-18 16:00-17:30***Room: Room 14***IWISH-MAS: Modeling & Simulation in Healthcare - Session II****Chair(s): Marco Frascio, University of Genoa**

IWISH\_12: The medical point of view into a simulation project of management for safety and security in disasters and emergencies of industrial plants (DIEM-SSP Project)

Francesca Mandolino, Antonella Petrillo, Marco Frascio

University of Genoa; Parthenope University of Naples - Italy

IWISH\_10: Spatial psychiatric hospitalization modelling in an international setting – an agent based approach

Günther Zauner, Christoph Urach, Martin Bicher, Niki Popper, Florian Endel

DWH simulation services; TU Wien; DEXHELPP; IMEHPS.research - Austria

MAS\_20: Simulation of virtual human hand evolution after stroke

Esteban Peña-Pitarch, NeusTicó-Falguera

Escola Politècnica Superior d'Enginyeria de Manresa; XarxaAssistencialAlthaia - Spain

IWISH\_13: Generator of diets for individuals with diabetes with minimization of glycemic index

Maximino Navarro Mentado, Esther Segura Pérez

UNAM - Mexico

**Social Event****Monday 2017-09-18 20:00-21:00****20:00, I3M Welcome Ceremony @ Palau Robert, Passeig de Gràcia, 107 08008  
Barcelona****Welcome addresses from I3M, UAB and Spanish Simulation Community  
Representatives**

**Tuesday 2017-09-19 9:00-10:30***Room: Room 18***EMSS: Modeling & Simulation in Manufacturing and Forecasting****Chair(s): Luciano Di Donato, INAIL; Francesco Longo, University of Calabria; Antonio Padovano, University of Calabria**

EMSS\_69: Building Information modelling and simulation integration for modular construction manufacturing performance improvement

Beda Barkokebas, Youyi Zhang, Chelsea Ritter, Mohamed Al-Hussein  
University of Alberta - Canada

EMSS\_84: Holistic planning of production and intralogistics systems through automated modeling within and among the tools of the digital factory

David Weigert, Paul Aurich, Tobias Reggelin  
Otto von Guericke University Magdeburg - Germany

EMSS\_38: Using simulation and reliability concepts to set starting times in multitask projects with random duration and a common deadline

Angel A. Juan, Laura Calvet, Carles Serrat, Sara Hatami  
University of Catalonia - Spain

EMSS\_14: Simulation model of prefabricated house from manufacturing to on-site installation

Mohammed Sadiq Altaf, Mohamed Al-Hussein  
University of Alberta - USA

EMSS\_79: Demand prediction model of an organization

Oroselia Sanchez, Idalia Flores  
Universidad Nacional Autónoma de México - Mexico

**Tuesday 2017-09-19 9:00-10:30***Room: Room 16***EMSS: Simulation & Optimization in Aviation and Transportation****Chair(s): Miquel Angel Piera, UAB**

EMSS\_47: Complex networks of the air passenger traffic in Mexican airports

Olivia Sashiko Shirai Reyna, Idalia Flores De La Mota  
UNAM - Mexico

EMSS\_80: Simulation of boarding pedestrian in Mexican subway: the case of Pantitlan terminal station

Yazmin Dillarza-Andrade, Aida Huerta-Barrientos, Geraldo Salazar-Diaz, Joali Evelyn Pérez-Bonilla  
UNAM - Mexico

EMSS\_34: Air traffic simulator for passive ADS-B surveillance system

Jiri Kratochvil, Karel Simerda  
University of Pardubice - Czech Republic

EMSS\_76: A comparative analysis of different methods for identification of the evolution of number of possible conflict-free airspace configurations including multiple aircraft and single conflict

Julia de Homdedeu, Maria del Mar Tous, Miquel Angel Piera, Thimjo Koca, Marko Radanovic  
Autonomous University of Barcelona - Spain

**Tuesday 2017-09-19 9:00-10:30***Room: Room 10***MAS: Decision Support Systems****Chair(s): Alessio Ishizaka - University of Portsmouth**

MAS\_1: AHP-K-GDSS: a new sorting method based on AHP for group decisions  
Alessio Ishizaka, Francesco Lolli, Rita Gamberini, Bianca Rimini, Elia Balugani  
University of Modena and Reggio Emilia; University of Portsmouth - Italy/ UK

MAS\_7: A risk management model for measuring project complexity  
Fabio De Felice, Antonella Petrillo, Federico Zomparelli, Marco Esposito  
University of Cassino; University of Naples "Parthenope" - Italy

MAS\_10: Heuristic modules multi-lift planning tool for industrial site  
Mahmoud Farajmandi, Ulrich Hermann, Hosein Taghaddos, Simaan M. AbouRizk  
University of Alberta; University of Tehran - Canada/ Iran

MAS\_19: Modeling supply chain quality management performance  
Juan Miguel Cogollo Flórez, Alexander Alberto Correa Espinal  
Instituto Tecnológico Metropolitano; Universidad Nacional de Colombia - Colombia

MAS\_28: Validation of a cost model for the superstructure service in juvenile prisons in Brazil by means of the Monte Carlo simulation  
Camila Isaton, Antônio Edésio Jungles, Jamil José Salim Neto  
Federal University of Santa Catarina - Brazil

**Tuesday 2017-09-19 9:00-10:30***Room: Room 12***HMS-EMSS: Ports and Terminals Modeling & Simulation - Session II****Chair(s): Manfred Gronalt, BOKU University**

HMS\_21: Port competitiveness evaluation by fuzzy logic of major port in Asia  
Veerachai Gosasang, Jiravich Klomperee, Pitinoot Kotcharat  
Port Authority of Thailand - Thailand

HMS\_19: Truck gate simulation for inland terminals  
Jana Vögl, Manfred Gronalt  
University of Natural Resources and Life Sciences - Austria

HMS\_14: A simulation model for estimating the carbon footprint of vehicles in the terminal operating processes  
Wenhe Yang, Soemon Takakuwa  
Chuo University - Japan

EMSS\_83: The intelligent decision support system prototype for port informational integration  
Ana X. Halabi-Echeverry, Sardar M. N. Islam, Hugo L. Nino-Vergara, Nelson Obregon-Neira  
Universidad de La Sabana; Victoria University  
City Flinders Campus; Universidad Javeriana - Colombia/ Australia

**Tuesday 2017-09-19 9:00-10:30***Room: Room 14***IMAACA: Modeling & Control - Session I****Chair(s): Sergio Junco, Universidad Nacional de Rosario**

