I3M 2023

The 20th International Multidisciplinary Modeling & Simulation Multiconference

(For online Participants, the Conference Time is Greece Local Time, GMT+3)

Program

Organized by

Summary

I3M 2023 Partners

The I3M 2023 Organization Committee thanks all the partners and institutions for their support to the event.

Scientific Partners

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The 20th International Multidisciplinary Modelling & Simulation Multiconference (I3M 2023) involves EMSS, HMS, MAS, DHSS, IWISH, SESDE, FOODOPS, Conferences, Workshops and related Special Sessions; All Sessions are open to all I3M Attendees.

- EMSS: European Modelling & Simulation Symposium, 35th Edition, Part of I3M 2023.

- HMS: The International Conference on Harbour, Maritime & Multimodal Logistics Modelling and Simulation, 25th Edition, Part of I3M 2023.

- MAS: The International Conference on Modelling & Applied Simulation, 22nd Edition, Part of I3M 2023.

- IMAACA: The International Conference on Integrated Modeling and Analysis in Applied Control and Automation, 16th Edition, Part of I3M 2023.

- DHSS: The International Defense and Homeland Security Simulation Workshop, 13th Edition, Part of I3M 2023

- IWISH: The International Workshop on Innovative Simulation for Healthcare, 12th Edition, Part of I3M 2023.

- SESDE: The International Workshop on Simulation for Energy, Sustainable Development & Environment, 11th Edition, Part of I3M 2023.

- FOODOPS: The International Food Operations and Processing Simulation Workshop, 9th Edition, Part of I3M 2023.

- Special Sessions: I3M Special Sessions are freely open to all the attendees (e.g., Opening Ceremony, I3M 2023 Special sessions, etc.).

Organization Committees

I3M 2023 General co-Chairs
Agostino G. Bruzzone - DIME - University of Genoa, Italy
Yuri Merkuryev - Department of M&S, Riga TU, Latvia

I3M 2023 Program Co-Chairs
Francesco Longo - MSC-LES, DIMEG, University of Calabria, Italy
Miquel Angel Piera - Autonomous University of Barcelona, Spain
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EMSS: The 35th European Modelling & Simulation Symposium

EMSS General co-Chairs:
Francesco Longo, MSC-LES, DIMEG, University of Calabria, Italy
Emilio Jiménez, La Rioja University, Spain

EMSS Program co-Chairs:
Michael Affenzeller, Upper Austria University of Applied Sciences, Austria
Antonella Petrillo, Parthenope University of Naples, Italy
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HMS: The 25th International Conference on Harbour, Maritime & Multimodal Logistics Modelling and Simulation

HMS General co-Chairs:
Agostino Bruzzone, DIMEG, University of Genoa, Italy
Yury Merkuryev, Riga Technical University, Latvia

HMS Program co-Chairs:
Eleonora Bottani, University of Parma, Italy
Miquel Angel Piera - Autonomous University of Barcelona, Spain

MAS: The 22nd 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

IMAACA: The 16th International Conference on Integrated Modeling and Analysis in Applied Control and Automation

IMAACA General Chair:
Sergio Junco, Universidad Nacional de Rosario, Argentina

IMAACA Program Chair:
Loucas Louca, University of Cyprus, Cyprus

IMAACA Honorary Chair:
Geneviève Dauphin-Tanguy, France

DHSS: The 13th International Defense and Homeland Security Simulation Workshop

DHSS General Chair:
Agostino Bruzzone, DIME, University of Genoa, Italy

DHSS Program Chair:
Benjamin Goldberg, US Army DEVCOM Soldier Center, USA

IWISH: The 12th International Workshop on Innovative Simulation for Health Care

IWISH General co-Chairs:
Marco Frascio, University of Genoa, Italy
Vera Novak, BIDMC, Harvard Medical School, USA

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SESDE: The 11ᵗʰ International Workshop on Simulation for Energy, Sustainable Development & Environment

SESDE General co-Chairs:
Janos Sebestyen Janosy, Centre for Energy Research, Hungary
Gregory Zacharewicz, Ecole des Mines d'Alès, France

SESDE Program Chair:
Letizia Nicoletti, CAL-TEK Srl, Italy
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FOODOPS: The 9ᵗʰ International Food Operations and Processing Simulation Workshop

FOODOPS General co-Chairs:
Giuseppe Vignali, University of Parma, Italy
Francesco Longo, University of Calabria, Italy

FOODOPS Program Chair:
Vittorio Solina, University of Calabria, Italy

I3M 2023

Hybrid Conference

All the sessions will be physically chaired. If you are a **Session Chair** please follow the instructions reported below.

Procedure for Sessions' Chairs

If you are a Session Chair, below you can find the procedure you are required to follow to manage your session.

1) Please be sure to join the Session Room at least 15 minutes before the Session scheduled time.

2) Check the presence of the speakers in the room and ask them some basic information to properly introduce them before their speeches. Please ask the speakers to upload their presentations on the laptop.

3) Some of the speakers will be online. Please ask them some basic information to properly introduce them. Familiarize yourself with the Microsoft TEAMS meeting functionalities (e.g., camera and microphone controls, desktop sharing, etc.). You can easily find all these functionalities on the screen. A session assistant will be there to start the Microsoft TEAMS session for online participants and to help you if needed.

4) Keep the computer camera and microphone switched ON. At the time of the session you can introduce yourself as Session Chair and you can start the Session. Please be sure to stay close to the microphone to be sure that online participants can hear you well.

5) If you have in person speakers in your session:

   a. Be sure to share the screen of the presentation on Microsoft TEAMS (so the online attendees can follow the presentation).
   b. Ask the speaker to stay close to the microphone (to allow online attendees to listen properly).
   c. After the presentation, please check if there are questions from physical and online participants. If there are no questions, please be prepared to "break the ice" by doing the first question.

6) If you have online speakers in your session:

   a. Ask the speaker to switch the microphone and the camera ON and introduce the speaker.
   b. Ask the speaker to share his/her screen and start the video of the presentation. Each video should last 10 minutes maximum.
   c. After the video of the presentation, please check if there are questions from the physical attendees or from the online attendees. After question time, remember the online speaker to switch the camera and the microphone OFF. If there are no questions, please be prepared to "break the ice" by doing the first question.

I3M 2023

Hybrid Conference

All the sessions will be held in a hybrid mode both in presence and online (through Microsoft TEAMS). If you are an **"in presence" or "online" speaker** please follow the instructions reported below.

Procedure for "in presence" Speakers

If you are an "in presence" Speaker, below you can find the procedure you are required to follow to make your presentation.

- Please join the session at least 15 minutes before the scheduled time and present yourself to the Session Chair.
- At a certain point in time (according to the scheduling of the presentations in the session), the Session Chair will call your name, present you and invite you to join the floor. Please be sure that the screen of the computer is shared on TEAMS.
- Please stay close to the microphone when doing your presentation (so the "online" participants can easily listen your presentation).

Procedure for "online" Speakers (Conference time is Greece Local Time)

If you are an "online" Speaker, below you can find the procedure you are required to follow to make your presentation.

