

I3M 2024

The 21st International Multidisciplinary Modeling & Simulation Multiconference

Superior School of Engineering and Technology,
University of La Laguna, Tenerife, Spain

18-20 September 2024

(For online Participants, the Conference Time is
Tenerife Local Time - WEST)

Final Program

Organized by



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I3M 2024 Partners

The I3M 2024 Organization Committee thanks all the partners and institutions for their support to the event

Scientific Partners



Industrial Sponsors



Media Partners



I3M 2024

List of Conferences and Workshop

The 21st International Multidisciplinary Modelling & Simulation Multiconference (I3M 2024) involves EMSS, HMS, MAS, IMAACA, DHSS, IWISH, SESDE, FOODOPS, Conferences, Workshops and related Special Sessions; Sessions are open to all I3M Attendees.

- EMSS: European Modelling & Simulation Symposium, 36th Edition, Part of I3M 2024.
- HMS: The International Conference on Harbour, Maritime & Multimodal Logistics Modelling and Simulation, 26th Edition, Part of I3M 2024.
- MAS: The International Conference on Modelling & Applied Simulation, 23rd Edition, Part of I3M 2024.
- IMAACA: The International Conference on Integrated Modeling and Analysis in Applied Control and Automation, 17th Edition, Part of I3M 2024.
- DHSS: The International Defense and Homeland Security Simulation Workshop, 14th Edition, Part of I3M 2024.
- IWISH: The International Workshop on Innovative Simulation for Healthcare, 13th Edition, Part of I3M 2024.
- SESDE: The International Workshop on Simulation for Energy, Sustainable Development & Environment, 12th Edition, Part of I3M 2024.
- FOODOPS: The International Food Operations and Processing Simulation Workshop, 10th Edition, Part of I3M 2024.
- Special Sessions: I3M Special Sessions are freely open to all the attendees (e.g., Opening Ceremony, I3M 2024 Special sessions, etc.).

I3M 2024

Organization Committees

Organization Committees

I3M 2024 General co-Chairs

Agostino G. Bruzzone - DIME - University of Genoa, Italy

Yuri Merkuryev - Department of M&S, Riga TU, Latvia

I3M 2024 Program co-Chairs

Francesco Longo - MSC-LES, DIMEG, University of Calabria, Italy

Miquel Angel Piera - Autonomous University of Barcelona, Spain

EMSS: The 36th 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

HMS: The 26th 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 23rd International Conference on Modelling & Applied Simulation

MAS General co-Chairs:

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

MAS Program co-Chairs:

Fabio De Felice, University of Cassino, Italy
Iván Castilla Rodríguez, University of La Laguna, Spain

IMAACA: The 17th 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 14th 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 13th 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

SESDE: The 12th International Workshop on Simulation for Energy, Sustainable Development & Environment

SESDE General co-Chairs:

Claudia Frydman, Laboratoire d'Informatique et Systèmes, France

Gregory Zacharewicz, Ecole des Mines d'Alès, France

SESDE Program co-Chairs:

Juan Albino Méndez Pérez, University of La Laguna, Spain

Antonio Cimino, University of Salento, Italy

FOODOPS: The 10th 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 2024

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 the screen of the presentation on Microsoft TEAMS (so all the attendees can follow the presentation).
 - 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. After question time, remember the online speaker to switch the camera and the microphone OFF.

I3M 2024

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).
- Your presentation must not exceed 10-12 minutes. Be ready to answer questions made by session’s attendees.

Procedure for "online" Speakers (Conference time is Tenerife Local Time, WEST)

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 your screen and your presentation. At this time, please switch your microphone and your camera ON, share your screen, your presentation and present your work.
- Your presentation must not exceed 10-12 minutes. Be ready to answer questions made by session’s attendees.
- After the presentation and questions time, please be sure to switch your microphone and camera OFF.
- Please note that you have been required by email to upload a video of your presentation on a shared folder. This video will be used by the session chair in case of problems (e.g., you are not able to do your presentation due to internet connection problems).

I3M 2024

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 to make the question.
- When you ask the question, please 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 Tenerife Local Time, WEST)

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 Tenerife Local Time, WEST) 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 to make the question by calling your name).
- When you ask the question, please remember to switch your microphone and camera ON.
- After the interaction with the Speaker please remember to switch your microphone and camera OFF.

I3M 2024

Activities and Sessions Details

Wednesday, September 18th

09:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Aula Magna de Física y Matemáticas, Faculty of Physics and Mathematics, Floor 0	Wed 18th, 2024
<i>Microsoft Teams, Session Link:</i> Access the Online Session	
I3M 2024 Opening Ceremony <i>Chair: Agostino Bruzzone, DIME, University of Genoa, Italy</i> <ul style="list-style-type: none">• Welcome Message – Prof. Agostino Bruzzone, DIME, University of Genoa, Italy• Welcome Message – Prof. Antonio Aparicio Juan, Vice-Chancellor of Research, University of La Laguna, Spain• Welcome Message – Prof. Jonas Philipp Luke, Subdirector of the Computer Science Section, University of La Laguna, Spain• Welcome Message – Prof. Ivan Castilla Rodriguez, I3M 2024 Local Committee Chair, University of La Laguna, Spain• EMSS Conference – Prof. Francesco Longo, University of Calabria• HMS Conference – Prof. Yuri Merkurjev, Riga Technical University, Latvia• IWISH Workshop – Prof. Marco Frascio, University of Genoa, Italy• MAS Conference – Prof. Adriano Solis, York University, Canada• IMAACA Conference – Prof. Sergio Junco, Universidad Nacional de Rosario, Argentina• DHSS Conference – Prof. Agostino Bruzzone, DIME, University of Genoa, Italy• SESDE Workshop – Prof. Gregory Zacharewicz, Ecole des Mines d'Alès, France• 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 Jiménez, La Rioja University, Spain• I3M 2025 and Conference Updates - Claudia Frydman, LSIS, France and Prof. Agostino Bruzzone, University of Genoa, Italy	

10:30 am – 11:00 am Tenerife Local Time

Coffee Break

<p>11:00 am – 12:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Aula Magna de Física y Matemáticas, Faculty of Physics and Mathematics, Floor 0</p>	<p>Wed 18th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i></p> <p>Access the Online Session</p>	
<p>I3M 2024 Plenary Session Speeches <i>Chair: Prof. Agostino G. Bruzzone, DIME, University of Genoa, Italy</i></p> <ul style="list-style-type: none">> Prof. Giuseppe Vignali, University of Parma, Italy Simulation and modeling in the food industry: Past, Present and Future research> Prof. Juan Albino Méndez Pérez, University of La Laguna, Spain Modelling and management of Energy Communities> Prof. Shaun West, Lucerne University of Applied Sciences and Arts, Switzerland SimCity for the Real World: Harnessing Model Trains, Simulations, and Digital Twins for Dynamic Decision-Making	


12:30 pm – 2:00 pm Tenerife Local Time, WEST

Lunch Break

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2</p>	<p>Wed 18th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i></p> <p style="text-align: center;">Access the Online Session</p>	
<p>FOODOPS Special Session - The SMALLDERS Project <i>Chair(s): Vittorio Solina, University of Calabria</i></p> <ul style="list-style-type: none"> > I3M_33: Exploring Novel Sustainability Metrics for the Agri-Food Supply Chain <i>Ayla Amamou, Chourouk Ben Taouess, Lilia Sidhom and Abdelkader Mami</i> > I3M_34: Role of Life Cycle Assessment (LCA) in Promoting Olive Oil Sustainability: A State-of-the-Art Review <i>Ilyes Dammak, Ayla Amamou, Lilia Sidhom and Abdelkader Mami</i> > I3M_57: Implementation of Automatic Identification and Data Capturing technologies in the Agri-Food Supply Chains: a review and framework <i>Eleonora Bottani, Roberta Stefanini and Giuseppe Vignali</i> > I3M_79: Finding the Perfect Match: Smallholder Selection in Short Food Supply Chains <i>Manuella Germanos, Oussama Ben-Ammar and Greg Zacharewicz</i> > I3M_84: Generative AI for Business Model Generation (GAI4BM): from Textual Description to Business Process Model <i>Nicolas Daclin, Sihem Mallek-Daclin and Gregory Zacharewicz</i> 	