IMAACA\_1: Unknown input observer for MIMO systems with stability  
Joel Abraham Gonzalez, Christophe Sueur  
Ecole Centrale de Lille - France

IMAACA\_2: A new approach to the derivation of a single set of implicit state space equations from a fixed causality bond graph of a hybrid model  
Wolfgang Borutzky  
Bonn-Rhein-Sieg University of Applied Sciences - Germany

IMAACA\_7: Anti-Wind-Up solution for a two degrees of freedom controller  
Lucrecia Gava, Anibal Zanini  
Universidad de Buenos Aires - Argentina

IMAACA\_11: A novel port-Hamiltonian based design of stabilizing controller for DC-DC buck converter  
Juan Tomassini, Alejandro Donaire, Sergio Junco  
Universidad Nacional de Rosario; Queensland  
University of Technology - Argentina/ Australia

IMAACA\_13: Bond graph model conditioning for analysis, simulation and control system design: application to a planar mobile robotic manipulator  
Matías Nacusse, Martín Crespo, Sergio Junco, Vitalram Rayankula, Pushparaj Mani Pathak  
National University of Rosario; CONICET; Indian Institute of Technology Roorkee - Argentina/ India

**Tuesday 2017-09-19 10:30-11:00****COFFEE BREAK Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE****Tuesday 2017-09-19 11:00-12:30***Room: Room 18***EMSS: Human Centered & Human Focused M&S****Chair(s): Emilio Jemènez, University of La Rioja; Peer Olaf Siebers, University of Nottingham**

EMSS\_100: Innovative modelling of social networks for reproducing complex scenarios  
Agostino G. Bruzzone, Riccardo di Matteo, Marina Massei, Ivan Vianello  
University of Genoa; Simulation Team; SIM4Future; NATO Joint Warfare Center - Italy/ Norway

EMSS\_72: Stimulation model - a multilayer social network generator  
Alexander Tarvid  
University of Latvia - Latvia

EMSS\_12: Quantum cognition models of ethical decision-making in human behavior simulation  
Levent Yilmaz  
Auburn University - USA

EMSS\_28: Evidence-based evaluation of psychosocial risk factors and the interaction of their stressors using system dynamics  
Hossein Abaeian, Mohamed Al-Hussein, Osama Moselhi  
Concordia University; University of Alberta - Canada

EMSS\_92: Sociotechnical systems acceptance and sustainability assessment using dynamic simulation model  
Dace Aizstrauta, Egils Ginters  
Riga Technical University - Latvia

**Tuesday 2017-09-19 11:00-12:30***Room: Room 16***EMSS: Modelling and Simulation Approaches in and for Education****Chair(s): Maja Atanasijevic-Kunc, University of Ljubljana; Andreas Körner, Vienna University of Technology**

EMSS\_68: Robot soccer strategy adaptation

Vaclav Svaton, Jan Martinovic, Katerina Slaninova, Vaclav Snasel  
Technical University of Ostrava - Czech Republic

EMSS\_16: Educational animation as a complementary tool to convey knowledge to civil construction workers

Leiliane Santana, Ailton Freire, Marília Dagostin, Antônio Jungles  
Instituto Federal da Bahia; Instituto Federal do Piauí; Universidade Federal de Santa Catarina;  
Universidade Federal de Santa Catarina - Brazil

EMSS\_27: Simulation for teaching the production cell concept in civil production engineering

Daniela Matschulat Ely, Ana Carolina Brandão Taroni  
Centro Federal de Educação Tecnológica de Minas Gerais - Brazil

EMSS\_9: Use of games to student training in the civil engineering undergraduation course: a bibliometric analysis

Ailton Freire, Daniela Ely, Leiliane Santana, Antônio Jungles, Marcos Dalmau  
Instituto Federal do Piauí; Centro Federal de Educação Tecnológica de Minas Gerais; Instituto Federal da Bahia; Universidade Federal de Santa Catarina - Brazil

EMSS\_93: Analytical review and the analysis of educational programs with computer modelling and simulation engineering content

Borut Zupancic, Yuri Senichenkov, Gašper Mušic  
University of Ljubljana; Peter the Great Saint-Petersburg Polytechnic University - Slovenia/ Russia**Tuesday 2017-09-19 11:00-12:30***Room: Room 10***FOODOPS: M&S of Food Processing, Scheduling and Distribution - Session I****Chair(s): Marco Better, OptTek Systems, Inc.**

FOODOPS\_9: Sustainable distribution system in food retail sector - a simulation modelling approach

Sameh Saad, Ramin Bahadori, Jishnu Ravisankar  
Sheffield Hallam University - UK

FOODOPS\_11: Advanced approaches to solving critical and complex production scheduling problems

Marco Better, James P. Kelly, Manuel Laguna, Ross Palmer  
OptTek Systems; University of Colorado at Boulder - USA

FOODOPS\_12: Discrete event simulation of a pigmeat packing plant

Lluís Miquel Plà-Aragones, Adela Pagès-Bernaus, Eva Novoa-Tufet, Jordi Mateo-Fornés, Pedro Terrafeta,  
Daniel Mendoiroiz, Lorea Pérez-Cànovas, Sandy López-Nogales  
University of Lleida; Carnicas Iruña-Velasco - Spain

FOODOPS\_15: Market analysis of dairy products produced in the Parmigiano-Reggiano area

Rodolfo Mantione, Giuseppe Vignali  
University of Parma - Italy

FOODOPS\_10: Drying process simulation in food industry using lattice boltzmann method  
 Mohammad Mobarak, Mohamed Hussein, Antonio Delgado  
 Friedrich-Alexander-Universität Erlangen-Nürnberg; Cairo University - Germany/ Egypt

**Tuesday 2017-09-19 11:00-12:30**

*Room: Room 12*

**DHSS-MAS: Defense and Homeland Security - Session I**

**Chair(s): Erdal Cayirci, University of Stavanger**

DHSS\_19: An underwater buoyancy-driven glider simulator with Modelling & Simulation as a Service architecture

Manlio Oddone, Agostino Bruzzone, Emanuel Coelho, Daniele Cecchi, Bartolome Garau  
 NATO STO CMRE; Simulation Team, University of Genoa - Italy

DHSS\_8: Requirement specification method based on SES and DEVS formalism in defense system simulation

Jiyong Yang, Jaewoong Choi, Inho Jung, Changbeom Choi  
 Handong Global University - Republic of Korea