- Please join the session at least 15 minutes before the scheduled time and present yourself to the Session Chair (you can switch your camera and microphone ON). You can easily find the name of the Session Chair within the Conference Program. After presenting yourself to the Session Chair, please switch your camera and microphone OFF.
- At a certain point in time (according to the scheduling of the presentations in the session), the Session Chair will call your name, present you and invite you to share the video of your presentation. At this time, please switch your microphone and your camera ON and share the video of your presentation.
- The video of your presentation must not exceed 10 minutes length. Be ready to answer questions made by session's attendees.
- After the presentation and questions time, please be sure to switch again your microphone and camera OFF.

I3M 2023

Hybrid Conference

All the sessions will be held in a hybrid mode both in presence and online (through Microsoft TEAMS). If you are an **"in presence" attendee or an "online" attendee** please follow the instructions reported below.

Procedure for "in presence" Session Attendees

If you are an "in presence" Session Attendee, below you can find the procedure you are required to follow during the Session.

- Please join the Session at the scheduled time according to the conference program.
- You will be allowed to make questions at the end of each presentation. Please be sure to raise your hand in case of question. The Session Chair will allow you the make the question.
- When you ask the question remember to stay close to the microphone or to be sure that the online attendees (or speaker) can correctly hear your question (if needed the chair of the session can repeat your question for the online attendees).

Procedure for "online" Session Attendees (Conference time is Greece Local Time)

If you are an "online" Session Attendee, below you can find the procedure you are required to follow during the Session.

- Please join the session at the scheduled time (conference time is Greece Local Time) according to the conference program. The links to join the sessions are reported within the program in correspondence of each session. Once you join the session, please be sure to switch your microphone and camera OFF.
- You will be allowed to make questions at the end of each presentation. Please be sure to raise your hand in case of question (you have to click on the "raised hand" symbol in Microsoft TEAMS. The Session Chair will allow you the make the question by calling your name).
- When you ask the question remember to switch your microphone and camera ON.
- After the interaction with the Speaker please remember to switch your microphone and camera OFF.

I3M 2023

Activities and Sessions Details

Monday, September 18th

09:00 am – 10:30 am, *Divani Caravel Hotel* **Room: MYCENAE**	**Mon 18th, 2023**

Microsoft Teams, Session Link:

[Access the Online Session]

I3M 2023 Opening Ceremony
Chair: Agostino Bruzzone, DIME, University of Genoa, Italy

- **I3M Multiconference** – Prof Agostino Bruzzone, DIME, University of Genoa, Italy
- **EMSS Conference** –Prof. Francesco Longo, University of Calabria, Italy and Miquel Àngel Piera, Autonomous University of Barcelona, Spain
- **HMS Conference** – Prof. Yuri Merkuryev, Riga Technical University, Latvia
- **IWISH Workshop** –Prof. Marco Frascio, University of Genoa, Italy
- **MAS Conference** – Prof. Adriano Solis, York University, Canada
- **IMAACA Conference** –Prof. Agostino Bruzzone, DIME, University of Genoa, Italy
- **DHSS Conference** – Prof. Agostino Bruzzone, DIME, 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 Genoa, Italy
- **MISS & MSNet Societies and Simulation Team** – Prof. Emilio Jimènez, La Rioja University, Spain
- **I3M 2023 and Conference Updates**, Prof. Agostino Bruzzone, University of Genoa, Italy and Ivan Castilla Rodriguez, Universidad de la Laguna, Spain

10:30 am – 11:00 am

Coffee Break

11:00 am – 12:30 pm _**Divani Caravel Hotel**_ **Room: MYCENAE**	**Mon 18th, 2023**
Microsoft Teams, Session Link: **Access the Online Session**	

I3M Plenary Session Speeches
Chair: Prof. Agostino G. Bruzzone, DIME, University of Genoa, Italy

> **Prof. Maria Pia Fanti,** Full Professor, Polytechnic University of Bari, Italy
> _Machine learning and deep reinforcement learning applied in different fields: the role of simulation_

> **Prof. Lei Ren,** Professor, Beihang University, China
> _Data-driven Modeling for Industrial Artificial Intelligence_

> **David del Rio Vilas,** Head of Innovation, OHLA Servicios Ingesan
> _Simulation rhymes with Innovation: Modelling and Simulation as a Catalyst for Business Transformation_

12:30 pm – 2:00 pm

Lunch Break

2:00 pm – 3:30 pm _**Divani Caravel Hotel**_ **Room: EDESSA**	**Mon 18th, 2023**
Microsoft Teams, Session Link: **Access the Online Session**	

EMSS-DHSS: Simulation Methods in Finance and Economy
Chair(s): Emilio Jimenez, La Rioja University

> I3M_3: Exploring an Adaptive Differential Evolution Implementation of the PRDE Trading Algorithm
> _Marshall Peters_

> I3M_5: Nonstationary Continuum-Armed Bandit Strategies for Automated Trading in a Simulated Financial Market
> _Bingde Liu and John Cartlidge_

> I3M_45: Multi-Criteria Evaluation of IT Investments based on Complex Modeling and Caluluation of the Enterprise Information System Total Cost of Ownership
> _Olga Korableva, Boris Sokolov and Valerii Zakharov_

> I3M_90: Simulation Studies of Automated Trading Algorithms for Financial Exchanges Operating Frequent Batch Auctions
Daniel Savidge and Dave Cliff

> I3M_116: Co-Evolution Causes Instability: Differential Evolution of ZIP Automated Traders in a Simulated Financial Market
Dave Cliff

2:00 pm – 3:30 pm ***Divani Caravel Hotel*** **Room: KOZANI**	**Mon 18th, 2023**

Microsoft Teams, Session Link:

MAS-HMS: Modeling & Simulation for Inventory & Warehouse Management
Chair(s): Eleonora Bottani, University of Parma

> I3M_47: Determination of an optimal inventory system, and safety factor, in a MSME, through Monte Carlo simulation
Miguel Angel Andoaga-Mejia, Susana Casy Tellez-Ballesteros and Hilda Reyna Solis-Vivanco

> I3M_69: Dental Clinic Inventory Management with Monte Carlo Simulation
Nathaly Rojas González, César Eduardo Ortiz Ortiz, Jorge Antonio Velasco Peredo, Alitzel Anaid Gutiérrez Ramos and Ricardo Torres Mendoza

> I3M_52: Performance Analysis of Traditional and Trilateral Forklifts in Warehouse Material Handling: A Technical-Economic Evaluation and Simulation Study
Claudio Suppini, Andrea Volpi, Federico Solari, Eleonora Bottani, Letizia Tebaldi, Michele Bocelli and Roberto Montanari

> I3M_53: Investigating the impact of heavy product allocation on picker routing policies in a warehouse setting
Claudio Suppini, Andrea Volpi, Federico Solari, Eleonora Bottani, Letizia Tebaldi, Giorgia Casella, Michele Bocelli and Roberto Montanari

Microsoft Teams, Session Link:

EMSS-SESDE: Digital Twins in Industry and Strategic Infrastructures
Chair(s): Agostino G. Bruzzone, University of Genoa

> I3M_137: How Cognitive Capabilities for Smart Operator enhance Human-Robot Collaboration
> *Alessio Baratta, Antonio Cimino, Maria Grazia Gnoni, Giovanni Mirabelli, Antonio Padovano, Simone Talarico*

