

FINAL PROGRAM



24-26 October 2023



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AREA42



ESM®'2023 FOR THIS YEAR IS A HYBRID EVENT

ONLINE PRESENTATIONS ARE DENOTED BY _ONL AFTER THE PAPER CODE

The ESM®'2023 final programme also gives you info on how to virtually attend the event. A personalised email with login info will be forwarded to all registered participants

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General Information


1. Conference Location

The **ESM®'2023 Conference** is being held at



ISAE-SUPAERO

First Floor - Pôle d'Enseignement I, 10, avenue Édouard-Belin, 31400 Toulouse, France

 Tel: +33 (0) 5 61 33 80 80

 Email: rob.vingerhoeds@isae-supero.fr

ISAE-SUPAERO is located at about 4 kilometers from the city centre.

The registration desk will be placed next to the **Entrance Gate** at 10 avenue Édouard-Belin from Tuesday morning October the 24th onwards, where registration will start at 08.00 a.m. and will end at 5.00 p.m. On Wednesday October 25th the registration will be open from 08.30 a.m. until 05.00 p.m. On Thursday October 26th registration will only be open from 9.00 a.m.- 9.30 a.m. The way to the conference and desk will be signposted.

ALL MAJOR MAPS ARE AT THE BACK OF THIS PROGRAMME INCLUDING THE MAPS SHOWING THE LOCATION OF THE DAILY SHUTTLE BUSES TO AND FROM TOULOUSE CITY CENTRE AND ISAE-SUPAERO

How to reach the conference location in Toulouse

By Plane

When arriving by plane in Toulouse you will be arriving at The International [Toulouse-Blagnac Airport](#). As of April 2017, the airport features flights to 74 destinations mostly in Europe and Northern Africa with a few additional seasonal long-haul connections.


From [Toulouse-Blagnac Airport](#) you can take either **tram, airport shuttle, bus, coach or taxi** to Toulouse city centre and to LAAS.

By Tram from the Airport

The tramway line T2 offers you a direct way between the Toulouse city center and the airport. Travel time to the city centre:

Aéroport - Arènes: 21 minutes - connection to Metro line A

Aéroport - Palais de Justice: 32 minutes - connection to Metro line B

You can download the schedule [here](#) in pdf. 

To find out about fares please use this [link](#).

By Airport Shuttle from the Airport

Shuttle buses to Toulouse city centre stop outside Hall B every 20 minutes. Faster than the tram, they take approximately 20 minutes to reach the city

General Information

centre, stopping at Compans-Caffarelli and Jeanne d'Arc (both on [Metro Line B](#)), Jean Jaurès ([Metro Line A](#) and B) and at [Toulouse-Matabiau railway station](#)

Stops: Ground floor gate C2, arrival levels.

Duration: approximately 20 minutes, depending on traffic conditions.

Shuttle: Air-conditioned and wheelchair-friendly bus.

You can plan your shuttle trip using this [interactive map](#).

Each day the first bus departs at Toulouse airport from 5.40 a.m. and from Toulouse to the airport at 5.05 a.m.

Each day the last bus departs at Toulouse airport from 0.10 a.m. and from Toulouse to the airport at 9.40 p.m.

Price is €8

[By Bus](#) from the Airport

Many buslines can bring you to Toulouse-Blagnac Airport. You can use the connection with the metro lines at the airport's shuttles stop. Line serving Toulouse airport: Line 30 : Fenouillet Centre Commercial - Aéroport Toulouse-Blagnac You can see [here](#) the bus stop at the airport and those near.

The Department Council of Haute-Garonne has opened a new bus route to the Toulouse-Blagnac Airport: la ligne 88. This line serves Grenade, Ondes, Merville, Seilh, Beauzelle, Blagnac and Toulouse. Schedules correspond to a service for employees (morning, afternoon and evening). The bus stop is located outside of the B3 door. Bus : 55 places capacity.

You can work out the price using this [webpage](#).

By Taxi from the Airport

Taxis are available at the taxi ranks outside the arrivals area.

Arriving at Toulouse by plane at Toulouse-Blagnac airport and going directly to ISAE-SUPAERO

Taxi: 25 minutes

Shuttle Airport: every 15 minutes bringing you to Toulouse Matabiau train station, the shuttle also stops at the Allées Jean Jaurès, Place Jeanne d'Arc and Compans Caffarelli, total duration 45 minutes.

Bus + Subway: take the airport shuttle to the city center - 1/2 hour

stop: Jeanne d'Arc Station, take metro line B towards Ramonville, Faculty of Pharmacy down station, then take the bus 78* or lower station Ramonville Saint- Agne, then take the bus 37 * or 27 *, stop "ISAE-SUPAERO".