DHSS\_15: Modeling and simulation of forced population displacement flows using colored Petri Nets  
 Jenaro Nosedal-Sanchez, Ali Asgary, Adriano Solis, Francesco Longo  
 York University; University of Calabria - Canada/ Italy

MAS\_9: Simulation of a readiness-based sparing optimization

John Wray, Arnold Buss, Javier Salmeron  
 Naval Postgraduate School - USA

DHSS\_7: Test case base for dynamic verification of defense simulation model based on system entity structure and model base

Jaewoong Choi, Jiyong Yang, Inho Jung, Changbeom Choi  
 Handong Global University - Republic of Korea

**Tuesday 2017-09-19 11:00-12:30**

*Room: Room 14*

**IMAACA-EMSS-MAS: Modeling & Control - Session II**

**Chair(s): Sergio Junco, Universidad Nacional de Rosario**

IMAACA\_3: Development of a rules-based fuzzy algorithm for deviation of obstacles

Lucas Alves Dias, Roger William de Oliveira Silva, Paulo César da Silva Emanuel, André Ferrus Filho, Rodrigo Teixeira Bento  
 Faculdade de Tecnologia Termomecanica - Brazil

IMAACA\_5: Well-formed Petri Net based patterns for modeling logic controllers for autonomous trains

Yuchen Xie, Manel Khelif-Bouassida, Armand Toguyéni  
 Univ. Lille Nord de France - France

MAS\_29: Power distribution control algorithm for fuel economy optimization of 48V mild hybrid vehicle

Seongmin Ha, Theho Park, Wonbin Na, Hyeongcheol Lee  
 Hanyang University - Korea

EMSS\_4: Fractional positive and stable time-varying continuous-time linear electrical circuits

Tadeusz Kaczorek  
 University of Technology - Poland

**Tuesday 2017-09-19 12:30-14:00****LUNCHEON Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE****Tuesday 2017-09-19 14:00-15:30***Room: Room 18***EMSS: VV&A, Simulation Experiments and ICT Applications****Chair(s): Emilio Jemènez, University of La Rioja**

EMSS\_60: Analyzing for measure characteristics of nash-sutcliffe efficiency type indicators used for model validation

Kai-Bin Zhao, Ke Fang, Ming Yang  
Harbin Institute of Technology - China

EMSS\_39: Estimation of expectations in two-level nested simulation experiments

David Fernando Muñoz  
Instituto Tecnológico Autónomo de México - Mexico

EMSS\_11: A method for obtaining the credibility of a simulation model

Ke Fang, Ming Yang, KaiBin Zhao  
Harbin Institute of Technology - China

EMSS\_57: A method for factor screening of simulation experiments based on association rule mining

Lingyun Lu, Wei Li, Ping Ma, Ming Yang  
Harbin Institute of Technology - China

EMSS\_18: Information management on the example of features of IT system "sindbad"

Mariusz Nepelski, Dominik Hryszkiewicz, Grzegorz Gudzbeler  
Police Academy in Szczytno - Poland**Tuesday 2017-09-19 14:00-15:30***Room: Room 16***EMSS-MAS: Advances in Combined, Parallel and Distributed Simulation****Chair(s): Chair(s): Gasper Music, University of Ljubljana; Thomas Wiedemann, HTW Dresden FB Informatik**

EMSS\_26: Synchronization algorithm for peer-to-peer interactive distributed simulation implemented in a single-threaded web application

Stepan Kartak  
University of Pardubice - Czech Republic

EMSS\_89: Combined synthesis/simulation approach to design and verification of production control strategies

Juliana Keiko Sagawa, Gasper Music  
Federal University of Sao Carlos; University of Ljubljana - Brazil/ Slovenia

EMSS\_94: Using High Level Architecture to combine simulations in company context: mobile factory

Simon Gorecki, Gregory Zacharewicz, Nicolas Perry  
University of Bordeaux; ENSAM of Bordeaux - France

EMSS\_3: Use of CPANS for grouping DNA sequence fragments in the construction of gnomes

Mario Rossainz López, Manuel I. Capel, Roberto Hernández-Munive, Ivan Olmos Pineda, J. Arturo Olvera López  
University of Puebla; University of Granada - Mexico/ Spain

MAS\_3: A Java library for easing the distributed simulation of space systems  
Alberto Falcone, Alfredo Garro  
University of Calabria - Italy

**Tuesday 2017-09-19 14:00-15:30**

*Room: Room 10*

**FOODOPS-SESDE: M&S of Food Processing, Scheduling and Distribution -  
Session II**

**Chair(s): Giuseppe Vignali, University of Parma**

SESDE\_7: Life cycle assessment of a spreadable cream made from parmesan cheese  
David Mosna, Giuseppe Vignali  
University of Parma - Italy

FOODOPS\_4: Can Regional Organic Agriculture Feed The Regional Community? A Case Study For  
Hamburg And North Germany  
Sarah Joseph  
Kühne Logistics University - Germany

FOODOPS\_1: Computational Fluid Dynamics (CFD) simulation of hot-air flow profile and temperature  
distribution in a CECH dryer  
Adesoji Matthew Olaniyan, Samuel Kehinde Oyeniyi, Abraham Olusola Oloye, Oluwole Idowu Ogunniyi,  
Ezinne Winnifred Igwegbe  
Federal University Oye-Ekiti; University of Ibadan; Union Bank of Nigeria Plc - Nigeria

FOODOPS\_13: CFD model validation of a bag filter for air filtration in a milling plant  
Federico Solari, Giorgia Tagliavini, Roberto Montanari, Eleonora Bottani, Nicola Malagoli, Mattia Armenzoni  
University of Parma - Italy

**Tuesday 2017-09-19 14:00-15:30**

*Room: Room 12*

**DHSS: Adaptive and Predicting Computer Based Tutoring**

**Chair(s): Robert Sottolare, US Army Research Laboratory**

DHSS\_2: Lessons learned for affective data and intelligent tutoring systems  
Keith Brawner  
United States Army Research Laboratory - USA

DHSS\_3: Utilizing intelligent tutoring systems and the generalized intelligent framework for tutoring (GIFT)  
for research  
Anne Sinatra  
United States Army Research Laboratory - USA

DHSS\_5: Task allocation and automation level in the design of intelligent tutoring system authoring tools  
Scott Osofsky, Robert Sottolare, Keith Brawner  
United States Army Research Laboratory; Oak Ridge Associated Universities - USA



DHSS\_6: Adaptive instructional methods to accelerate learning and enhance learning capacity