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 1.4, Escuela Superior de Ingeniería y Tecnología, Floor 0</p>	<p>Wed 18th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i></p> <p style="text-align: center;">Access the Online Session</p>	
<p>MAS-EMSS: Innovative Methods in Economics & Finance <i>Chair(s): Mercedes Pérez de la Parte, La Rioja University</i></p> <ul style="list-style-type: none"> > I3M_31: The role of simulation as a method for sales forecasting – A systematic literature review <i>Tobias Johannes Klima, Markus Rabe and Michael Toth</i> 	

- > I3M_80: Kanban as a precursor for JIT, one-piece flow and economic performance
Roberto Díaz Reza, Jorge Luis García Alcaraz, Yashar Aryanfar, Mercedes Pérez de la Parte and Ali Keçebaş
- > I3M_106: A Distributed Real-Time Multi-Agent Stock Exchange Simulator for Investigating Inter-Market Arbitrage
Artur Varosyan and Dave Cliff
- > I3M_64: Feasibility Test of A Hybrid Simulation Approach for Optimized Resource Allocation and Cash Flow Management
Mohammadsadegh Shahrokhishahraki, Mohammad Rezaeiashtiani, Hamidreza Golabchi, Yasser Mohamed and Gaang Lee

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 2.2, Escuela Superior de Ingeniería y Tecnología, Floor 1</p>	<p>Wed 18th, 2024</p>
<p>Microsoft Teams, Session Link: </p>	
<p>EMSS-HMS-SESDE: Modeling & Simulation for Inventory Management <i>Chair(s): Emilio Jimenez, La Rioja University</i></p> <ul style="list-style-type: none"> > I3M_83: Comparison of structural typologies in industrial warehouses <i>Jorge Fernández-Zorzano, Javier Ferreiro-Cabello, Esteban Fraile-García, Emilio Jimenez Macias and Jorge Los Santos-Ortega</i> > I3M_107: Dynamic transport-lot assignment for the hot-storage area <i>Sebastian Leitner, Philipp Fleck, Stefan Wagner and Michael Affenzeller</i> > I3M_85: Random vs Class-based allocation policies: impact of the warehouse parameters on the distance traveled by pickers <i>Claudio Suppini, Natalya Lysova, Federico Solari, Letizia Tebaldi, Alessandro Carloni and Roberto Montanari</i> > I3M_113: Configuration of an automated storage and retrieval system via simulation <i>Annarita De Maio, Francesco Longo, Roberto Musmanno and Pierpaolo Veltri</i> > I3M_153: Sustainability in Warehouse Design and Management by using Building Information Modeling & Simulation <i>Agostino G. Bruzzone, Antonio Giovannetti, Elia Pazzaglia, Stefano Bottino, Yernar Rakhmnaberdı and Luca Salfa</i> 	

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST</p> <p><u>University of La Laguna (Tenerife)</u></p> <p>Room 2.6, Escuela Superior de Ingeniería y Tecnología, Floor 1</p>	<p>Wed 18th, 2024</p>
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>IWISH: Novel Approaches for Healthcare Applications (Part I)</p> <p><i>Chair(s): Marco Frascio, University of Genoa</i></p> <ul style="list-style-type: none"> > I3M_6: 3D printed models of the major congenital heart defects: integration into the training of nursing students <i>Katherine Morrison, Tracy Lakin, Haley Hoy, Delaney Enlow, Kevin Hernandez, Gary Maddux and Bernard Schroer</i> > I3M_7: Step-up approach in trauma surgery training: a pilot course <i>Federica Renzi, Michele Altomare and Osvaldo Chiara</i> > I3M_4: Achieving realism in women's health simulation with silicone rubber labia majora augmented with an anatomically correct uterus: An enhanced training experience for nursing students <i>Darlene Showalter, Jarmel Poole, Haley Hoy, Kevin Hernandez, Delaney Enlow, Cooper Gunter, Gary Maddux and Bernard Schroer</i> > I3M_5: Low-cost female catheterization simulator for increasing anatomical accuracy and clinical competency of insertion <i>Darlene Showalter, Haley Hoy, Kevin Hernandez, Cooper Gunter, Delaney Enlow, Gary Maddux and Bernard Schroer</i> 	

3:30 pm – 4:00 pm Tenerife Local Time, WEST

Coffee Break

<p>4:00 pm – 5:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2</p>	<p>Wed 18th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i></p> <p style="text-align: center;">Access the Online Session</p>	
<p>EMSS-MAS: Innovative Digital Twins and Simulation-Based Approaches <i>Chair(s): Adriano Solis, York University</i></p> <ul style="list-style-type: none"> > I3M_90: The coexistence of commercial and open-source simulation solutions in the Digital Twin era <i>Denisa Borges, Luís Dias, Marcelo Henriques and Ricardo Machado</i> > I3M_49: Safeguarding Critical Infrastructures with Digital Twins and AI <i>Andrea Tundis and Oscar H. Ramírez-Agudelo</i> > I3M_55: Artificial Intelligence and Digital Twin for Effective Risk Management in an experimental plant <i>Ilaria Pietrangeli, Giovanni Mazzuto, Filippo Emanuele Ciarapica and Maurizio Bevilacqua</i> > I3M_73: Digital Twins in Action: Optimizing FuzbAI Through Simulation and Modeling <i>Matevž Bošnjak, Goran Andonovski and Igor Škrjanc</i> > I3M_139: Enhancing Simulation Capabilities Through the Integration of Discrete Event Simulation and Virtual Reality <i>Joseph Jabbour, Jalal Possik, Charles Yaacoub, Sina Namaki Araghi, Simon Gorecki, Gregory Zacharewicz, Adriano O. Solis</i> 	

<p>4:00 pm – 5:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 1.4, Escuela Superior de Ingeniería y Tecnología, Floor 0</p>	<p>Wed 18th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i></p> <p style="text-align: center;">Access the Online Session</p>	
<p>DHSS: New Methods for Defense and Homeland Security <i>Chair(s): Agostino Bruzzone, University of Genoa</i></p> <ul style="list-style-type: none"> > I3M_23: H-Verify: Automating Intrusions through Digital Twins <i>Emilio Panti, Lorenzo Isoni and Fabrizio Baiardi</i> 	

- > I3M_43: Synthetic threat Dataset Generation by UAV fleet Simulation
Gennaro Pio Rimoli, Francesco Palmieri and Massimo Ficco
- > I3M_44: Modelling the Promotion of Warriors' Resistance to Information Warfare Threats through Fuzzy DEMATEL with Trapezoidal Structure
Svajone Bekesiene
- > I3M_131: Enhancing Defense Threat Assessment through Segmentation and Labelling of Synthetic Data
Agostino Bruzzone, Umberto Battista, Carolina Badano, Federico Taddei Santoni
- > I3M_132: Leveraging Synthetic Data Generation for Military Decision Support Enhancement
Agostino Bruzzone, Umberto Battista, Carolina Badano, Federico Taddei Santoni

4:00 pm – 5:30 pm Tenerife Local Time, WEST

University of La Laguna (Tenerife)

Room 2.2, Escuela Superior de Ingeniería y Tecnología, Floor 1

Wed 18th, 2024

Microsoft Teams, Session Link:

[Access the Online Session](#)

IWISH: Novel Approaches for Healthcare Applications (Part II)