By Train

When arriving by train in Toulouse you arrive at [Toulouse-Matabiau station](#). Toulouse-Matabiau station is well connected with the [French national railgrid](#) and is reachable from all major French cities town

General Information

Arriving at Toulouse by train at Matabiau Railway station and going directly to ISAE-SUPAERO

Taxi: 15 minutes

Metro: Take the subway, in the Railway Station, get off station Jean Jaurès, this station is the only point of correspondence between lines A and B underground.

Take line B, direction Ramonville, Faculty of Pharmacy down station, then take the bus 78 * or lower station Ramonville Saint-Agne, then take the bus - 37 * or 27 *, stop "ISAE-SUPAERO".

Metro: Take the 27* towards Ramonville, stop "ISAE-SUPAERO"

By Metro

Metro Lines A and B cross each other in the city centre of Toulouse as can be seen in this map. Line B is the one connecting the city centre with ISAE-SUPAERO.

Leaving the metro at Paul Sabatier Station and going directly to ISAE-SUPAERO

Leave the metro at the Université Paul Sabatier Station which is between Pharmacie station and Ramonville station

Outside Université Paul Sabatier station you walk to ISAE-SUPAERO

This takes about 10min to reach ISAE-SUPAERO.

By Car

Arriving in Toulouse by car (from beltway) and going directly to ISAE-SUPAERO

Exit 20, direction "Complexe scientifique de Rangueil"

Toulouse Train/Tram/Metro/Bus Maps

You can download all respective maps from this [link](#).

Or further maps here: <https://websites.isae-supaero.fr/2fnirs/conference-venue/travel-transportation/how-to-reach-the-city>

ESM[®]2023 VIRTUAL PARTICIPATION AND PRESENTATION

As some ESM[®]2023 participants have opted for an online presentation, we are opening up a virtual environment for the ESM[®]2023 presentations using ZOOM: <https://zoom.us/> A first trial is envisaged on Friday the 20th of October from 14h00 to 15h00.

General Information

2.Login

Each registrant will receive a **name login** upon registration. **The login is personal and non-transferrable and can only be your name. Company or generic university logins are NOT allowed. Non-regular logins will be removed from the online meetings.**

3.Tickets

Prices of extra tickets for non-registered companions

Extra conference dinner	€ 65
Extra lunch ticket	€ 25

4. Registration

The ESM®'2023 Registration will be open onsite next to the Entrance Gate at 10 avenue Édouard-Belin and online for information and registration info for those already registered. **AT CONFERENCE REGISTRATION CAN ONLY BE DONE ONLINE FOR THOSE STILL WISHING TO REGISTER AS A VIRTUAL PARTICIPANT AT THIS TIME**

<https://www.eurosis.org/conf/esm/2023/email-registration.html>

Tuesday, October 24.....8.00 a.m. to 5.00 p.m.

Wednesday, October 258.30 a.m. to 5.00 p.m.

Thursday, October 26.....9.00 a.m. to 9.30 a.m.

5. Conference Proceedings

Each electronic **fully** paid registrant will be provided with an electronic copy of the Conference Proceedings. **Fully paid onsite participants** will be provided with a printed copy of the conference proceedings as well as an electronic copy. **This is NOT applicable to students who are not authors and who have not fully registered.**

(Extra electronic or printed copies are available after **ESM®'2023**)

Price: (or equivalent in another currency) for an extra copy

Printed ESM®'2023 Proceedings	€ 65 plus 30% shipping costs
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6. Meeting Rooms and Room Legend

The ESM®'2023 conference will be held in **parallel meeting rooms designated Amphitheatre 4, ROOM A (Salle 61-101) ROOM B (Salle 61-102) and ROOM C (Salle 61-103)** in this programme.

General Information

7. Need Help?

Please see the registration desk or contact EUROSIS (philippe.geril@eurosis.org) for your questions

8. Social Event and Lunches

All registrants are invited to

All **Coffee Breaks** for all 3 days which are served in the



Hallway First Floor
Pôle D'enseignement I
ISAE-SUPAERO
10 Avenue Édouard Belin

All lunches on the 24th, 25th and **26th(* FOR AIRBUS VISITORS ONLY)** are served at



ISAE-SUPAERO
Restaurant – Salle de
Direction
10 Avenue Édouard Belin

The Conference Dinner

All participants are invited to the conference dinner which will be held on **WEDNESDAY the 25th of October at the Brasserie Beaux-Arts**. As we need to give an exact number of participants we would appreciate **your confirmation at the desk before Tuesday lunchtime**.