Robert Sottolare

United States Army Research Laboratory - USA

DHSS\_10: Knowledge acquisition versus skill development: pedagogical considerations from an intelligent tutoring perspective

Benjamin Goldberg, Benjamin Bell, Debbie Brown

United States Army Research Laboratory - USA

**Tuesday 2017-09-19 14:00-15:30**

*Room: Room 14*

**MAS-EMSS: Simulation Based Design**

**Chair(s): Adriano Solis, York University; Yilin Huang, Delft University of Technology**

MAS\_4: Effect of ankle joint position on biped robot walking behaviour

Van-Tinh Nguyen, Ngoc-Linh Tao, Hiroshi Hasegawa

Shibaura Institute of Technology; Hanoi University of Science and Technology - Japan/ Vietnam

EMSS\_78: Modified rate equation models for understanding performance limits of vertical and in-plane compound cavity VCSELS

Naser F.G. Albugami, Eugene A. Avrutin

University of York - UK

MAS\_8: Simulation-based design with UQ for creating new combination of functions considering uncertainty

Takahiro Ichimaru, Hiroshi Hasegawa, Yuji Kado

Shibaura Institute of Technology; Japan Aerospace Exploration Agency - Japan

MAS\_16: Design by contract of cyber-physical systems driven by simulation and based on properties modeling

Andrea Tundis, Max Mühlhäuser

Technische Universität Darmstadt - Germany

MAS\_21: Multi-pole modelling and intelligent simulation of a fluid power feeding system with a pneumo-hydraulic accumulator

Mait Harf, Gunnar Grossschmidt

Tallinn University of Technology - Estonia

**Tuesday 2017-09-19 15:30-16:00**

**COFFEE BREAK Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE**

**Tuesday 2017-09-19 16:00-17:30**

*Room: Room 18*

**EMSS-MAS: Simulation Based Optimization**

**Chair(s): Pasquale Legato, University of Calabria; Rina Mary Mazza, University of Calabria**

EMSS\_58: Evolution strategy - testing different tournament selection strategies

Pavel Raska, Zdenek Ulrych

University of West Bohemia - Czech Republic

EMSS\_46: Avoiding rule explosion and making approximate inverse reasoning in computing with words applications

Oscar G. Duarte

Universidad Nacional de Colombia - Colombia

EMSS\_33: Theory and practice of information fusion models' quality estimation and models' quality control  
Boris Sokolov, Stanislav Micony, Alevtina Ziuban, Vadim Burakov, Iliya Pimanov, Dmitri Ivanov  
Russian Academy of Sciences; ITMO University; Berlin School of Economics and Law - Russia/ Germany

MAS\_12: ACO topology optimization: The geometrical constraint method by learning overlaid optimal ants route  
Nanami Hoshi, Hiroshi Hasegawa  
Shibaura Institute of Technology - Japan

MAS\_18: Energy optimization of a wind system with small power by fuzzy MPPT algorithm  
Jean Claude Rakotoarisoa, Sonia Moussa, Jean Nirinarison Razafinjaka  
University of Antsirana; University El Manar - Madagascar/ Tunisia

**Tuesday 2017-09-19 16:00-17:30**

*Room: Room 16*

**EMSS-HMS: M&S in Railway Networks**

**Chair(s): Eleonora Bottani, University of Parma**

EMSS\_42: Utilization of railway network model for dynamic calculation of train delays  
Jan Fikejz, Jan Merta  
University of Pardubice - Czech Republic

EMSS\_53: Calculation of the capacity of switch area within railway stations with the use of simulation methods  
Michael Bažant, Josef Bulicek, Pavel Krýže, Petr Veselý  
University of Pardubice; SZDC - Czech Republic

EMSS\_31: Unitary hybrid model of railway traffic  
Radek Novotny, Antonin Kavicka  
University of Pardubice - Czech Republic

EMSS\_24: Nested simulations supporting traffic optimizations related to railway stations  
Roman Divis, Antonin Kavicka  
University of Pardubice - Czech Republic

HMS\_26: Railway planning: an integrated approach using discrete event simulation  
Carlos Henrique Fernandes de Faria, Marta Monteiro da Costa Cruz  
Federal University of Minas Gerais; Federal University of Espirito Santo - Brazil

**Tuesday 2017-09-19 16:00-17:30**

*Room: Room 10*

**FOODOPS: M&S of Food Processing, Scheduling and Distribution - Session III**

**Chair(s): Giuseppe Vignali, University of Parma**

FOODOPS\_5: Drying characteristics of soybean (glycine max) using continuous drying and intermittent drying  
Hyeon Woo Park, Won Young Han, Hwang-Won Kang, Won Byong Yoon  
Kangwon National University; National Institute of Crop Science - Korea

FOODOPS\_6: Developing a linearization method to determine an optimum formulation in surimi blend with varied moisture content using linear programming  
Hyeon Woo Park, Jae W. Park, Won Byong Yoon  
Kangwon National University; Oregon State University - Republic of Korea/ USA

FOODOPS\_7: Accurate prediction of heat penetration of a surimi paste with various salt and moisture contents using numerical simulation with temperature dependent thermal property functions  
Hyeon Woo Park, Myeong-Gi Lee, Jae W. Park, Won Byong Yoon  
Kangwon National University; Oregon State University - Korea/ USA

FOODOPS\_8: Effect of inulin in Jerusalem Artichoke (*Helianthus Tuberosus* L.) flour on the viscoelastic behavior of cookie dough and quality of cookies  
Youn Ju Lee, Ok-Hwan Lee, Won Byong Yoon  
Kangwon National University - Korea

**Tuesday 2017-09-19 16:00-17:30**

*Room: Room 12*

**HMS-EMSS: M&S in Logistics, Traffic and Transportation, Session I**

**Chair(s): Yuri Merkuryev, Riga Technical University**

HMS\_10: Applying Monte Carlo simulation in an indicator-based approach to evaluate freight transportation scenarios  
Laura Baumann, Fabian Behrendt, Niels Schmidtke  
Fraunhofer Institute for Factory Operation and Automation; Otto von Guericke University Magdeburg - Germany

HMS\_24: A decision support tool for strategic conflict management through assignment of calculated take-off times  
Nina Schefers, Juan José Ramos González, Pau Folch  
Universitat Autònoma de Barcelona; Aslogic - Spain

EMSS\_65: Optimal stochastic control of an aluminum recycling unit in reverse logistics  
Franck Eric Kemi Yotat, Jean Pierre Kenne, Victor Songmene  
University of Quebec - Canada