Chair(s): Marco Frascio, University of Genoa

- > I3M_18: Mathematical Modeling of Behavior-Induced Body Weight Changes
Mantana Chudtong, Pitchaporn Paitong and Andrea De Gaetano
- > I3M_19: Simulating Brain Gradient-Echo Magnetic Resonance Images through Microstructural Modeling
Mert Sisman, Alexandra Roberts, Hangwei Zhuang, Renjiu Hu, Junghun Cho, Shun Zhang, Pascal Spincemaille, Thanh Nguyen and Yi Wang
- > I3M_41: Calibration error as loss function in binary classification
Stephan Dreiseitl
- > I3M_60: A numerical model to investigate aorta coarctation
Gionata Fragomeni, Patrizia Vizza, Arrigo Palumbo and Vera Gramigna

<p>4:00 pm – 5:30 pm Tenerife Local Time, WEST</p> <p><u>University of La Laguna (Tenerife)</u></p> <p>Room 2.6, Escuela Superior de Ingeniería y Tecnología, Floor 1</p>	<p>Wed 18th, 2024</p>
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>SMALLDERS General Assembly</p> <p><i>Chair(s): Francesco Longo, University of Calabria</i></p> <p>This session is reserved for SMALLDERS project consortium members only.</p> <p>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).</p> <p>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.</p>	

Activities and Sessions Details

Thursday, September 19th

<p>9:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2</p>	<p>Thu 19th, 2024</p>
<p>Microsoft Teams, Session Link: Access the Online Session</p>	
<p>FOODOPS: Innovative Solutions in the Agri-Food Sector (Part I) <i>Chair(s): Giuseppe Vignali, University of Parma</i></p> <ul style="list-style-type: none">> I3M_110: CoAP-based Digital Twin Modelling of Heterogeneous IoT Scenarios <i>Luca Davoli, Hafiz Humza Mahmood Ramzan, Laura Belli and Gianluigi Ferrari</i>> I3M_38: A Conceptual Framework for Predictive Digital Dairy Twins: Integrating Explainable AI and Hybrid Modeling <i>Dana Jox, Darius Hummel, Jörg Hinrichs and Christian Krupitzer</i>> I3M_63: Defining a Cognitive Digital Twin architecture in food supply chains: the early outcomes of DSS4LCO initiative <i>Gabriele Pasetti Monizza, Maryam Mozaffari, Simone Fabbrizzi, Johann Gamper, Oswald Lanz and Dominik Matt</i>> I3M_65: Artificial intelligence-based soil moisture estimation using a combination of in-situ measurements and open-source data <i>Luca Preite, Arianna Paini and Giuseppe Vignali</i>> I3M_148: Optimization based on Innovative Models for Online Food Delivery and Supply Chain Management <i>Agostino G. Bruzzone, Giovanni Maria Ferraris and Fabio Ferrero</i>	

<p>9:00 am – 10:30 am Tenerife Local Time, WEST</p> <p><u>University of La Laguna (Tenerife)</u></p> <p>Room 1.4, Escuela Superior de Ingeniería y Tecnología, Floor 0</p>	<p>Thu 19th, 2024</p>
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>HMS: Recent Advances in the Maritime Sector</p> <p><i>Chair(s): Eleonora Bottani, University of Parma</i></p> <ul style="list-style-type: none"> > I3M_92: Threatmap: A Framework for Enhancing Security Awareness and Decision-Making for Naval Agents <i>Md Abu Sayed, Mayamin Hamid Raha, Parvaneh Aliniya, Monica Nicolescu and Mircea Nicolescu</i> > I3M_133: Enhancing Maritime Training: The Role of VR in Ship Bridge Simulators - The CAL-TEK Case Study <i>Virginia D'Augusta, Francesco Longo, Karen Althea Manfredi, Giovanni Mirabelli, Letizia Nicoletti, Vittorio Solina, Simone Talarico</i> > I3M_86: Ship route planning in simulation models of Arctic transport systems <i>Alex Topaj and Oleg Tarovik</i> > I3M_98: How to identify ground slot patterns in inland terminals to increase storage capacity of containers – a combination of metaheuristic and simulation <i>Jana Voegl, Pavel Cimili, Patrick Hirsch and Manfred Gronalt</i> > I3M_149: Scenario Simulation to Investigate new Solutions for Port Terminals and Plants based on Intelligent Data Fusion and Supply Chain Modeling <i>Agostino G. Bruzzone, Anna Sciomachen, Marco Gotelli, Antonio Giovannetti, Alessia Giulianetti, Farshad Shamlu</i> 	

9:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.6, Escuela Superior de Ingeniería y Tecnología, Floor 2	Thu 19th, 2024
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>SESDE-MAS: Electric Solutions for a Sustainable Future Chair(s): Antonio Padovano, University of Calabria</p> <ul style="list-style-type: none"> > I3M_51: A high-level model of electric isolated systems to assess energy transition planning <i>Iván Castilla Rodríguez, Alfredo Ramírez Díaz, Juan Albino Méndez Pérez, Francisco Javier Ramos Real, Óscar García Afonso, Benjamín González Díaz, José Francisco Gómez González, Francisco Javier Calero García, Israel Riverón Miranda and Vivek Vinod Balani-Mahtani</i> > I3M_72: An optimization model for the charging infrastructure of electric vehicles incorporating the topography: a case study for the island of Tenerife <i>Alejandro Rojano-Padrón, Iván Castilla Rodríguez and Francisco J. Ramos-Real</i> > I3M_138: A Decision Support System for End-of-Life Management of Electric Vehicle Batteries: A Framework Addressing Disassembly Complexities <i>Martina Cardamone, Vincenzo Carrelli, Francesco Longo, Antonio Padovano, Felice Tauro</i> > I3M_20: ECO-CHARGE: Sustainable Decision Making for EV Charging Station Production <i>Fabio De Felice, Cristina De Luca, Anaiz Gul Fareed, Veronica Campanile and Antonella Petrillo</i> > I3M_25: A review on current trends on optimal EVCS location <i>Silvia Carpitella, Xudong Jia and Rasoul Narimani</i> 	

9:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.7, Escuela Superior de Ingeniería y Tecnología, Floor 2	Thu 19th, 2024
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>IWISH: Novel Solutions in the Healthcare Sector Chair(s): Marco Frascio, University of Genoa</p> <ul style="list-style-type: none"> > I3M_32: Optimizing Pharmaceutical Supply Chain Configuration in Primary Healthcare: A Mathematical Modeling and Decision Support Approach <i>Manal Alzaidan, Majed Hadid, Regina Padmanabhan and Laoucine Kerbache</i> 	

- > I3M_74: Stochastic modeling of glioblastoma spread: a numerical simulation study
Alessandro Borri, Massimiliano D'Angelo, Laura D'Orsi, Marcello Pompa, Simona Panunzi and Andrea De Gaetano
- > I3M_102: Molecular docking of triazole-based ligands with KDM5A to identify potential inhibitors
Jose Siguenza and Haci Baykara
- > I3M_103: Gait Evaluation for Prevention and Rehabilitation based on Dynamic- Time-Warping and Acceleration Measurement
Jan Beckmann and Volkhard Klinger
- > I3M_111: Visualization of Patient Progress Monitoring and Vital Signs Trends in Electronic Nursing Reports
Barbara Traxler, Clara Diesenreiter and Oliver Krauss

10:30 am – 11:00 am Tenerife Local Time, WEST

Coffee Break

11:00 am – 12:30 pm Tenerife Local Time, WEST

University of La Laguna (Tenerife)

Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2

Thu 19th, 2024

Microsoft Teams, Session Link:

[Access the Online Session](#)

EMSS-SESDE-MAS: Recent Challenges in the Energy Sector

Chair(s): Emilio Jimenez, La Rioja University

- > I3M_17: Operationalizing justice in models used as decision-support tools in local and regional energy transition planning
Aarthi Meenakshi Sundaram, Yilin Huang, Eefje Cuppen and Igor Nikolic
- > I3M_93: Designing a low-energy fiber-optic interconnect link of terabyte throughput for hyper-scale Data Centers
Mikhail Belkin, Evgeny Plastinin and Nikita Smirnov
- > I3M_81: A comparative study of a geothermal double flash cycle equipped with a carbon dioxide transcritical cycle for different well inlet temperatures
Yashar Aryanfar, Jorge Luis García Alcaraz, Emilio Jiménez Macías and Ali Keçebaş