> I3M_85: Snapshot Initialization: a New Method to Synchronize Dynamic Digital Twins Applied to Industrial Process
> *Louise Da Costa Ramos, Adrien Vassal, Gildas Besançon, Didier Paen, Jean-Christophe Blanchon, Stéphane Lagarde and Thomas Piollet*

> I3M_88: Implementation and integration of a Digital Twin for production planning in manufacturing
> *Michela Lanzini, Nicola Adami, Sergio Benini, Ivan Ferretti, Gianbattista Schieppati, Calogero Spoto and Simone Zanoni*

> I3M_19: Artificial Neural Networks approach for Digital Twin modelling of an ejector
> *Ilaria Pietrangeli, Giovanni Mazzuto, Filippo Emanuele Ciarapica and Maurizio Bevilacqua*

> I3M_123: Sustainability, Environmental Impacts and Resilience of Strategic Infrastructures
> *Agostino G. Bruzzone, Marina Massei, Marco Gotelli, Antonio Giovannetti and Antonio Martella*

2:00 pm – 3:30 pm *Divani Caravel Hotel* **Room: PELLA**	**Mon 18th, 2023**

Microsoft Teams, Session Link:

> [Access the Online Session]

EMSS-SESDE: Simulation & Optimization for Industrial Applications
Chair(s): Lin Zhang, Beihang University, China

> I3M_138: A Comparative Study of Genetic Algorithms for Integrated Predictive Maintenance and Job Shop Scheduling
> *Antonio Cimino, Mohaiad Elbasheer, Francesco Longo, Giovanni Mirabelli, Antonio Padovano, Vittorio Solina*

> I3M_10: An adaptive frequency optimization method for credibility assessment of equipment digital twins in intelligent manufacturing
> *Han Lu, Lin Zhang, Lei Ren and Yuanjun Laili*

> I3M_60: Towards an advanced work packaging simulation-based approach for industrial construction projects
> *Mohamed Elmenshawy, Rana Ead, Rick Hermann, Stephen Hague and Simaan Abourizk*

> I3M_28: A Sustainable Approach to Risk Assessment in Automotive Paint Shops
> *Silvia Carpitella, Fortunato Carpitella and Joaquín Izquierdo*

> I3M_144: Synergistic Fusion of Simulation and Virtual Reality: A Proposed New Approach for Collaborative Integration
> *Joseph Jabbour, Jalal Possik, Charles Yaacoub, Adriano O. Solis and Gregory Zacharewicz*

3:30 pm – 4:00 pm

Coffee Break

4:00 pm – 5:30 pm *Divani Caravel Hotel* **Room: EDESSA**	**Mon 18th, 2023**

Microsoft Teams, Session Link:

[Access the Online Session]

EMSS-DHSS: Simulation Advances in the Aviation Sector
Chair(s): Miquel Àngel Piera, Autonomous University of Barcelona

> I3M_24: A Model to Analyze the Potential Environmental Benefits of Continental Formation Flights
> *Tomás De Urrengeochea Cantavenera, Oriol Bracons Escarré, Gonzalo Martín López and Miquel Àngel Piera Eroles*

> I3M_31: Flight pairs detection for use in formation flight
> *Oriol Bracons Escarré, Tomás De Urrengeochea Cantavenera, Gonzalo Martín López and Miquel Àngel Piera Eroles*

> I3M_109: Simulation as a decision support tool for airport land use developments
> *Luis Enrique García Rosado, Ann Godelieve Wellens and Catya Zúñiga Alcaráz*

> I3M_6: Towards an Automated Biodiversity Modelling Process for Forest Animals using Uncrewed Aerial Vehicles
> *Christoph Praschl and David Schedl*

4:00 pm – 5:30 pm *Divani Caravel Hotel* **Room: KOZANI**	**Mon 18th, 2023**

Microsoft Teams, Session Link:

[Access the Online Session]

SESDE: Energy and Thermal Applications
Chair(s): Antonella Petrillo, Parthenope University of Naples, Italy

> I3M_50: Enhancing Power Plants Safety by Accurately Predicting CO and NOx Leakages from Gas Turbines Using FFNN and LSTM Neural Networks
> *Samar Taha Yousif, Firas Alnaimi, Ammar Al-Bazi and Sivadass Thiruchelvam*

> I3M_77: Simulation workflow for considering the outdoor microclimate in building energy modeling
> *Victoria Patricia Lopez Cabeza, Eduardo M. Diz-Mellado, José Antonio Rodríguez-Gallego, Carlos Rivera-Gómez and Carmen Galán Marín*

> I3M_78: Outdoor comfort analysis and microclimatic adaptation in a mid-20th century neighbourhood. A two scenarios simulation case study
Javier Sola-Caraballo, Victoria Patricia López-Cabeza, Carlos Rivera-Gomez and Carmen Galan-Marin

> I3M_117: Potential of Building Integrated Photovoltaics as Building Envelope Material in Europe and its Thermal Analysis using Phase Change Material
Anaiz Gul Fareed, Antonella Petrillo, Fabio De Felice, Francesco Colangelo, Ilenia Farina and Narinder Singh

> I3M_4: Approach to increase a Capturing Distance of Emissions in Industrial Ventilation
Sergey Spotar and Igor Chokhar

4:00 pm – 5:30 pm ***Divani Caravel Hotel*** **Room: NAOUSSA**	**Mon 18th, 2023**

Microsoft Teams, Session Link:

Access the Online Session

SESDE-MAS-EMSS: Innovative Digital Twin-Based Approaches
Chair(s): Agostino G. Bruzzone, University of Genoa

> I3M_20: The development of a Novel Hybrid Gas Turbine digital twin to predict performance deterioration
Hiyam Farhat and Coriolano Salvini

> I3M_43: Comparative Analysis of Digital Twin and Cyber-Physical System Concepts
Elina Lidere and Arnis Lektauers

> I3M_111: A Digital Twin Prototype for an Addiction Treatments Clinic
Yasmina Maizi, Antoine Arcand and Ygal Bendavid

> I3M_132: Autonomous System Digital Twin to test Machine Vision
Agostino G. Bruzzone, Marina Massei, Kirill Sinelshchikov,, Marco Gotelli, Antonio Giovannetti, Alberto De Paoli, Roberto Ferrari, Bharath Gadupuri and Javier Pernas

4:00 pm – 5:30 pm ***Divani Caravel Hotel*** **Room: PELLA**	**Mon 18th, 2023**

Microsoft Teams, Session Link:

EMSS-MAS-HMS-SESDE: Simulation and Optimization in Supply Chains and Logistics
Chair(s): Giuseppe Vignali, University of Parma

> I3M_57: Simulation modelling for integrating economic and environmental performance assessment for autonomous delivery systems in last mile logistics
> *Lorenzo Rubrichi, Maria Grazia Gnoni and Fabiana Tornese*

> I3M_61: The response to Covid-19 in logistics and supply chain processes: evidence from a review of the literature
> *Elena Baldrighi, Laura Monferdini and Eleonora Bottani*

> I3M_25: Using Simulation-Optimization to Integrate Financial and Product Flow Planning in Supply Chains
> *Ehsan Badakhshan, Ali Badakhshan, Sameh M Saad, Ramin Bahadori and Peter Ball*

> I3M_119: The impact of Information Transparency and Waste Treatment Lead Time in Symbiotic Supply Chains: a Simulation study
> *Rebecca Fussone, Salvatore Cannella and Jose Manuel Framinan*