HMS\_6: Variable-depth adaptive large neighbourhood search algorithm for open periodic vehicle routing problem with time windows  
Binhui Chen, Rong Qu, Hisao Ishibuchi  
The University of Nottingham; Southern University of Science and Technology; Osaka Prefecture University  
UK/ China/ Japan

EMSS\_5: Analysing collaborative performance and cost allocation for the joint route planning problem  
Lotte Verdonck, Katrien Ramaekers, Benoît Depaire, An Caris, Gerrit K. Janssens  
Uhasselt; Research Foundation Flanders - Belgium

**Tuesday 2017-09-19 16:00-17:30**

*Room: Room 14*

**Special Session: I3M 2018 and MISS-MSNet Board of Directors Meeting**

**Chair(s): Francesco Longo, University of Calabria; Janos Sebestyen Janosy, Centre for Energy Research Hungarian Academy of Sciences**

**Social Event****Tuesday 2017-09-19 18:30-23:00****20:00, I3M Gala Dinner @ Restaurant La Gavina, Placa Pau Vila, 1 Edifici Palau du Mar, Barcelona*****During Gala Dinner the I3M Best Paper Awards will be presented***

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**Wednesday 2017-09-20 9:00-10:30***Room: Room 18***EMSS-MAS: Agent Directed Simulation*****Chair(s): Levent Yilmaz, Auburn University***

EMSS\_44: An agent-based modelling and simulation framework to assess small businesses' recovery from flooding

Meshal Alharbi, Graham Coates  
Durham University - UK

EMSS\_6: Supporting organisational decision making in presence of uncertainty

Vinay Kulkarni, Souvik Barat, Tony Clark, Balbir Barn

Tata Consultancy Services Research; Sheffield Hallam University; Middlesex University London - India/ UK

EMSS\_52: Simulation of an evolutionary game for a wealth distribution model structured in a small world network

Javier Lara De Paz, Gabriel Policroniades, Idalia Flores  
Universidad Nacional Autónoma de México - Mexico

EMSS\_67: Agent based modeling architecture with BPMN and DEVS network

Mariem Sbayou, Youssef Bouanan, Gregory Zacharewicz, Julien Francois  
Univ. Bordeaux - France

MAS\_15: An execution model for exception handling in a multi-agent system

Zina Houhamdi, Belkacem Athamena

Al Ain University of Science and Technology - UAE

**Wednesday 2017-09-20 9:00-10:30***Room: Room 16***EMSS-HMS: M&S in Logistics, Traffic and Transportation, Session II*****Chair(s): Miquel Angel Piera, UAB***

EMSS\_23: Agent-based micro simulation to assess the performance of roundabouts considering different variables and performance indicators

António A. C. Vieira, Luís M. S. Dias, Guilherme A. B. Pereira, José A. Oliveira  
University of Minho - Portugal

EMSS\_1: A simulation optimization method for design and control of signalized intersections in urban areas

Yuan Chen, Ling Li, Yinghua Shen, Bingsheng Liu

University of Alberta; Tianjin University - Canada/ China

EMSS\_19: Parameter selection for PCMA\* using surrogate-assisted black-box optimization and microscopic traffic simulation

Bernhard Werth, Erik Pitzer, Michael Affenzeller, Christian Backfrieder

University of Applied Sciences Upper Austria; Johannes Kepler University - Austria

HMS\_2: An efficient heuristic for multi-objective train load planning: a parameter sensitivity analysis  
Hilde Heggen, Kris Braekers, An Caris  
U Hasselt; Maastricht University; Research Foundation Flanders - Belgium/ Holland

EMSS\_97: Controlled triangular batches petri nets: a highway case study  
Leonardo Brenner, Isabel Demongodin  
LSIS - France

**Wednesday 2017-09-20 9:00-10:30**

*Room: Room 10*

**IWISH-EMSS: Data Driven System Simulation - Modelling & Simulation of Complex Systems**

**Chair(s): Niki Popper, Dexhelpp**

IWISH\_1: Quality assessment of input data for emergency department simulation  
Lien Vanbrabant, Niels Martin, Katrien Ramaekers, Kris Braekers  
U Hasselt; Research Foundation Flanders - Belgium

IWISH\_3: Towards standards based health data extraction facilitating process mining  
Emmanuel Helm, Barbara Franz, Andreas Schuler, Oliver Krauss, Josef Küng  
University of Applied Sciences Upper Austria; Johannes Kepler University - Austria

IWISH\_9: Deterministic record linkage of health data as preparatory work in modelling and simulation – use case: hospitalizations in Austria  
Barbara Glock, Florian Endel, Gottfried Endel  
DWH simulation services; TU Wien; Main Association of Austrian Social Security Institutions; DEXHELPP - Austria

EMSS\_30: Deep learning approaches for small dimensional biomedical data  
Karin Proell  
University of Applied Sciences Hagenberg - Austria

**Wednesday 2017-09-20 9:00-10:30**

*Room: Room 12*

**DHSS-MAS: Defense and Homeland Security - Session II**

**Chair(s): Chamnan Kumsap, Thailand Ministry of Defense**

DHSS\_18: Interoperable Simulation and Serious Games for creating an Open Cyber Range  
Agostino G. Bruzzone, Riccardo Di Matteo, Marina Massei, Enrico Russo, Mirko Cantilli, Kirill Sinelshchikov, Giovanni Luca Maglione  
University of Genoa; DIBRIS; Simulation Team; Simulation Team, Sim4Future; Liophant - Italy

DHSS\_4: The compliance of project management with corporate's research and development strategies: DTI's virtual shooting range case study  
Gp Capt Chamnan Kumsap  
Defense Technology Institute - Thailand

MAS\_30: U.S. Army mobile augmented and virtual reality training systems for handheld IED detectors  
Dean Reed, Latika Eifert, Shane Reynolds, Travis Hillyer, Clive Hoayun  
University of Central Florida; Army Research Laboratory - USA

DHSS\_17: Methodology of shooting training using modern IT techniques  
Grzegorz Gudzbeler, Jaroslaw Struniawski  
Police Academy in Szczytno - Poland

DHSS\_1: Joint military space operations simulation: a survey  
Erdal Cayirci, Hakan Karapinar, Lutfu Ozcakil, Erdem Yazgan  
University of Stavanger; HAVELSAN; Hacettepe University; TED University - Norway/ Turkey