- > I3M_15: Towards a multi-model infrastructure for integrated decision-making in energy transition
Yilin Huang and Igor Nikolic
- > I3M_67: Impact of cost perception and environmental concern on environmental attitudes toward green energy
Ingrid Iovana Burgos Espinoza, José Roberto Diaz Reza, Jorge Luis García Alcaraz and Emilio Jimenez Macias

11:00 am – 12:30 pm Tenerife Local Time, WEST

University of La Laguna (Tenerife)

Room 1.4, Escuela Superior de Ingeniería y Tecnología, Floor 0

Thu 19th, 2024

Microsoft Teams, Session Link:

[Access the Online Session](#)

EMSS-SESDE-HMS: Sustainable and Efficient Approaches in Aviation

Chair(s): Ivan Castilla Rodriguez, University of La Laguna

- > I3M_1: The role of digital twins in shaping aviation's circular economy transformation
Akram Pattan, Madhura Bhandigani, Silvia Carpitella and Sepideh Abolghasem
- > I3M_87: Modeling the implementation of technology in a passenger security screening checkpoint at Amsterdam Airport Schiphol
Sersinho Gardt, Catya Zuniga and Ann Wellens
- > I3M_71: Towards a digital twin of the PRM service in airports based on semantic tools
Juan José Herrera-Martín, Iván Castilla-Rodríguez, Christian Torres-González, Rafael Arnay and Gonçal Costa
- > I3M_68: Topology Effects in Drone Parcel Delivery
Irene Izco Berastegui, Adrian Serrano-Hernandez and Javier Faulin Fajardo
- > I3M_40: Verification of Sensing Drone Stochastic Control Theory Algorithms
John Richardson, Don Tran and Christopher Lorensen

11:00 am – 12:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.6, Escuela Superior de Ingeniería y Tecnología. Floor 2	Thu 19th, 2024
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>Special Session: PRIMA Projects <i>Chair(s): Francesco Longo and Vittorio Solina, University of Calabria</i></p> <ul style="list-style-type: none"> > GREEN DRIED FRUITS Project Elisa De Marchi, University of Milan, Italy > TECHONEY Project Tiziana De Magistris, Agrifood Research and Technology Centre of Aragon, Spain > CERERE Project Antonio Padovano, University of Calabria, Italy > SMALLDERS Project Francesco Longo and Vittorio Solina, University of Calabria, Italy 	


11:00 am – 12:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.7, Escuela Superior de Ingeniería y Tecnología. Floor 2	Thu 19th, 2024
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>Special Session: Eurosim Board Meeting <i>Chair(s): Agostino Bruzzone, University of Genoa</i></p> <p>This session is aimed at discussing the upcoming activities of the Eurosim Society.</p> <p>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. Under the EUROSIM umbrella, EUROSIM Member Societies and co-operating societies and groups organise conferences, produce publications on modelling and simulation, work in standardising or technical committees.</p>	

12:30 pm – 2:00 pm Tenerife Local Time, WEST
Lunch Break

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2</p>	<p>Thu 19th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i> Access the Online Session</p>	
<p>EMSS-MAS: Finance, Business Processes and Project Management <i>Chair(s): Antonio Cimino, University of Salento and Vittorio Solina, University of Calabria</i></p> <ul style="list-style-type: none"> > I3M_9: Transformation of BPMN models of business processes into models using colored Petri nets <i>David Le and Antonín Kavička</i> > I3M_94: Simulation of Social Media-Driven Bubble Formation in Financial Markets using an Agent-Based Model with Hierarchical Influence Network <i>Gonzalo Bohorquez and John Cartlidge</i> > I3M_42: Modelling of efficient project portfolios <i>Petr Fiala and Renata Majovska</i> > I3M_75: Dynamic and risk multicriteria analyses of project portfolios <i>Renata Majovska and Petr Fiala</i> 	

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 1.4, Escuela Superior de Ingeniería y Tecnología, Floor 0</p>	<p>Thu 19th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i> Access the Online Session</p>	
<p>FOODOPS: Innovative Solutions in the Agri-Food Sector (Part II) <i>Chair(s): Giuseppe Vignali, University of Parma</i></p> <ul style="list-style-type: none"> > I3M_26: Packaging and technologies for food products: a state-of-the art survey <i>Eleonora Bottani, Martina Nicoletti and Giuseppe Vignali</i> > I3M_27: Resilience in the Food Industry: Interviews-based evidences <i>Letizia Tebaldi, Andrea Volpi and Giuseppe Vignali</i> 	

- > I3M_28: Radio Frequency Identification in the Food Industry: Preliminary results from a bibliometric analysis on case studies
Letizia Tebaldi, Andrea Volpi, Claudio Suppini, Natalya Lysova, Roberto Montanari and Eleonora Bottani
- > I3M_62: Life Cycle Assessment of pelletized compost from agricultural waste valorization processes
Arianna Pains, Luca Preite and Giuseppe Vignali
- > I3M_95: Mitigating Design Errors in Standardized Food Processing Plants: Insights from CFD Simulation of a Tomato Concentration Process
Federico Solari, Natalya Lysova, Alex Dalla Fiora, Andrea Volpi, Antonio Rizzi and Roberto Montanari

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.6, Escuela Superior de Ingeniería y Tecnología. Floor 2</p>	<p>Thu 19th, 2024</p>
<p>Microsoft Teams, Session Link: </p>	
<p>EMSS-MAS: Simulation and Optimization for Industrial Applications <i>Chair(s): Adriano Solis, York University</i></p> <ul style="list-style-type: none"> > I3M_100: Convergence Analysis of Genetic Algorithms on Dynamic Production Scheduling <i>Michael Heckmann, Bernhard Werth and Stefan Wagner</i> > I3M_89: Aggregated evaluation of production flows <i>Ivo Formánek, David Kruml and Jan Paseka</i> > I3M_135: Towards Real-Time Task Allocation in Human-Robot Collaboration: Defining Key Requirements and Features for a Multi-Simulation Digital Twin System <i>Alessio Baratta, Antonio Cimino, Alessandro Chiurco, Francesco Longo, Giovanni Mirabelli, Letizia Nicoletti</i> > I3M_137: Exploring the Impact of Emotional States on Human Performance in Production Systems: A Simulation Approach <i>Manuel Campanella, Antonio Cimino, Antonio Padovano, Vittorio Solina and Adriano O. Solis</i> 	

<p>2:00 pm – 3:30 pm Tenerife Local Time, WEST</p> <p><u>University of La Laguna (Tenerife)</u></p> <p>Room 3.7, Escuela Superior de Ingeniería y Tecnología. Floor 2</p>	<p>Thu 19th, 2024</p>
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>EMSS-IWISH: New Technologies and Approaches in the Healthcare Sector</p> <p><i>Chair(s): Marco Frascio, University of Genoa</i></p> <ul style="list-style-type: none"> > I3M_22: Enhancing Surgical Training in Italy: Proposing a Standardized Multidisciplinary Curriculum for Residency Programs. A four years experience of the SPIGC-AIMS working group. <i>Domenico Soriero, Giacomo Pugliese, Marco Amisano, Davide Pertile, Alessandro Pasculli, Beatrice Sperotto, Luigi Losco, Michele Maruccia, Roberto Meniconi, Francesca Ratti, Matteo Serenari, Giuseppe Vizzielli, Stefano Restaino, Marco Frascio et al.</i> > I3M_112: Emerging Technologies for Data-Driven Pharmaceutical Supply Chain Management <i>Galina Merkuryeva</i> > I3M_2: Identifying and addressing disruptions in healthcare supply chain management <i>Puravkumar Patel, Smitesh Shah, Silvia Carpitella and Sepideh Abolghasem</i> > I3M_134: Integration of Industry 4.0 Technologies for Enhancing Healthcare Efficiency and Patient Care: A Comprehensive Literature Review <i>Martina Cardamone, Antonio Cimino, Virginia D'Augusta, Antonio Nervoso, Antonio Padovano, Simone Talarico</i> 	