Brasserie Beaux-Arts
1 Quai de la Daurade
F-31000 Toulouse, France
<https://brasserielesbeauxarts.fr/>
Tel: +33.(0)5 61 21 12 12
Email: contact@brasserielesbeauxarts.fr

Session Chairs information

9. Conference Visit to AIRBUS

All pre-registered participants are invited to come and visit the AIRBUS site from 13.30 to 16.30 on Thursday the 26th of October. **IMPORTANT:** You will need to bring a **valid passport or national identity card ONLY** with you to be able to participate in this tour. Careful: **at least 3 months of remaining validity for the document is required.** Without such an identification document, you will not be able to join the tour.

10. Best Paper Award

During the conference the papers, which were accepted as **extended** papers will be judged by the committee and conference participants in order to choose the best paper of the ESM®'2023 conference.

The best paper author of the conference receives a certificate and a free registration to any EUROSIS event held within 2 years after receiving the best paper award. This registration waiver is only VALID FOR 2 YEARS AFTER RECEIPT AND FOR 1 (ONE) PERSON. In case of multiple authors, one (1) author only can use the registration waiver.

ALL SESSION CHAIRPERSONS IN THIS PROGRAM ARE PROVISIONAL

Session Chairs are chosen on a voluntary basis by proposals by either authors or local committee members or are appointed by the Track Chairs, General Program Chair or General Conference Chair. They are responsible for their assigned session. They make sure their speakers are available, take care of the timing within the session, chair the discussion after each presentation and introduce each speaker based on the CV's given to them by the authors. **If a session chair is not available then the first author takes on the responsibility to chair** In case they chair a session featuring **extended papers**, then they are required to distribute and collect the reviews of that or those papers at the beginning and end of the session. If they have time they should also indicate in their papers the number of session participants.

THE NUMBERS NEXT TO THE PRESENTATIONS DENOTE THE PAGE-NUMBERS IN THE PROCEEDINGS. IF NO NUMBERS ARE MENTIONED THEN THIS PAPER IS NOT PUBLISHED IN THE PROCEEDINGS

THE AUTHORS WHO ARE UNDERLINED ARE NORMALLY THE PRESENTERS

ONLY PAPERS IN GREY BOXES ARE THE EXTENDED PAPERS ELIGIBLE FOR THE BEST PAPER AWARD

TUESDAY, 24th OCTOBER 2023

08.00-17.00	REGISTRATION		
08.45-09.00	WELCOME BY ROB VINGERHOEDS– ESM’2023 GENERAL CONFERENCE CHAIR – AMPHITHEATRE 4		
09.00-10.00	KEYNOTE SPEECH BY GAUTIER HATTENBERGER – AMPHITHEATRE 4		
10.00-10.30	COFFEE BREAK		
10.30-11.30	KEYNOTE SPEECH BY LUDOVIC APVRILLE – AMPHITHEATRE 4		
11.30-12.30	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	SIMULATION IN AEROSPACE	MACHINE LEARNING I	
12.30-13.30	LUNCH BREAK		
13.30-15.00	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	AUTONOMOUS SYSTEMS SIMULATION	MACHINE LEARNING II	
15.00-15.30	COFFEE BREAK		
15.30-17.30	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	SIMULATION IN BUSINESS APPLICATIONS	AGENT BASED SIMULATION	
17.30	END OF DAY I		

WEDNESDAY, 25th OCTOBER 2023

08.30-17.00	REGISTRATION		
09.00-10.00	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	INVITED SPEECH JOËL COLLOC	LEARNING AGENTS I	SIMULATION IN LOGISTICS I
10.00-10.30	COFFEE BREAK		
10.30-12.30	SESSION		
	ROOM A	ROOM B	ROOM C
	ENGINEERING SIMULATION	ANALYTICAL AND NUMERICAL ANALYSIS	SIMULATION IN LOGISTICS II
12.30-13.30	LUNCH BREAK		
13.30-15.00	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	STRATEGIC DECISION MAKING	LEARNING AGENTS II	TRAFFIC SIMULATION
15.00-15.30	COFFEE BREAK		
15.30-17.30	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	ENVIRONMENTAL SIMULATION MANAGEMENT	STATISTICAL SIMULATION AND OPTIMIZATION	SIMULATION IN IOT AND SMART INDUSTRY
17.30	END OF DAY II		
20.00-22.30	CONFERENCE DINNER		