**Wednesday 2017-09-20 9:00-10:30**

*Room: Room 14*

**EMSS-MAS-IWISH: Industry and Industry 4.0 Applications**

**Chair(s): Francesco Longo, University of Calabria**

EMSS\_98: Smart maintenance lifecycle management: a design proposal  
Jan Zenisek, Letizia Nicoletti, Francesco Longo, Gabriele Traugott, Antonio Padovano, Michael Affenzeller  
University of Applied Sciences Upper Austria; University of Calabria; CAL-TEK - Austria/ Italy

MAS\_34: Immersive, interoperable and intuitive mixed reality for service in industrial plants  
Agostino G. Bruzzone, Marina Massei, Francesco Longo, Kirill Sinelshchikov, Riccardo di Matteo, Marina Cardelli, Praveen Kuman Kandunuri  
Simulation Team, University of Genoa; University of Calabria; Simulation Team, Liophant Simulation;  
Simulation Team, SIM4Future; Simulation Team, MAST - Italy

MAS\_35: A strategic serious game addressing system of systems engineering  
Agostino G. Bruzzone, Marina Massei, Giovanni Luca Maglione, Kirill Sinelshchikov, Riccardo di Matteo  
Simulation Team, University of Genoa; Simulation Team, Liophant Simulation; Simulation Team,  
SIM4Future - Italy

EMSS\_101: Autonomous systems & safety issues: the roadmap to enable new advances in industrial application  
Agostino G. Bruzzone, Marina Massei, Matteo Agresta, Riccardo di Matteo,  
Kirill Sinelshchikov, Francesco Longo, Letizia Nicoletti, Luciano di Donato, Laura Tommasini, Carla Console, Alessandra Ferraro, Marco Pirozzi, Daniele Puri, Leonardo Vita, Fabio Cassara,  
Canio Mennuti, Giuseppe Augugliaro, Corrado Delle Site, Francesco Di Palo, Paolo Bragatto  
Simulation Team; Sim4future; University of Calabria; CAL-TEK; INAIL - Italy

IWISH\_14: Hyperbaric plant simulation for industrial applications  
Agostino G. Bruzzone, Matteo Agresta, Kirill Sinelshchikov  
Simulation Team, University of Genoa, - Italy

**Wednesday 2017-09-20 10:30-11:00**

**COFFEE BREAK Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE**

**Wednesday 2017-09-20 11:00-12:30**

*Room: Room 18*

**HMS: Forecasting, Replenishment, Warehouses and Distribution Simulation**

**Chair(s): Manfred Gronalt, BOKU University**

HMS\_11: The effect of storage and routing policies on picker blocking in a real-life narrow-aisle warehouse  
Teun van Gils, An Caris, Katrien Ramaekers  
U Hasselt - Belgium

HMS\_13: Reducing workload imbalance in parallel zone order picking systems  
Sarah Vanheusden, Teun van Gils, Katrien Ramaekers, An Caris  
UHasselt - Belgium

HMS\_12: The impact of replenishment frequency on the logistics Cost - A simulation approach  
Sameh Saad, Ramin Bahadori  
Sheffield Hallam University - UK

HMS\_4: The impact of risks on the deliveries of a logging company: simulation model case study  
Peter Mensah, Yuri Merkuryev, Eric Klavins, Francesco Longo  
Riga Technical University; University of Calabria - Latvia

HMS\_23: Simulation and visualization to support material flow planning in a metal construction company  
Gaby Neumann, Thomas Masurat

**Wednesday 2017-09-20 11:00-12:30**

*Room: Room 16*

**SESEDE: Simulation For Energy, Environment and Sustainable Development**

**Chair(s): Janos Sebestyen Janosy, Centre for Energy Research Hungarian Academy of Sciences**

SESEDE\_1: Agent-based modeling of urban land-use development: modelling and simulating households and economic activities location choice in Bordeaux, France  
Youssef Bouanan, Seghir Zerguini, Nathalie Gaussier  
Univ. Bordeaux - France

SESEDE\_3: A simulation tool to assess the integration of cargo bikes into an urban distribution system  
Wladimir Hofmann, Tom Assmann, Parisa Dolati Neghabadi, Van-Dat Cung, Jurijs Tolujevs  
Fraunhofer IFF; Univ. Grenoble Alpes; Transport and Telecommunication Institute - Germany/ France/ Latvia

SESEDE\_4: Economic and environmental sustainability of a large-scale retail store  
Eleonora Bottani, Simona Arabia, Giorgia Casella  
University of Parma - Italy

SESEDE\_5: Simulation of autonomous systems collaborating in industrial plants for multiple tasks  
Agostino G. Bruzzone, Marina Massei, Ian Mazal, Riccardo di Matteo, Matteo Agresta, Giovanni Luca Maglione  
Simulation Team, University of Genoa; NATO M&S COE; Simulation Team, SIM4Future; Simulation Team, Liophant - Italy

SESEDE\_6: Simulation as decision support system for disaster prevention  
Agostino G. Bruzzone, Matteo Agresta, Kirill Sinelshchikov  
University of Genova; Simulation Team - Italy

**Wednesday 2017-09-20 11:00-12:30**

*Room: Room 10*

**Special Session: Demonstration of the GIFT System for Adaptive Computer Based Tutoring**

**Chair(s): Robert Sottolare, US Army Research Laboratory**

**Wednesday 2017-09-20 11:00-12:30***Room: Room 12***Special Session: Presenting the Book "Robust Modelling and Simulation"****Chair(s): Miguel Mujica Mota, Amsterdam University of Applied Sciences; Idalia Flores, University of Mexico****Wednesday 2017-09-20 11:00-12:30***Room: Room 14***IMAACA-MAS: Energy Management****Chair(s): Geneviève Dauphin-Tanguy, École Centrale de Lille; Sergio Junco, Universidad Nacional de Rosario**

IMAACA\_8: Optimum fuel consumption strategy for series-parallel hybrid electric vehicles: modelling and approaches

Ivan Miguel Trindade, Agenor de Toledo Fleury  
University of Sao Paulo - Brazil

IMAACA\_12: Optimal sizing of a hybrid cooling system

Farah Kojok, Rachid Outbib, Oussama Ibrahim, Rafic Younes, Farouk Fardoun  
Aix-Marseille University; Lebanese University; Versailles Saint Quentin University; University Institute of Technology - France/ Lebanon

IMAACA\_9: PHM oriented behavior modeling for PEM fuel cell systems via delayed feedback reservoir computing model

Zhongliang Li, Rachid Outbib  
Aix-Marseille University - France

MAS\_6: Fuzzy-variable gain PI control of WECS based on a doubly FED induction generator