> I3M_26: A new eco-friendly initiative for last food mile delivery in urban areas
> *Ramin Bahadori, Sameh Saad, Ehsan Badakhshan, Terrence Perera and Ranjika Gunathilaka*

I3M 2023

Activities and Sessions Details

Tuesday, September 19ᵗʰ

9:00 am – 10:30 am ***Divani Caravel Hotel*** **Room: EDESSA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

> [Access the Online Session]

IWISH-MAS: Simulation for Healthcare Applications
Chair(s): Marco Frascio, University of Genoa

> I3M_17: 3D printed models of endobronchial valves inside bronchi airways: augmented with 3D simulation
> *Nilsa Black-Mead, Haley Hoy, Ishmael Domingo, Gary Maddux, Bernard Schroer and Tracy Lakin*

> I3M_22: PENSIM: Realistic HD-sEMG simulation model for bipennated muscles
> *Goulwen Le Bras, Jeremy Laforet, Jean-François Grosset and Sofiane Boudaoud*

> I3M_75: PENSIM: Validation of ELVIS, a virtual simulator for laparoscopic training
> *Mara Coduri, Alessandra Oliveri, Elisa Bruzzo, Guglielmo Rapallo, Federico Boero, Cesare Librici, Carmelo Chiarenza, Marta Baratto, Marco Frascio, Michele Minuto and Serena Ricci*

> I3M_101: Power of simulation with 3D printed models for training acute care nurse practitioners
> *Tracy Lakin, Nilsa Black-Mead, Haley Hoy, Ishmael Domingo, Gary Maddux and Bernard Schroer*

> I3M_70: Simulation the customer service capacity in a dental clinic.
> *Alfredo Gomez O, Oriana Juan A, Georgi Tsvetanov, Laura Muñoz R and Ricardo Torres*

9:00 am – 10:30 am ***Divani Caravel Hotel*** **Room: KOZANI**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

> **Access the Online Session**

EMSS-MAS-IWISH: Modeling, Simulation & Automation for Smart Manufacturing
Chair(s): Antonella Petrillo, Parthenope University of Naples, Italy

> I3M_33: A Knowledge Graph Reasoning Framework for Manufacturing Multi-view Heterogeneous Data
> *Jinyun Cai, Weilin Qin, Lei Ren, Lin Zhang and Liyuanjun Lai*

> I3M_36: An integrated methodological approach to promote ecological and digital transition in the manufacturing context
> *Antonella Petrillo, Fabio De Felice, Cristina De Luca, Anaiz Gul Fareed and Ilaria Baffo*

> I3M_37: Towards an Automated Process for Adaptive Modelling of Orthoses and Shoe Insoles in Additive Manufacturing
> *Gerald Adam Zwettler, Martin Trixner, Clemens Schartmüller, Sophie Bauernfeind, Thomas Stockinger and Christoph Praschl*

> I3M_98: Increasing the output of prefab production lines - simulation aid to guide the improvement process
> *Wolfgang Grenzfurtner, Elena Pichler and Manfred Gronalt*

> I3M_99: Modeling, Simulation and Intelligent Algorithms for Solving the Machine-Loading Problem: A Literature Review
> *Giorgia Casella, Eleonora Bottani, Teresa Murino and Federico Solari*

9:00 am – 10:30 am ***Divani Caravel Hotel*** **Room: NAOUSSA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

> **Access the Online Session**

HMS-DHSS: Advances in the Maritime Sector (I Session)
Chair(s): Marina Massei, University of Genoa

> I3M_38: Container terminal simulation for vulnerability assessment
> *Stefanie Gote, Alexander Gabriel and Frank Sill Torres*

- > I3M_66: Operational planning and combinatorial optimization in simulation models of marine transportation systems
  Alex Topaj and Oleg Tarovik

- > I3M_124: Opertions in Ports supported by Simulation, XR and AI
  Agostino G. Bruzzone, Marina Massei, Kirill Sinelshchikov,, Marco Gotelli, Antonio Giovannetti, Alberto De Paoli, Roberto Ferrari and Marina Cardelli

- > I3M_125: Data Analytics for Safety and Security within Ports based using Open Sources
  Agostino G. Bruzzone, Antonio Giovannetti, Roberto Ferrari, Bharath Gadupuri, Javed Karim, Anna Sciomachen, Francesco Longo, Gianfranco Fancello, Antonio Martella, Filippo Monaci, Luca Bucchianica and Claudia Giliberti

- > I3M_143: Vehicle physics simulation, as the key component of the autonomous navigation algorithm
  Jan Mazal, Roman Adamek, Agostino Bruzzone and Dang Pham Huy

9:00 am – 10:30 am ***Divani Caravel Hotel*** **Room: PELLA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

EMSS: Innovative Petri Nets-Based Approaches
Chair(s): Emilio Jimenez, La Rioja University

- > I3M_27: Formal modelling of the Friendship mechanism in Bluetooth Mesh
  M.Carmen Ruiz, Juan Jose Pardo, Carlos Gregorio-Ruiz and Damas Gruska

- > I3M_41: Petri Net Dynamic Interpretation
  Rafael Yusupov, Boris Sokolov, Valerii Zakharov and Alexander Semenov

- > I3M_112: Buffer Allocation Problem modeling by means of Timed Petri Nets
  Joselito Medina-Marin, Maria Guadalupe Serna-Diaz, Norberto Hernández-Romero and Juan Carlos Seck-Tuoh-Mora

- > I3M_115: A proposal based on Petri nets and Artificial Neural Networks for modeling Biotechnological process
  Joselito Medina-Marin, Maria Guadalupe Serna-Diaz, Juan Carlos Seck-Tuoh-Mora, Norberto Hernandez-Romero and Irving Barragan-Vite

10:30 am – 11:00 am

Coffee Break

11:00 am – 12:30 pm ***Divani Caravel Hotel*** **Room: EDESSA**	**Tue 19th, 2023**
Microsoft Teams, Session Link: [Access the Online Session]	

IWISH: Innovative Approaches in Healthcare
Chair(s): Marco Frascio, University of Genoa

> I3M_18: Lumbar puncture trainer for training acute care nurse practitioner students: goal of low cost
> *Nilsa Black-Mead, Haley Hoy, Cooper Gunter, Ishmael Domingo, Gary Maddux and Bernard Schroer*

> I3M_54: Newtonian and non-Newtonian blood model, a comparative study on large and small vessels
> *Gionata Fragomeni*

> I3M_87: Performance-optimized Dynamic-Time-Warping Based Identification of Motion Trajectories
> *Volkhard Klinger and Jan Beckmann*

> I3M_7: Enhancing Interoperability of HL7 Resources Using Namespaces in Graph Databases
> *Andreas Pointner, Christoph Praschl and Oliver Krauss*

> I3M_40: Extending International Terminology Systems to Enhance Communication Between Nursing Services
> *Clara Diesenreiter, Oliver Krauss and Barbara Traxler*

11:00 pm – 12:30 pm ***Divani Caravel Hotel*** **Room: KOZANI**	**Tue 19th, 2023**
Microsoft Teams, Session Link: [Access the Online Session]	

FOODOPS-EMSS: Sustainability Challenges in the Agri-Food Sector
Chair(s): Giuseppe Vignali, University of Parma