3:30 pm – 4:00 pm Tenerife Local Time, WEST

Coffee Break

<p>4:00 pm – 5:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2</p>	<p>Thu 19th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i> Access the Online Session</p>	
<p>HMS: Innovative and Sustainable Approaches for Logistics <i>Chair(s): Eleonora Bottani, University of Parma</i></p> <ul style="list-style-type: none"> > I3M_8: Exploring the maturity of Discrete-event simulation in logistics: is this a new research domain? <i>Eleonora Bottani and Giorgia Casella</i> > I3M_66: Application of Machine Learning for 3D Localization using RFID-Tag RSSI Values in Logistics Environments <i>Lukas Rissmann, Jakob Wittmann, Corinna Huber and Sebastian Meissner</i> > I3M_96: Analysis of interrelationships among key factors of smart urban logistics and urban access management: a system dynamics-based model <i>Gaetana Rubino, Domenico Gattuso and Manfred Gronalt</i> > I3M_52: Process mapping and KPIs modelling for a manufacturing company <i>Martina Bresadola and Eleonora Bottani</i> > I3M_114: Evaluating Supply Chain Performance Through Lean, Agile, Resilient, and Green (LARG) Perspectives: A Comprehensive Framework <i>Eleonora Bottani, Laura Monferdini, Giorgia Casella and Cristina Mora</i> 	

<p>4:00 pm – 5:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 1.4, Escuela Superior de Ingeniería y Tecnología, Floor 0</p>	<p>Thu 19th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i> Access the Online Session</p>	
<p>EMSS: Advanced Modeling and Simulation <i>Chair(s): Juan Albino Mendez Perez, University of La Laguna</i></p> <ul style="list-style-type: none"> > I3M_10: Credibility Metric Weighting for Accelerating Qualitative Model Evaluation <i>Ke Hu, Jiabei Gong, Jiayi Zhang, Bijun Tang, Yuanjun Laili, Lin Zhang and Lei Ren</i> 	

- > I3M_12: Tianshu: Towards Accurate Measuring, Modeling and Simulation of Deep Neural Networks
Hongming Huang, Hong Xu and Nan Guan
- > I3M_56: Easy Communication Environment for Heterogeneous and Distributed Simulation Models Design
Artis Aizstrauts and Egils Ginters
- > I3M_59: Never Mind The No-Ops: A Faster Simulation Algorithm For Modelling Co-Evolutionary Species Interactions via Spatial Cyclic Games
Dave Cliff
- > I3M_70: Pipeline Representation Using Generic Parallel Algorithms in Heterogeneous Parallel Computing. A comparative analysis
Mario Rossainz-López, Barbara Sanchez-Rinza, Zuriel López-Sosa and Manuel I. Capel-Tuñón

<p>4:00 pm – 5:30 pm Tenerife Local Time, WEST <i>University of La Laguna (Tenerife)</i> Room 3.6, Escuela Superior de Ingeniería y Tecnología. Floor 2</p>	<p>Thu 19th, 2024</p>
<p><i>Microsoft Teams, Session Link:</i></p> <div style="text-align: center; border: 1px solid black; background-color: #FFD700; padding: 5px; display: inline-block;"> Access the Online Session </div>	
<p>EMSS-MAS: Traffic, Mobility and Emergency Management <i>Chair(s): Marina Massei, University of Genoa</i></p> <ul style="list-style-type: none"> > I3M_39: Scenario Modeling for the Virtual Validation and Verification of Cloud-based Mobility Services <i>Philipp Heisig and Sabine Sachweh</i> > I3M_104: Hybrid toll plaza capacity: Simulation modeling of traffic <i>Alexander Talavirya and Mikhail Laskin</i> > I3M_105: Integrating Flood Maps into Agent-Based Modeling for Participatory Management <i>Chainarong Kesamoon and Prachya Boonprasurt</i> > I3M_24: Towards Modelling Human Behaviour and Warning Message Informativity in Large-Scale Event Evacuation <i>Amelie Schmidt-Colberg, Sophie Teigler, Ruth Meyer and Antonio Kruse</i> 	

<p>4:00 pm – 5:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.7, Escuela Superior de Ingeniería y Tecnología. Floor 2</p>	<p>Thu 19th, 2024</p>
<p>Microsoft Teams, Session Link:</p> <p style="text-align: center;">Access the Online Session</p>	
<p>4:00 pm – 4:45 pm Tenerife Local Time, WEST Special Session: I3M 2025 and MISS/MSNet Board of Directors Meeting <i>Chair(s): Agostino Bruzzone, University of Genoa and Claudia Frydman, LSIS</i></p> <p>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 2025 edition.</p> <p>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.</p> <p>The session will also host the traditional MISS and MSNet Annual Directors Meeting.</p> <p>4:45 pm – 5:30 pm Tenerife Local Time, WEST Special Session: Strategic Engineering PhD and STRATEGOS <i>Chair: Prof. Agostino G. Bruzzone, University of Genoa</i></p> <p>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.</p>	

I3M 2024 Awards Ceremony

The I3M 2024 Awards will be delivered during the Gala Dinner on September 19th, 2024

8:30 pm – 11:00 pm Tenerife Local Time, WEST In presence	Thu 19th, 2024
<i>La Laguna Gran Hotel, C. Nava y Grimon, 18, 38201 La Laguna, Santa Cruz de Tenerife, Spain</i>	
<p>I3M Awards Ceremony</p> <p>I3M Best Paper Awards The I3M 2024 Best Paper Award is assigned by the I3M 2024 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.</p> <p>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</p> <p>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.</p>	

I3M 2024

Activities and Sessions Details

Friday, September 20th

9:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2	Fri 20th, 2024
<i>Microsoft Teams, Session Link:</i> Access the Online Session	
EMSS: Innovative Simulation Models and Mathematical Paradigms <i>Chair(s): Roberto Musmanno and Annarita De Maio, University of Calabria</i> <ul style="list-style-type: none">> I3M_115: Impact of Pretraining Datasets on Point-MAE Performance in Point Cloud Classification <i>Rita Younes, Roy Abi Zeid Daou, Grace El Khoury, Jalal Possik and Charles Yaacoub</i>> I3M_108: Evolutionary Hyperparameter Tuning in ML.NET <i>Philipp Neuhauser and Stefan Wagner</i>> I3M_101: Tournament versus Circulant: On Simulating 7-Species Evolutionary Spatial Cyclic Games with Ablated Predator-Prey Networks as Models of Biodiversity <i>Dave Cliff</i>> I3M_88: SimLuxJS – an optimized JavaScript-simulator <i>Thomas Wiedemann and Michael Danzig</i>> I3M_91: Modeling reliability constraints in modern Optical Network Simulation Environments <i>Francesco Palmieri and Ficco Massimo</i>	

<p>9:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 2.6, Escuela Superior de Ingeniería y Tecnología. Floor 1</p>	<p>Fri 20th, 2024</p>
<p>Microsoft Teams, Session Link: Access the Online Session</p>	
<p>MAS-DHSS-FOODOPS: Simulation and Sustainable Supply Chains <i>Chair(s): Ivan Castilla Rodriguez, University of La Laguna</i></p> <ul style="list-style-type: none"> > I3M_35: Supply Chains modelling with Agent Based Simulation: a methodological exploration of agent types and their interactions <i>Francesco Zammori, Francesco Moroni and Alessandro Viola</i> > I3M_36: Assessing the Effect of Citizens' Behaviour in Textile Waste Separate Collection: An Agent-based Simulation Model <i>Nicola Mercogliano, Francesco Zammori, Giovanni Romagnoli and Davide Castellano</i> > I3M_97: Assessing Agri-food supply chain multi-capital sustainability using Simple Multi-Attribute Rating Technique: the policy maker case study <i>Safa Chabouh, Lilia Sidhom, Ala Zammiti and Abdel Kader Mami</i> > I3M_46: Pharmaceutical Logistics under Cyberattack Conditions <i>Larissa Schachenhofer and Patrick Hirsch</i> > I3M_37: Modeling impact damage to fruit during harvest and postharvest processing <i>Feizollah Shahbazi</i> 	