Tsiory Patrick Andrianantenaina, Zazad d'Edissak Tsaralahy, Jean Nirinarison Razafinjaka, Hervé Mangel  
University of Antsirana; University of Brest - Madagascar/ France**Wednesday 2017-09-20 12:30-14:00****LUNCHEON Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE****Wednesday 2017-09-20 14:00-15:30***Room: Room 18***EMSS: M&S in Photonics and Industrial Technologies****Chair(s): Alexander S. Sigov, Moscow Technological University; Mikhail E. Belkin, Moscow State Technological University**

EMSS\_55: Numerical algorithm for waveguiding properties reconstruction from intensity-only measurements in multicore fibers with strong mode coupling

Alexey Andrianov, Nikolay Kalinin, Arkady Kim  
Institute of Applied Physics of RAS; Nizhny Novgorod State University - Russia

EMSS\_56: Electro-optical composite polymer layers for high speed radiophotonics modulators, experiment and modeling

Maxim M. Nazarov, Viktor I. Sokolov, Eugeny V. Polunin, Yulia E. Pogodina  
Russian Academy of Sciences; Kurchatov Institute National Research Center - Russia



EMSS\_73: Compact integrated-optical amplifiers for the telecommunication C-band on the basis of polymer waveguides with embedded NALUF4/YB3+/ER3+/CE3+ nanocrystals

Ilya M. Asharchuk, Alexander S. Akhmanov, Ivan O. Goryachuk, Maxim M. Nazarov, Andrey V. Nechaev, Kirill V. Khaydukov, Victor I. Sokolov

Russian Academy of Sciences; Kurchatov Institute National Research Center; Moscow state university of fine chemical technologies - Russia

EMSS\_51: Modeling key photonics components based on off-the-shelf microwave-electronics computer tool

Mikhail Belkin, Vladislav Golovin, Yuri Tyschuk, Alexander Sigov

Moscow State Technological University; Sevastopol State University - Russia

EMSS\_43: Modeling photonics-based microwave frequency converter

Mikhail Belkin, Alexander Sigov

Moscow State Technological University - Russia

### **Wednesday 2017-09-20 14:00-15:30**

*Room: Room 16*

### **HMS-EMSS: Construction and Distribution in Logistics**

**Chair(s): Miquel Angel Piera, UAB**

HMS\_27: Intermodal logistics: supporting planning and scheduling services of freight forwarder

Francesco Longo, Letizia Nicoletti, Antonio Padovano, Agostino G. Bruzzone, Adriano O. Solis, Beatrice Zaccaro

University of Calabria; CAL-TEK; York University - Italy/ Canada

HMS\_28: Agile solutions & data analytics for logistics providers based on simulation

Agostino G. Bruzzone, Marina Massei, Matteo Agresta, Kirill Sinelshchikov, Riccardo di Matteo

Simulation Team University of Genoa; Simulation Team Liophant Simulation; Simulation Team Sim4Future - Italy

HMS\_15: Methods and algorithms of ship-building manufactory operation and resources scheduling

Boris Sokolov, Vyacheslav Zelentsov, Nikolay Mustafin, Alexander Kovalev, Vladimir Kalinin

SPIIRAS; ITMO University; Arsenal Design Bureau; Military-space academy - Russia

EMSS\_15: A hybrid simulation-based optimization approach for scheduling dynamic block assembly in shipbuilding

Natalia P. Basán, Victoria G. Achkar, Carlos A. Méndez, Alejandro García-del-Valle

INTEC; University of A Coruña and UMI Navantia-UDC - Argentina/ Spain

EMSS\_32: DES techniques applied to the design of a training session about lean methodology in a shipbuilding process

José Antonio Muiña-Dono, Adolfo Lamas-Rodríguez, Ángel Fernández Rodríguez, David Chas-Álvarez

Universidade da Coruña - Spain

### **Wednesday 2017-09-20 14:00-15:30**

*Room: Room 10*

### **Special Session: The NASA Simulation Exploration Experience**

**Chair(s): Agostino Bruzzone, University of Genoa**

Wednesday 2017-09-20 15:30-16:00

**COFFEE BREAK Co-Sponsored by CAL-TEK, MAST, LIO-TECH, SIM4FUTURE**

Wednesday 2017-09-20 16:00-17:30

Room: Room 18

**I3M Closing Ceremony**

Chair(s): *Agostino Bruzzone, University of Genoa; Francesco Longo, University of Calabria*

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### ***I3M Next Year***

Be Ready for I3M in Budapest

***I3M2018***

If you are interested in being active in I3M2018 in Budapest, Hungary, please visit:

[www.msc-les.org/conf/i3m2018](http://www.msc-les.org/conf/i3m2018)

and/or contact the Program Chair Dr.Francesco Longo ([f.longo@unical.it](mailto:f.longo@unical.it))

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### **International Journal Special Issues for I3M**

The I3M Organization has finalized an agreement to publish most interesting I3M papers in International Journals and to provide the opportunity to I3M authors to submit papers on International journals featuring Special Issues on simulation topics. The following Special Issues will include a collection of best papers submitted and presented at I3M or will feature topics in the area of Modeling & Simulation

-International Journal of Food Engineering

***Special Issue on: "Modeling & Simulation of food processing and operations"***

-International Journal of Simulation and Process Modelling

***Special Issue on: "Concepts and Methodologies for the Next Generation of Modeling & Simulation Techniques"***

-International Journal of Simulation and Process Modelling

***Special Issue on: "System Modeling and Real-World Industry 4.0 Applications"***

-International Journal of Service and Computing-Oriented Manufacturing

***Special Issue on: "Smart Manufacturing system: theories advances and applications"***

-International Journal of Privacy and Health Information Management

***Special Issue on: "Theories and Applications in Healthcare Management"***

-International Journal of Oil, Gas and Coal Technology

***Special Issue on: "Modeling, Simulation and Computer Software developments in petroleum, production and processing industries"***

## I3M Best Paper Awards

In the I3M Best Paper Awards will be delivered during I3M at the Gala Dinner; these are assigned by the I3M Best Paper Award International Committee and selected among the top quality papers of each Conference based on their originality, scientific quality and impact on each specific domain.