> I3M_11: Numerical Analysis of Texture Modified 3D Printed Surimi gel: An Opportunity to Produce Elder Friendly 3D Food
> *Timilehin Martins Oyinloye Oyinloye and Won Byong Yoon*

> I3M_120: Water footprint of a 5 kg bag of washed potatoes
Mercedes Sáenz, Juan Ignacio Latorre-Biel, Eduardo Martinez, Emilio Jimenez and Julio Blanco

> I3M_102: Exploring Key Performance Indicators in the Food Supply Chain: A Survey and Analysis
Eleonora Bottani, Letizia Tebaldi, Giorgia Casella, Cristina Mora and Isaia Vitri

> I3M_13: Quality evaluation of Virgin Coconut Oil processing in Pacific Island Countries using Analytic Hierarchy Process
Jimaima Lako, Ronal Chand, Rishal Singh and Riteshni Naidu

> I3M_23: Mixing of non-Newtonian fluids: from CFD simulations to predictive performance metrics
Natalya Lysova, Federico Solari, Claudio Suppini, Michele Bocelli, Andrea Volpi and Roberto Montanari

11:00 am – 12:30 pm ***Divani Caravel Hotel*** **Room: NAOUSSA**	**Tue 19th, 2023**
Microsoft Teams, Session Link: Access the Online Session	

DHSS-MAS-EMS-IWISH: Modeling & Simulation for Emergency, Crisis, Risk Management
Chair(s): Adriano Solis, York University

> I3M_35: The Rover Module for emergency management: A technical description, crowd simulation, and battery test
Dean Reed, Jonathan Hurter, Devyn Dodge, Alexander Mompoint and Travis Hillyer

> I3M_49: Combining TAPAS and SUMO towards crises management based on traffic data
María López Díaz and Andrea Tundis

> I3M_97: Analysis of massive crowd dynamics during special events: 2026 FIFA World Cup as a case study
Mauricio Bastida Alamilla, Aida Huerta Barrientos and Alma Elia Vera Morales

> I3M_122: Hospital selection problem for Emergency Medical Services: Simulation and metamodeling of transport time
Fatima Zahra Sahlaoui, Lina Aboueljinane and Maria Lebbar

> I3M_134: Strategic Engineering for Decision Making during Urban Crises
Agostino G. Bruzzone, Marco Gotelli, Antonio Giovannetti, Alberto De Paoli, Roberto Ferrari, Massimo Pedemonte, Antonio Martella, Andrea Reverberi, Francesco Faccio, Luca Cirillo, Filippo Ghisi, Filippo Monaci, Luca Bucchianica and Marco Frosolini

11:00 am – 12:30 pm **_Divani Caravel Hotel_** **Room: PELLA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

[**Access the Online Session**]

Special Session: I3M 2024 and MISS/MSNet Board of Directors Meeting
Chair(s): Agostino Bruzzone, University of Genoa and Ivan Castilla Rodriguez, Universidad de la Laguna, Spain

This Special Session is an opportunity to meet colleagues from different Universities and countries and to join a completely open discussion about the organization of the I3M 2024 edition that will be held in Tenerife, Spain.

As the discussion will be completely open, there are no predefined speakers and there is no need to prepare specific power point presentations. During the session, each attendee will be invited to introduce herself/himself and her/his affiliation as well as to discuss about opportunities to set-up new tracks and special sessions and/or join the I3M International Program Committee. New ideas to improve the conference organization are also welcome.

The session will also host the traditional MISS and MSNet Annual Directors Meeting.

12:30 pm – 2:00 pm

Lunch Break

2:00 pm – 3:30 pm **_Divani Caravel Hotel_** **Room: EDESSA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

[**Access the Online Session**]

FOODOPS Special Session - The SMALLDERS Project
Chair(s): Vittorio Solina, University of Calabria

> I3M_SMALLDERS: The SMALLDERS Project – General Overview
> *Vittorio Solina*

> I3M_104: A digital model application to optimize water consumption in agriculture
> *Luca Preite, Federico Solari and Giuseppe Vignali*

> I3M_105: Selection of 4.0 sensors for small holders: the compromise between the advantages and the costs of the implementation
Roberta Stefanini, Luca Preite, Eleonora Bottani, Laura Belli, Luca Davoli, Gianluigi Ferrari and Giuseppe Vignali

> I3M_48: An asexual genetic algorithm for the smallholders' demand selection problem
Manuella Germanos, Oussama Ben-Ammar and Gregory Zacharewicz

> I3M_92: Agri-food supply chain sustainability from the consumer perspective: a survey-based study in the Tunisian context
Safa Chabouh, Lilia Sidhom, Ayla Amamou and Abdel Kader Mami

2:00 pm – 3:30 pm ***Divani Caravel Hotel*** **Room: KOZANI**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

EMSS: Modeling & Simulation for Traffic Management
Chair(s): Maria Pia Fanti, Polytechnic University of Bari

> I3M_12: Improved fuzzy decision support system for human-realistic overtaking in railway traffic simulations
Tomáš Vyčítal

> I3M_44: Design and evaluation of simulation model to connect an interurban toll road to the street and road network
Alexander Talavirya, Mikhail Laskin and Svetlana Pupentzova

> I3M_56: Electric Vehicles Routing Simulation and Optimization under Smart Charging Strategies
Wasim Ali, María del Cacho Estil-Les, Agostino Marcello Mangini, Michele Roccotelli and Maria Pia Fanti

> I3M_89: Impact of higher category infrastructure on public transport related to travel to work
Norbert Mondek

> I3M_110: Traffic Light Management for Automated Guided Vehicle Systems using Deep Reinforcement Learning
Ricardo Cardoso, Rosaldo Rossetti, Zafeiris Kokkinogenis and João Almeida

2:00 pm – 3:30 pm *Divani Caravel Hotel* **Room: NAOUSSA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

Access the Online Session

HMS-EMSS: Advances in the Maritime Sector (II Session)
Chair(s): Agostino Bruzzone, University of Genoa

> I3M_128: New Generation Interoperable Simulators for Port Operations
> *Agostino G. Bruzzone, Marina Massei, Kirill Sinelshchikov, Roberto Ferrari and Marina Cardelli*

> I3M_130: Safety and Security in the Marine and Harbor Environment
> *Agostino G. Bruzzone, Marco Gotelli, Antonio Giovannetti, Alberto De Paoli, Roberto Ferrari, Bharath Gadupuri, Javed Karim, Elvezia Cepolina, Massimo Pedemonte, Anna Sciomachen, Gianfranco Fancello, Amsa Taib and Xhulia Sina*

> I3M_86: Efficient Maritime Object Detection and Validation for Enhancing Safety of Uncrewed Marine Systems
> *Ahmet Saglam and Yiannis Papelis*

> I3M_135: Virtual Gas Analyzer in the Maritime Sector
> *Agostino G. Bruzzone, Alberto De Paoli and Mehrnoosh Mashayekhi*

2:00 pm – 3:30 pm *Divani Caravel Hotel* **Room: PELLA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

Access the Online Session

EMSS-MAS-HMS: Simulation for Sustainable and Efficient Mobility
Chair(s): Jan Zenisek, University of Applied Sciences Upper Austria

> I3M_79: Mobility simulation in Hamburg considering various capacities for the Elbe Tunnel
> *Abtin Nourmohammadzadeh, Stefan Voß and Jingjing Yu*