<p>9:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.6, Escuela Superior de Ingeniería y Tecnología, Floor 2</p>	<p>Fri 20th, 2024</p>
<p>Microsoft Teams, Session Link: Access the Online Session</p>	
<p>EMSS-SEDE: Advanced Paradigms for Simulation & Optimization <i>Chair(s): Mohaiad Elbasheer, University of Calabria and Anaiz Gul Fareed, Parthenope University of Naples</i></p> <ul style="list-style-type: none"> > I3M_13: Simulation of smoke optical density in road tunnel by two tunnel models for FDS <i>Peter Weisenpacher, Jan Glasa and Lukas Valasek</i> > I3M_16: Comparison of ECDSA Signature Verification Implementations on Bare-Metal Embedded Systems <i>Philipp Holzer, Franz Leopold Wiesinger and Michael Bogner</i> 	

- > I3M_50: Optimization of Implantation and Diffusion Parameters to Minimize the Point Defects Formation in Textured Thin Film Solar Cells
Abderrazzak El Boukili
- > I3M_77: Efficient Global Optimization for Dynamic Problems
Bernhard Werth, Johannes Karder, Stefan Wagner and Michael Affenzeller
- > I3M_146: Innovative Solutions for Modeling Human Behavior in Buildings and Construction Sites
Agostino Bruzzone, Giovanni Maria Ferraris, Kirill Sinelshchikov, Luca Bucchianica, Pier Filippo Monaci, Luca Tarone, Antonio Martella, Massimo Pedemonte

<p>9:00 am – 10:30 am Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.7, Escuela Superior de Ingeniería y Tecnología, Floor 2</p>	<p>Fri 20th, 2024</p>
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Microsoft Teams, Session Link:

[Access the Online Session](#)

DHSS: Innovative Simulation Solutions for Defense and Homeland Security

Chair(s): Agostino Bruzzone, University of Genoa

- > I3M_140: An Audacious Wargame on Critical Infrastructures based on LLMs and Simulation over Physical, Cyber & Cognitive Actions
Agostino G. Bruzzone, Antonio Giovannetti, Luca Cirillo, Marco Gotelli, Filippo Ghisi
- > I3M_141: Constructive wargaming simulation as a critical component of the tactical swarm configuration optimization
Jan Mazal, Roman Adamek, Pham Huy Dang, Agostino Bruzzone, Jaroslav Hrdina, Petr Vasik
- > I3M_142: Tactical behavior optimization for a UGV teams
Jan Mazal, Jaroslav Hrdina, Petr Vasik, Roman Adamek, Jiří Plíhal, Dalibor Prochazka, Ivan Eryganov
- > I3M_143: Blockchain for Secure Railway Signal Communication & Protection of Critical Infrastructures
Agostino Bruzzone, Antonio Giovannetti, Siddhi Rajendra Gangar, Lorenzo Motta
- > I3M_144: Strategic Engineering to support Decision Makers in Complex Systems: Innovative Models for Cognitive Warfare Simulation
Agostino Bruzzone, Antonio Giovannetti, Marco Gotelli, Jan Hodicky, Marina Massei, Alberto De Paoli, Roberto Ferrari, Filippo Ghisi

10:30 am – 11:00 am Tenerife Local Time, WEST

Coffee Break

11:00 am – 12:30 pm Tenerife Local Time, WEST

University of La Laguna (Tenerife)

Salón de Grados de la Escuela Superior de Ingeniería y Tecnología, Floor 2

Fri 20th, 2024

Microsoft Teams, Session Link:

[Access the Online Session](#)

MAS-EMSS-SESDE: Simulation and Artificial Intelligence for Novel Applications

Chair(s): Claudia Frydman, LSIS and Vittorio Solina, University of Calabria

- > I3M_14: Where are the arithmetic capabilities of a large language model located?
Andreas Stöckl and Oliver Krauss
- > I3M_61: Enhancing Photorealism of Physically Accurate 3D Simulated Images Using GANs
Veronica Campana, Jorge Jimenez, Jürgen Roßmann and Ruggero Carli
- > I3M_78: Pedestrians' urban thermal comfort: A machine learning assessment through transect walks
José-Antonio Rodríguez-Gallego, Eduardo Diz-Mellado, Tomás Chacón Rebollo, Carmen Galán-Marín and Carlos Rivera-Gomez
- > I3M_130: Explaining LSTM neural networks: A DEVS-based approach
Ali Ayadi, Thi-My-Duyen Truong, Claudia Frydman, Cédric Wemmert
- > I3M_136: Leveraging ML for On-Site Bubble Point Pressure Prediction in Sudanese Crude Oil: A Resilient Approach During Conflict
Mohaiad Elbasheer, Hassan Suliman, Caterina Fusto, Giovanni Mirabelli, Antonio Padovano, Vittorio Solina

<p>11:00 am – 12:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 2.6, Escuela Superior de Ingeniería y Tecnología. Floor 1</p>	<p>Fri 20th, 2024</p>
<p>Microsoft Teams, Session Link: Access the Online Session</p>	
<p>EMSS-SESDE-MAS: Sustainability-oriented solutions in the industrial and urban sectors Chair(s): <i>Emilio Jimenez, La Rioja University</i></p> <ul style="list-style-type: none"> > I3M_29: Assessing the Environmental Impact of Steel and the presence of Critical Raw Materials: an Improved Tool for Industry <i>Isabel García Gutiérrez, Patricia Orquín Granada, Carlos Javierre and Daniel Elduque</i> > I3M_30: Strategies based on ecodesign to improve sustainability in molded products <i>Ángel Fernández, Isabel Claveria and Patricia Orquín</i> > I3M_82: Environmental assessment of a structural element in a residential building <i>Jorge Los Santos-Ortega, Jorge Fernández-Zorzano, Esteban Fraile-García, Javier Ferreiro-Cabello and Emilio Jimenez Macias</i> > I3M_109: An overview of CFD simulation plug-ins within the BIM environment for urban microclimate analysis <i>Lucía Campos-Rosa, Carlos Rivera-Gomez, Carmen Galan-Marin and Jesus Lizana</i> > I3M_151: Generative AI and Retrieval-Augmented Generation (RAG) in an Agent-Based Simulation Framework for Urban Planning <i>Agostino Bruzzone, Antonio Giovannetti, Giacomo Genta, Daniele Cefaliello</i> 	

<p>11:00 am – 12:30 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> Room 3.6, Escuela Superior de Ingeniería y Tecnología. Floor 2</p>	<p>Fri 20th, 2024</p>
<p>Microsoft Teams, Session Link: Access the Online Session</p>	
<p>EMSS-MAS-SESDE: Novel Solutions based on Simulation and AI Chair(s): <i>Ivan Castilla Rodriguez, University of La Laguna</i></p> <ul style="list-style-type: none"> > I3M_145: Innovative Extended Reality and Simulation-based Training for Control Room Operators in Industry <i>Agostino Bruzzone, Kirill Sinelshchikov, Marina Massei, Luca Cirillo, Xhulia Sina, Filippo Ghisi, Roberto Ferrari, Giovanni Ferraris Marina Cardelli, Bharath Gadupuri, Javed Karim, Pooriya Azadegan</i> 	