## Gianni Cantice Award for Gifted Simulation Students

The "Gianni Cantice Research Award for Gifted Simulation Students" will be announced during the I3M Gala Dinner and attributed to the best simulation student applicants; the Award is entitled to Col.Cantice as recognition for his long activity in Simulation; the Gianni Cantice Award Winner will receive the Award Certificate, a financial contribution (e.g. free registration to the next I3M conference) and the opportunity to spend a period in a M&S Excellence Center world wide, as visiting researcher of the Simulation Team. The Master and PhD students interested, in applying for this competition, need to submit their application, as described on the web site ([www.liophant.org/i3m/cantice](http://www.liophant.org/i3m/cantice)), to Dr.Marina Massei ([massei@itim.unige.it](mailto:massei@itim.unige.it)) before the deadline (September 10, 2017). For information about next edition of Gianni Cantice Award, please visit the web site [www.liophant.org/i3m/cantice](http://www.liophant.org/i3m/cantice).

## I3M Hotel and Venue

The I3M 2017 multiconference will be held at Casa de la Convalescència, Barcelona, Spain

*Further Information are available on the web site [www.msc-les.org/conf/i3m2017](http://www.msc-les.org/conf/i3m2017)*

The Casa de La Convalescència,  
Sant Antoni M<sup>a</sup> Claret, 171  
08041 Barcelona, Spain  
Tel.: +93 433 50 00  
Fax: +93 446 45 08  
Info.casa.convalescencia@uab.cat  
<http://www.uab-casaconvalescencia.org/en/>

Directions to the Case de La Convalescència:

Underground:

Yellow line (L4) - GUINARDÓ – HOSPITAL DE SANT PAU station

Blue line (L5) - SANT PAU – DOS DE MAIG station

By bus

Lines: 15, 19, 20, 45, 47, 50, 51, 92 and 192.

For the GPS

Introduce the following coordinates:

Latitude: 41.413702 (41° 24' 49.33" N)

Longitude: 2.177482 (2° 10' 38.94" E)

From the airport

\* Train + Underground. At the RENFE station, take the train to Sants-Estació. Once there take the Underground's blue line (L5) till SANT PAU – DOS DE MAIG station.

\* Bus + Underground. Outside the airport terminal, take the AEROBUS to Plaça Catalunya. Walk one corner till Plaça Urquinaona and take the Underground's yellow line (L4) to GUINARDÓ – HOSPITAL DE SANT PAU station.

Information about Hotel Accomodation can be found in the conference website at: <http://www.msc-les.org/conf/i3m2017/venue.html>

Lunches, coffee breaks and a gala dinner will be provided to all conference attendees with regular full registration.

## **Author and Chair Guidelines for I3M2017**

On the I3M web site guidelines for Track / Session Chairs and for Authors / Presenters are available please check them in order to properly deliver your presentation in the best way avoiding any inconvenience.

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### **I3M as Evolving Framework**

Dear attendee, the whole I3M Organization is very glad for having you here and for your support to this important event; we really hope you enjoyed the conference, therefore we are looking forward to further develop and improve it; by participating in I3M it is evident that a major stronghold of this Multiconference is its capability to mix very experienced people with young blood. So we will be glad if you could consider to be more involved in future events by submitting session or track proposals, by proposing new topics or by providing your availability for being a candidate for paper review; in addition you can find on the web site I3M Quality Assessment Forms for providing your feedback, thanks in advance for your support.

### **I3M2018, Budapest, Hungary**

I3M2018 will be held next year in Budapest, Hungary. Please consider to be active and to participate in this important event by submitting a paper or even by proposing a track and/or a session to the I3M Organization and Conference Chairs; for further information please check the web site: [www.msc-les.org/conf/i3m2018](http://www.msc-les.org/conf/i3m2018) or write to I3M2018 Program Chair Francesco Longo ([f.longo@unical.it](mailto:f.longo@unical.it))

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### **I3M2017 Industrial Sponsors**

CAL-TEK Srl  
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SIM4FUTURE

### **I3M2017 Media Partners**

InderScience Publisher - International Journal of Simulation and Process Modelling  
InderScience Publisher - International Journal of Service and Computing Oriented Manufacturing  
SAGE - Simulation Transactions of SCS  
IGI Global Disseminator of Knowledge - International Journal of Privacy and Health Information Management (IJPHIM)  
Halldale - The Journal of Healthcare, Education, Simulation and Training  
Halldale - The Military Simulation and Training Magazine  
De Gruyter - International Journal of Food Engineering

### **Synergies & Other Opportunities**

#### **WAMS 2018**

WAMS 2018, the International Workshop in Applied Modeling & Simulation will be held in Prague, Czech Republic, co-located with the MESAS Conference and with the Future Forces Event. Please consider to be active and to participate in this thematic workshop; for further information please check the web site: <http://www.msc-les.org/conf/wams2018> or write to Dr. Marina Massei ([marina.massei@liophant.org](mailto:marina.massei@liophant.org))

## **SIREN M&S Courses**

The Modeling & Simulation Professional Courses are organized with scientific sponsorship of MITIM-DIME University of Genoa, Simulation Team, MSC-LES University of Calabria and Liophant. Attendees have the opportunity to select among different M&S courses levels (i.e. Fundamentals, Regular, Advanced Educational Package) and categories (i.e. M&S, VV&A, PM and Interoperability). Each M&S course includes lecturing and exercises provided by world-wide experts, with several years of experience, from major center of excellence, i.e. MITIM-DIME University of Genoa, Virginian Modeling & Simulation Center (VMASC), GrVa Universidad Federal de Rio de Janeiro, LSIS Marseille, MAST, MSC-LES, National Center for Simulation (NSC), NASA, Riga TU, UAB, University of Arizona, etc. If you are interested in next SIREN Courses please visit [www.mastsrl.eu/mscourses](http://www.mastsrl.eu/mscourses) or contact [info@mastsrl.eu](mailto:info@mastsrl.eu)

## **SILENI**

SILENI (Simulation LEarning iNitiative) is an initiative devoted to promote M&S applied to real problems with special attention to Defense and Industry; SILENI promotes Seminars, Courses and Lectures on application of M&S. The name SILENI (Simulation LEarning iNitiative) is inspired by Greek mythology where Sileni (companions of Dionysus) were said to possess special knowledge and power of prophecy such as Modeling & Simulation. If you are interested in next SILENI Initiatives and Seminars please visit [www.liophant.org/sileni](http://www.liophant.org/sileni) or contact [info@liophant.org](mailto:info@liophant.org)

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***Further details on I3M Conferences are available in [www.liophant.org/i3m](http://www.liophant.org/i3m),  
[www.msc-les.org/conf/i3m2018](http://www.msc-les.org/conf/i3m2018)***