> I3M_83: Integrating Simulation and Optimization: A Case Study in Pamplona for Self-Collection Delivery Points Network Design
> *Irene Izco Berastegui, Adrian Serrano-Hernandez, Javier Faulin and Bartosz Sawik*

> I3M_103: Cost functions for rural and mixed footpaths
> *Domenico Gattuso, Gaetana Rubino and Domenica Pellicanò*

> I3M_76: A Framework for the Simulation-Based Selection of Socio-Technical Models Using Technical Requirements Analysis
> *Bernhard Jonathan Sattler, Jannik Stadler, Andrea Tundis, John Friesen and Peter F. Pelz*

> I3M_64: Mixed trucks and robots delivery approach: a simulation study
> *Angelina Krendeleva, Giuliana Rotunno, Walter Ukovich and Maria Pia Fanti*

3:30 pm – 4:00 pm
Coffee Break

4:00 pm – 5:30 pm ***Divani Caravel Hotel*** **Room: EDESSA**	**Tue 19th, 2023**
Microsoft Teams, Session Link: [Access the Online Session]	

SMALLDERS General Assembly
Chair(s): Vittorio Solina, University of Calabria

This session is reserved for SMALLDERS project consortium members only.
The project is carried out by a consortium of 5 partners including University of Calabria (Italy), University of Parma (Italy), IMT Mines Ales (France), Extremadura University (Spain) and University of Tunis (Tunisia).
The overall objective of the SMALLDERS project is to carry out basic research as well as industrial research and development activities with the aim of identifying a framework that involves innovative strategies, methodologies, technologies and business models to increase the resilience of small-scale farms in the Mediterranean area, to effectively and efficiently face unexpected and disruptive events such as the COVID-19 pandemic.

4:00 pm – 5:30 pm _**Divani Caravel Hotel**_ **Room: KOZANI**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

Access the Online Session

EMSS-HMS-DHSS: Modeling & Simulation in Transportation
Chair(s): Lin Zhang, Beihang University, China

> I3M_34: An integrated methodology to system design and simulation for electric vehicles based on X language
> _Pengfei Gu, Lin Zhang, Yuteng Zhang and Zhen Chen_

> I3M_58: Transport demand estimation for traffic simulations. Heuristic approach linked to vehicle counts
> _Domenico Gattuso, Domenica Savia Pellicanò and Gaetana Rubino_

> I3M_113: Minimizing operating failure attention times in the STC Metro: case of study of the optimal location of workshops
> _Cindy Magali Ochoa Morán, Alma Elia Vera Morales and Aida Huerta Barrientos_

> I3M_114: Demand analysis for failure prediction for decision making in the STC Metro
> _Adrian Vilchis Serrano, Alma Elia Vera Morales and Aida Huerta Barrientos_

4:00 pm – 5:30 pm _**Divani Caravel Hotel**_ **Room: NAOUSSA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

Access the Online Session

MAS-EMSS-IMAACA: Recent Challenges in the Energy Sector
Chair(s): Manfred Gronalt, BOKU University

> I3M_39: Identifying Energy Efficiency Patterns in Sorting Algorithms via Abstract Syntax Tree Mining
> _Oliver Krauss and Andreas Schuler_

> I3M_62: Assessing Resource Availability in floodwater Systems for Use in Power-To-X Technologies
> _Lucas Bjarke Jensen, Jonas Lund, Pernille Weiland Pedersen and Hugo Daniel Macedo_

> I3M_80: Comparison of a heat-air-moisture model with experiments for the drying behaviour of gypsum boards at higher temperatures
> *Lukas Weber, Jonas Herfurtner, Hans-Arno Jantzen and Uwe Janoske*

> I3M_108: Modeling the aeroacoustic noise of large wind energy systems for sound damping control purposes
> *Adrian Gambier and Andrea Rivarola*

4:00 pm – 5:30 pm ***Divani Caravel Hotel*** **Room: PELLA**	**Tue 19th, 2023**

Microsoft Teams, Session Link:

[Access the online session]

Special Session: Strategic Engineering PhD and STRATEGOS
Chair: Prof. Agostino G. Bruzzone, University of Genoa, Italy

This special session is devoted to present the Strategic Engineering PhD Program and the new Master's Degree Program in Strategic Engineering (STRATEGOS) at University of Genoa, Italy. All the attendees are invited to join to know more about these interesting opportunities and to set-up new collaboration within the framework of the Strategic Engineering PhD Program and STRATEGOS Master's Degree Program.

I3M 2023 Awards Ceremony

The I3M 2023 Awards will be delivered during the Gala Dinner on September 19th, 2023

8:30 pm – 11:00 pm **In presence**	**Tue 19th, 2023**
@Royal Olympic Hotel, "IOANNIS" Roof Garden Restaurant (7th floor), Athens, Greece	

I3M Awards Ceremony

I3M Best Paper Awards
The **I3M 2023 Best Paper Award** is assigned by the I3M 2023 Best Paper Award International Committee and selected among the top-quality papers presented at I3M based on originality, scientific quality and impact on the manufacturing domain.

Gianni Cantice Award for Gifted Simulation Students
The "Gianni Cantice Research Award for Gifted Simulation Students" will be announced during the I3M Awards Ceremony 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 and a free registration to the next I3M conference. Further information at www.liophant.org/i3m/cantice

Norbert Giambiasi Award
The Norbert Giambiasi Award is entitled to Prof. Norbert Giambiasi as recognition for very highly qualified contribution in Conceptual Modeling and DEVS within International Simulation Community. The Norbert Giambiasi Award Certificate Board selects the paper among best Conceptual Modeling contributions to I3M Conference.

Activities and Sessions Details

Wednesday, September 20th

9:00 am – 10:30 am ***Divani Caravel Hotel*** **Room: EDESSA**	**Wed 20th, 2023**

Microsoft Teams, Session Link:

[Access the Online Session](#)

SESDE-HMS-MAS: Big Data, Modeling & Simulation for Logistics
Chair(s): Gregory Zacharewicz, IMT Mines Ales

> I3M_71: Assessing the impact of smart lighting systems and on-site renewable generation in a distribution warehouse: a simulation-based approach
> *Luca Cannava, Sara Perotti, Behzad Najafi and Fabio Rinaldi*

> I3M_29: Optimizing Logistics Operations through Big Data in a Solar Panel Company
> *Miguel Rivas Pellicer, Mohamed Yoosha Tungekar and Silvia Carpitella*

> I3M_30: Data Analytics Driving Sustainability in Industry 4.0
> *Glen Victor Menezes and Silvia Carpitella*

> I3M_133: SRM and Performance Evaluation Models for Logistics Optimization in Consumer Supply Chain
> *Agostino G. Bruzzone, Antonio Giovannetti, Luca Bucchianica, Enrico Ferrari, Reihaneh Nagib, Damiano Verda and Marco Muselli*

> I3M_136: Innovating Material Handling by Unmanned Technology in Logistics: Opportunities and Strategies
> *Agostino G. Bruzzone, Kirill Sinelshchikov, Marco Gotelli and Daniele Cefaliello*

9:00 am – 10:30 am _**Divani Caravel Hotel**_ **Room: KOZANI**	**Wed 20th, 2023**

Microsoft Teams, Session Link:

[**Access the Online Session**]

EMSS-IMAACA: Advanced Simulations, Innovative Paradigms and Blockchain
Chair(s): Manfred Gronalt, BOKU University

> I3M_46: Unit cell model of a terahertz intelligent reflecting surface with Schottky microcontacts
> _Anatoliy Prikhodko, Terentiy Yaropolov, Alexander Shurakov and Gregory Gol'Tsman_

> I3M_51: A parallel proposal with message passing for the implementation of a Pipeline in the development of the video game SIMON
> _Mario Rossainz, Liosbel Cabrera Sánchez, Barbara Sanchez and Manuel I. Capel Tuñón_

> I3M_55: Simultaneous occurrence of intermittent and incipient faults
> _Wolfgang Borutzky_

> I3M_63: A framework for co-simulation based optimization
> _Diego Alejandro Vega and Vincent Chevrier_

> I3M_59: BlockVerify: Privacy-Preserving Zero-Knowledge Credentials Verification Framework on Ethereum
> _Theodoros Constantinides and John Cartlidge_

9:00 am – 10:30 am _**Divani Caravel Hotel**_ **Room: NAOUSSA**	**Wed 20th, 2023**

Microsoft Teams, Session Link:

[**Access the Online Session**]

EMSS-SESDE: Simulation, Artificial Intelligence and Machine Learning for Novel Applications
Chair(s): Jan Zenisek, University of Applied Sciences Upper Austria

> I3M_21: Evaluating Machine Learning and Heuristic Optimization Based Surrogates as a Replacement for a Complex Building Simulation Model
> _Kathrin Kefer, Samuel Haijes, Michael Mörth, Richard Heimrath, Thomas Mach, Valentin Kaisermayer, Daniel Muschick, Bogdan Burlacu, Stephan Winkler and Michael Affenzeller_

> I3M_72: Performance Comparison of Microsoft's AutoML API
> _Philipp Neuhauser and Stefan Wagner_

> I3M_106: The Synergistic Relationship between Artificial Intelligence and Simulation for Real-World Applications
> *Jorge Luis Jiménez Aparicio and Jürgen Roßmann*

> I3M_141: Literature overview on AI-based garment sizing systems under a sustainable perspective
> *Alessandro Chiurco, Virginia D'Augusta, Angelica La Rosa, Francesco Longo, Letizia Nicoletti, Vittorio Solina*

9:00 am – 10:30 am ***Divani Caravel Hotel*** **Room: PELLA**	**Wed 20th, 2023**

Microsoft Teams, Session Link:

[Access the Online Session]

Special Session: EUROSIM Board Meeting
Chair: Agostino G. Bruzzone, University of Genoa, Italy

EUROSIM - the Federation of European Simulation Societies, provides a European forum for regional and national simulation societies to promote the advancement of modelling and simulation in industry, research and development.

This Special Session is an opportunity to meet colleagues from different Universities and countries and to join a fruitful discussion about the future of EUROSIM.

10:30 am – 11:00 am

Coffee Break

11:00 am – 12:30 pm ***Divani Caravel Hotel*** **Room: EDESSA**	**Wed 20th, 2023**

Microsoft Teams, Session Link:

[Access the Online Session]

EMSS-MAS: Innovative Simulation Methods and Mathematical Paradigms
Chair(s): Adriano Solis, York University

> I3M_65: A credibility allocation approach of complex simulation systems
> *Huan Zhang, Wei Li, Huapin Geng, Ping Ma and Ming Yang*

> I3M_81: Pythagorean triples for linear approximations of probabilistic production streams
> *Ivo Formánek, David Kruml, Jan Paseka and Jan Šťovíček*

> I3M_107: A hysteresis type strategy for server reservation in a multi-server queueing system with priority and retrials
> *Ciro D'Apice, Alexander Dudin, Rosanna Manzo and Luigi Rarità*

> I3M_142: Simulation-Driven Analyses of Performance of PCB Assembly Operations: A Case Study
> *Karen Althea Manfredi, Antonio Nervoso, Adriano O. Solis and Francesco Longo*

11:00 am – 12:30 pm *Divani Caravel Hotel* **Room: KOZANI**	**Wed 20th, 2023**

Microsoft Teams, Session Link:

[**Access the Online Session**]

EMSS: Advanced Modeling & Simulation
Chair(s): Emilio Jimenez, La Rioja University

> I3M_14: Simulation of Thermal Phase Shift in THz Substrate Integrated All-Dielectric Waveguide
> *Sergey Seliverstov, Sergey Svyatodukh and Gregory Goltsman*

> I3M_15: Modeling of road tunnel airflows by FDS using tunnel model with a system of geometrical objects
> *Peter Weisenpacher*

> I3M_68: Data-driven modeling using convolutional neural network for experimental velocity fields of an impinging jet
> *Ali Mjalled, Mouhammad El Hassan, Hassan H. Assoum and Martin Mönnigmann*

> I3M_42: A domain specific language for distributed modeling
> *Jan Zenisek, Florian Bachinger, Erik Pitzer, Stefan Wagner, Dominik Falkner, Alfredo Lopez and Michael Affenzeller*

> I3M_140: Enhancing efficiency in the food industry: a simulation model for optimizing production processes
> *Caterina Fusto, Francesco Longo, Alisia Muraca, Lucrezia Rudi, Teresa Timpani, Pierpaolo Veltri*

11:00 am – 12:30 pm ***Divani Caravel Hotel*** **Room: NAOUSSA**	**Wed 20th, 2023**

Microsoft Teams, Session Link:

> [Access the Online Session]

EMSS-MAS: Innovative Applications of Digital Twins and AI
Chair(s): Agostino Bruzzone, University of Genoa

> I3M_126: Strategic Engineering: Transforming P&ID Documents into Digital Twins via Machine Learning and Cloud Computing
> *Agostino G. Bruzzone, Antonio Giovannetti, Giacomo Genta and Dimos Kapetis*

> I3M_129: Smart Customer Analysis for Personalized Promotion based on AI
> *Agostino G. Bruzzone, Kirill Sinelshchikov and Wolfhard Schmidt*

> I3M_32: Exploring multi-modelling approaches in Hamburg, Germany's evolving digital urban twin infrastructure
> *Rico Herzog*

> I3M_131: Innovative Machine Learning Solutions for Credit Classification of Commercial & Agricultural Vehicle Contracts
> *Agostino G. Bruzzone, Michele Arduini, Francesco Pandolfelli, Letizia Monti and Federico Mini*

> I3M_127: Data Analytics and Machine Learning for Very Large Oil&Gas Projects
> *Agostino G. Bruzzone, Marco Gotelli, Antonio Giovannetti, Edoardo Costa, Pietro Perlo, Filippo Monaci and Luca Pelizzoni*

12:30 PM – 1:00 PM ***Divani Caravel Hotel*** **(During Luncheon)**	**Wed 20th, 2023**

> Only in Presence

I3M 2023 Closing Ceremony
Chairs: Agostino Bruzzone, University of Genoa, Italy; Francesco Longo, University of Calabria, Italy.

All "in presence" attendees are invited to join the I3M 2023 Closing Ceremony. The Closing Ceremony is a nice opportunity to wrap-up the conference experience and to say hello each other waiting for the next I3M edition (2023) that will be held in Athens, Greece.