- > I3M_147: Modeling & Simulation for an Investigation Process to support Decision Making in a Non-Ordinary Context
Agostino Bruzzone, Giovanni Maria Ferraris, Antonio Giovannetti, Marco Gotelli
- > I3M_150: Innovative Modeling of Deep Fake Dynamics on the Population by using Artificial Neural Network
Agostino G. Bruzzone, Antonio Giovannetti, Luca Cirillo, Filippo Ghisi, Simone Gleisson Ferrero
- > I3M_152: Innovative Framework based on Simulation and Generative AI for enhance Decision Making in Green Projects
Agostino G. Bruzzone, Antonio Giovannetti, Luca Cirillo, Xhulia Sina, Filippo Ghisi, Simone Gleisson Ferrero
- > I3M_154: Stress-Driven Simulation model in Polar Coordinates: The Analytical case for Circular Plates
Roberto Cianci, Agostino Bruzzone, Roberta Sburlati, Mohamadreza Jafarinezhad

11:00 am – 12:30 pm Tenerife Local Time, WEST

University of La Laguna (Tenerife)

Fri 20th, 2024

Room 3.7, Escuela Superior de Ingeniería y Tecnología. Floor 2

Microsoft Teams, Session Link:

[Access the Online Session](#)

Special Session: LOLLIPOP, ISTEEL, EULEP Projects

Chair(s): Agostino Bruzzone, University of Genoa

This special session is aimed at discussing the main goals and results of the following projects:

- Lollipop
- Isteel
- Eulep

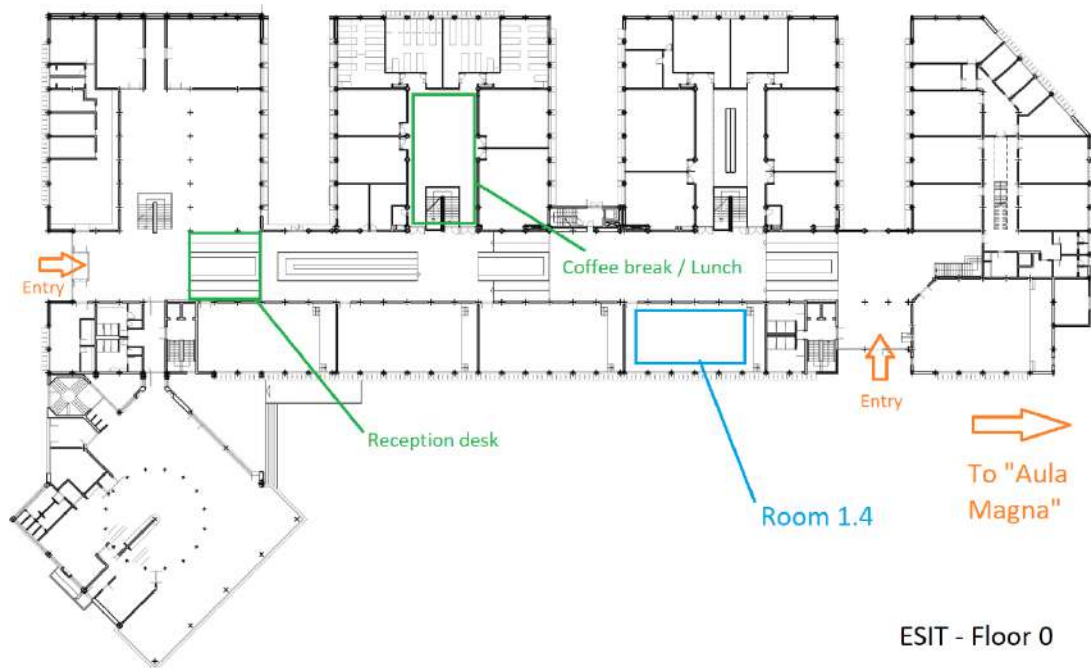
<p>12:30 pm – 2:00 pm Tenerife Local Time, WEST <u>University of La Laguna (Tenerife)</u> (During Luncheon)</p>	<p>Fri 20th, 2024</p>
<div style="text-align: center; border: 1px solid black; background-color: #FFD700; border-radius: 10px; padding: 5px; width: fit-content; margin: 0 auto;"> <p>Only in Presence</p> </div>	
<p>I3M 2024 Closing Ceremony <i>Chairs: Agostino Bruzzone, University of Genoa, Italy; Francesco Longo, University of Calabria, Italy.</i></p> <p>All “in presence” attendees are invited to join the I3M 2024 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 (2025).</p>	

Locations

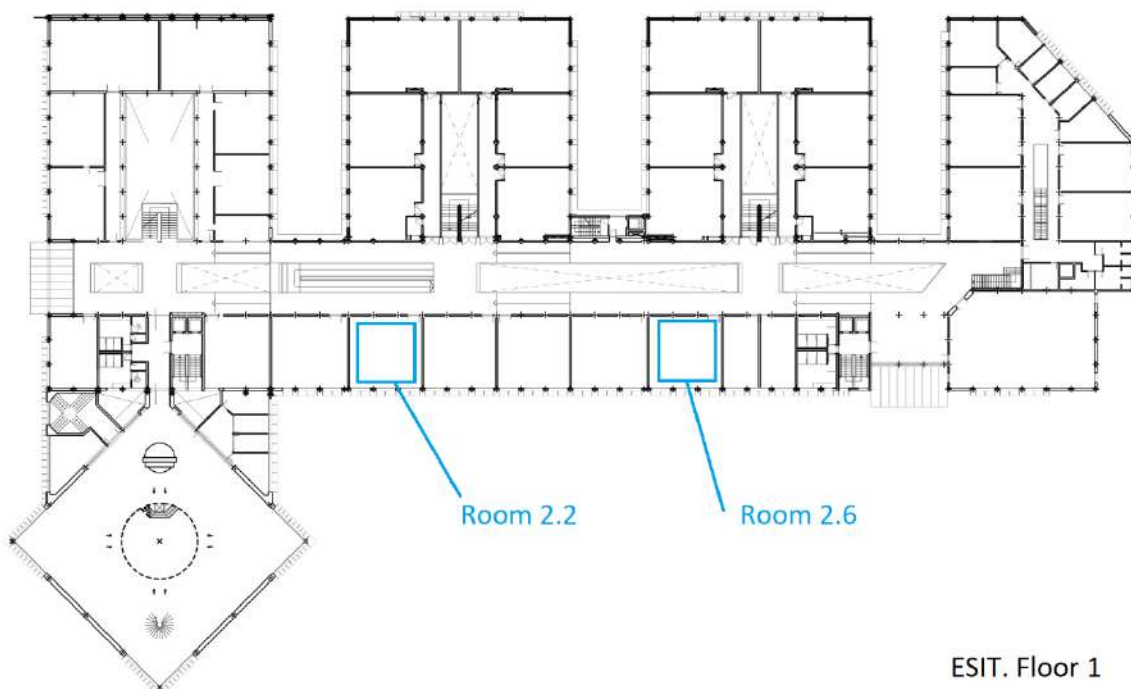
Location of Conference Sessions and Gala Dinner

Locations of conference events

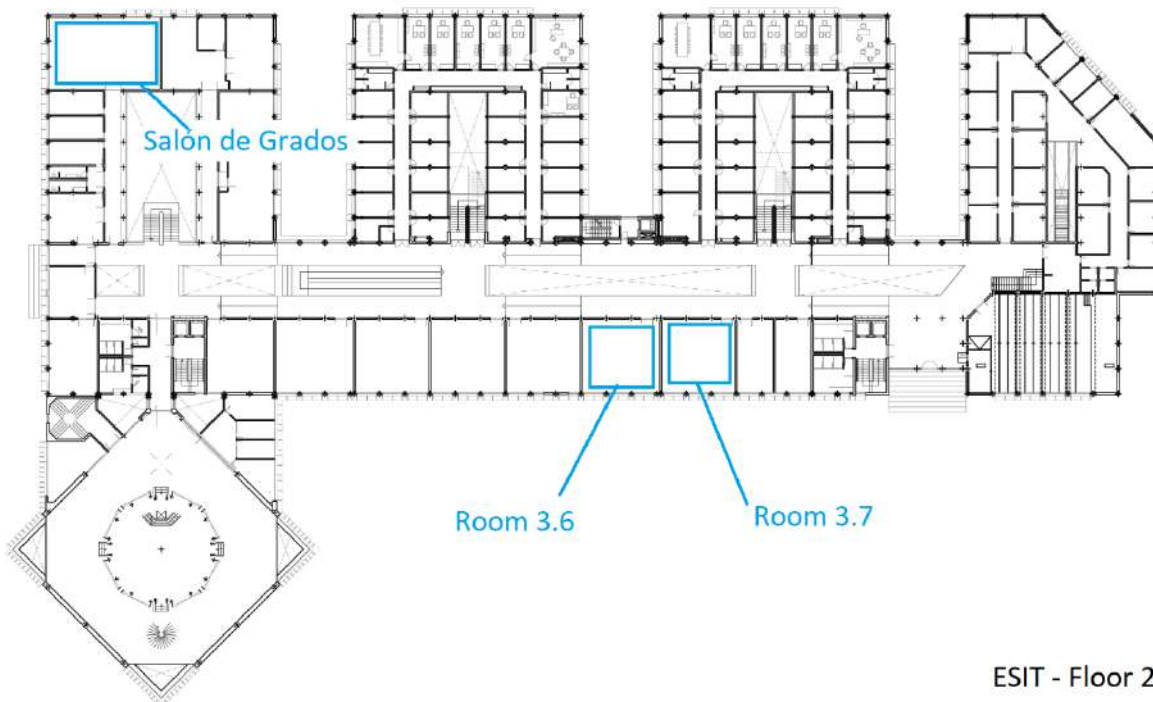
Escuela Superior de Ingeniería y Tecnología (ESIT) – Floor 0



Escuela Superior de Ingeniería y Tecnología (ESIT) – Floor 1



Escuela Superior de Ingeniería y Tecnología (ESIT) – Floor 2



Escuela Superior de Ingeniería y Tecnología Facultad de Física y Matemáticas



I3M Social Events

The I3M Organization Committee has organized one main Social Event for I3M 2024. Please find below the relevant information.

I3M 2024 Gala Dinner

The I3M 2024 Gala Dinner will be held on Thursday, September 19th (2024) at the "La Laguna Gran Hotel". La Laguna Gran Hotel is an emblematic building located in the heart of the historic center of San Cristóbal de La Laguna, a city declared a World Heritage Site by UNESCO in 1999. The evening will unfold at the "LASSOTEA" rooftop terrace, that offers panoramic views of the heart of La Laguna. Kindly note, formal dressing is required for this distinguished occasion.

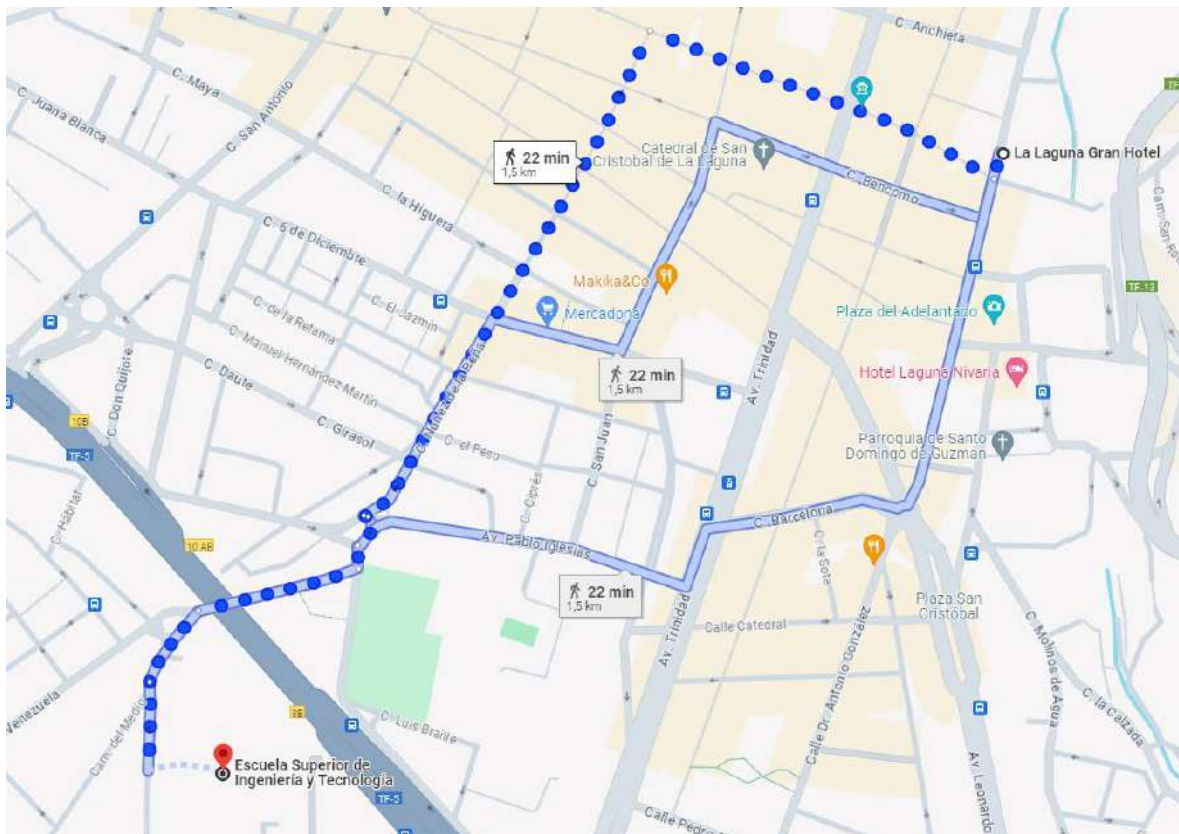
Getting to the La Laguna Gran Hotel in Tenerife

Here's how you can reach the "LASSOTEA" rooftop terrace from the Conference:

By foot: Just a 22-minute walk away (1.5 kilometers).

By car: Only a 7 minutes ride (2.7 kilometers).

By public transport: Walk approximately 4 minutes (260 meters) to the Lozoya bus stop. Take the 206 bus towards Barrio Nuevo. Buses run every 30 minutes. The bus ride is approximately 8 minutes long (5 stops) and will bring you to El Juego. From El Juego, walk about 8 minutes (550 meters) to reach La Laguna Gran Hotel, located at C. Nava y Grimon, 18, 38201 La Laguna, Santa Cruz de Tenerife, Spain.



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.

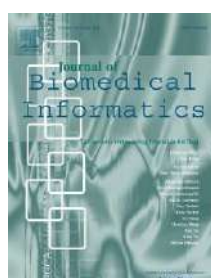
- **Applied Sciences (MDPI)**



- **Discover Sustainability (Springer)**



- **Journal of Biomedical Informatics (Elsevier)**



I3M 2024 Authors and Chairs Guidelines

Author and Chair Guidelines for the I3M2024 Hybrid Conference are available in the conference website at:

www.msc-les.org/i3m2024

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

I3M 2024 as evolving framework

Dear attendee, the 2024 edition of I3M will be held as a hybrid event (both in presence and online). Please check the website for additional information at:

www.msc-les.org/i3m2024

Alternatively, you can write to Dr. Vittorio Solina (vittorio.solina@unical.it).

The whole I3M 2024 Organization Committee is glad to see you in Tenerife and online. We really hope you will enjoy the hybrid conference.

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 2025 edition by submitting session or track proposals, by proposing new topics or by providing your availability for being a 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).

ISM Synergies & Other Opportunities

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

ISM 2024

The International Conference on Industry 4.0 and Smart Manufacturing (ISM 2024) will be held in Prague (Czech Republic) 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/ism2024>

You can also write to Dr. Vittorio Solina (vittorio.solina@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 2024 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 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 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