I3M Social Events

The I3M Local Organization Committee has organized one main Social Event for I3M 2023. Please find below the relevant information.

I3M 2023 Gala Dinner

The I3M 2023 Gala Dinner will be held on Tuesday, September 19th (2023) at the Royal Olympic Hotel. The evening will unfold at the "IOANNIS" Roof Garden Restaurant on the 7th floor. Revel in the mesmerizing sights it offers, with panoramic views of the Temple of Zeus, the iconic Acropolis, the serene National Garden, and the majestic Lycabettus Hill. Kindly note, formal dressing is required for this distinguished occasion.

Getting to the Royal Olympic Hotel in Athens' Heartbeat

Nestled in the vibrant core of Athens, the Royal Olympic Hotel is effortlessly accessible. Here's how you can reach the IOANNIS Roof Garden Restaurant:

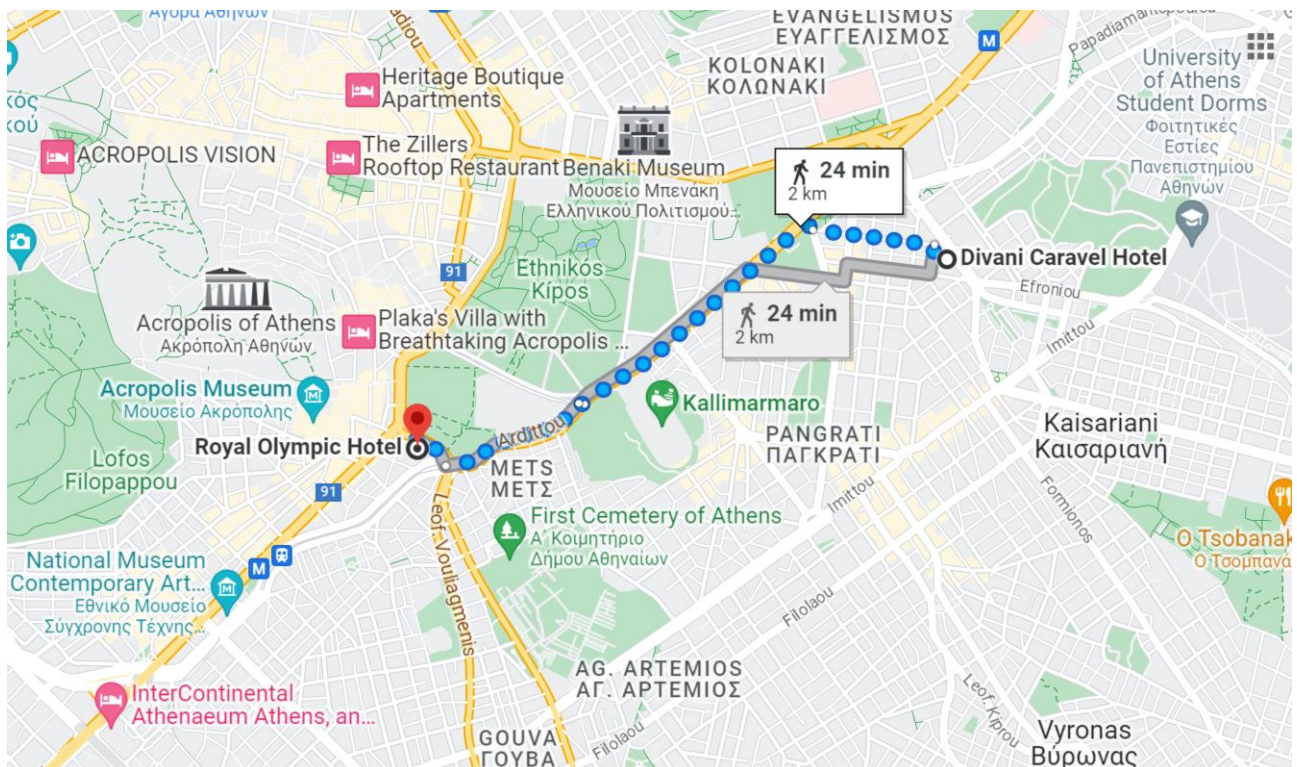**Acropolis Metro Station**: Just a 4-minute walk away (280 meters).
Acropolis Museum: A mere 5-minute stroll (300 meters).
Temple of Olympian Zeus: Only 5 minutes on foot (290 meters).
Syntagma Square: A quick metro ride, just 1 stop away or 7 minutes.
Plaka: An 8-minute walk will bring you here (650 meters).
Stavros Niarchos Park: 12 minutes by public transport.

I3M Proceedings Publication

The I3M organization Committee is carrying out a major effort to improve the visibility of the I3M articles.

Therefore, all the I3M proceedings are published as open access and will be available at https://www.cal-tek.eu/proceedings/.
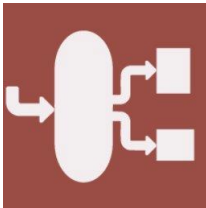
The I3M Proceedings will be indexed in SCOPUS and will be also provided with a DOI. The DOI will be also communicated to SCOPUS to allow link connection between the SCOPUS webpage of the article and the webpage where the PDF of the article is available for download.

DOIs coverage for the previous years editions of I3M is ongoing.

International Journal Special Issues

The Organization Committee will tentatively set-up the following International Journals Special Issues.

- **Processes (MDPI)**

- **Applied Sciences (MDPI)**

I3M 2023 Authors and Chairs Guidelines

Author and Chair Guidelines for the I3M2023 Hybrid Conference are available in the conference website at:

www.msc-les.org/i3m2023

Please check them in order to proper deliver your presentation in best way avoiding any inconvenience.

I3M 2023 as evolving framework

Dear attendee, the 2023 edition of I3M will be held as hybrid event (both in presence and online). Please check the website for additional information at:

www.msc-les.org/i3m2023

Alternatively, you can write to Prof. Francesco Longo (f.longo@unical.it).

The whole I3M 2023 Organization Committee is glad to see you in Rome and online. We really hope you will enjoy the hybrid conference, therefore we are looking forward to further develop and improve the I3M conference in 2023 in Athens (Greece).

By participating in I3M it is evident that a major stronghold of this Multi-Conference 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 the 2023 edition by submitting session or track proposals, by proposing new topics or by providing your availability for being candidate for paper review. In addition, please feel free to share any comment and suggestion to improve the conference to Prof. Francesco Longo, I3M Program Chair (f.longo@unical.it).

I3M Synergies & Other Opportunities

The I3M organization Committee is working in synergies with other International Conferences to provide attendee with additional publication opportunities and professional training.

ISM 2023

The ISM 2023 will be held in Lisbon (Portugal) and provides a unique opportunity to meet scientists, researchers and company managers who are working in the area of Smart Manufacturing and Industry 4.0. For further information please check the web site:

http://www.msc-les.org/ism2023

You can also write to Dr. Antonio Padovano (antonio.padovano@unical.it)
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 candidate for paper review or by inviting companies and managers to attend the ISM 2023 event.

Synergies & Other Opportunities

The I3M organization Committee is working in synergies with other International Conferences to provide attendee with additional publication opportunities and professional training.

SIREN M&S Courses

The Modeling & Simulation Professional Courses are organized with scientific sponsorization 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 or contact 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 or contact info@liophant.org