THURSDAY, 26 th OCTOBER 2023			
09.00-09.30	REGISTRATION		
09.00-10.30	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	DIGITAL TWINS	BACK-UP SESSION	
10.00-10.45	COFFEE BREAK		
10.30 12.30	PARALLEL SESSIONS		
	ROOM A	ROOM B	ROOM C
	CHATBOTS SOCIAL BOTS AND TEXT PROCESSING	SIMULATION IN BIOLOGY	
12.30-12.45	CLOSING SESSION AND BEST PAPER AWARD ROOM A		
12.45-13.30	LUNCH BREAK FOR AIRBUS REGISTERED PARTICIPANTS		
13.30-16.30	VISIT TO AIRBUS FOR PRE-REGISTERED PARTICIPANTS		

NOTES

Notes

Notes

NOTES

Tuesday, 24th October 2023

Registration

08.00 - 17.00

AMPHITHEATRE 4 - 08.45 – 09.00

Opening ESM'2023 and Welcome

Welcome Address

Prof. Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

ESM®'2023 General Conference Chair

09.00 – 10.00

AMPHITHEATRE 4 - 09.00-10.00

KEY

KEYNOTE SPEAKER

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France



KEY_01

[Simulation for UAV systems: from Flight Preparation to Air Traffic Control](#)

Dr. Gautier Hattenberger, ENAC, Toulouse, France

10.00 - 10.30

COFFEE BREAK

Welcome

Tuesday, 24th October 2023

10.30 – 11.30

AMPHITHEATRE 4 - 10.30-11.30

KEY

KEYNOTE SPEAKER

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France



KEY_02

[Automated System Engineering with Artificial Intelligence](#)

Prof. Ludovic Apvrille, Telecom Paris, Sophia Antipolis, France

11.30 – 12.30

ROOM A - Salle 61-101 - 11.30-12.30

AERO

SIMULATION IN AEROSPACE

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

SIM_METH_02

An Algorithm for eliminating The Boundary Layer Effect in the Integral Identity in Pies for 2D Orthotropic Problems

Krzysztof Szerszeń, Eugeniusz Zieniuk and Agnieszka Bołtuć 277

SIM-METH_04

A Procedure for approximating Boundary Conditions with Chebyshev Series in Pies Based on Automatic Differentiation

Krzysztof Szerszeń and Eugeniusz Zieniuk 282

ROOM B - Salle 61-102 - 11.30-12.30

AI

MACHINE LEARNING I

Chair: Eric MSP Veith, Carl von Ossietzky Univ. Oldenburg, Germany

Tuesday, 24th October 2023

SIM_OPT_06_AI

Metaheuristic Algorithms in Extreme Learning Machine for Selection of Parameters in Activation Function

Karol Struniawski, Aleksandra Konopka and Ryszard Kozera..... 239

SIM_AUTO_01_ONL

Implementation of Reinforcement-Based Machine Learning Algorithms for Bandwidth Allocation in the XGPON Networks

Khaoula Aaguech, Hichem Mrabet, Sami Triki, Imen Sfaihi Zouari and Abderrazek Jemai..... 244

12.30 - 13.30

LUNCH BREAK

13.30 – 15.00

ROOM A – Salle 61-101 - 13.30-15.00

ROB

AUTONOMOUS SYSTEMS SIMULATION

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

SIM_AI_03_AUTO

Selected Methods of PID Controller Tuning for Mobile Wheeled Robots

Karol Kania and Artur Babiarz 289

SIM_INTEL_01_AUTO

Improving Autonomous Vehicle Automation through Human System Interaction

David Puertas-Ramirez, Raul Fernandez-Matellan, David Martin-Gomez, Jesus G. Boticario and David Tena-Gago.....294

SIM_LOGIS_AUTO_01

Human Aware Cruise Control of a Smart Wheelchair in Populated Areas with Adaptation Based on Empathy Phenomenon

Krzysztof Skrzypczyk.....301

ROOM B – Salle 61-102 -13.30-15.00

AI

MACHINE LEARNING II

Chair: Adam Borovička, Prague Univ. of Econ. & Bus., Czech Republic

SIM_HPCN_01_ONL

Virtual Scenario Testbeds for Formal Training and Validation of Machine Learning based Systems

Osama Maqbool and Jürgen Roßmann..... 223

Parallel Sessions - Tuesday

Tuesday, 24th October 2023

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Application of Semi-Supervised Machine Learning Techniques to Subject Recognition based on Affective State

Íñigo Martín-Melero, Ana Serrano-Mamolar and Juan J. Rodríguez-Diez 231

SIM_AI_09_ONL

On the Recognition of the Game Type Based on Physiological Signals and Eye Tracking

Łukasz Czekaj, Łukasz Radzinski, Mateusz Kolimaga, Jakub Domaszewicz, Robert Kitłowski, Mariusz Szwoch and Włodzisław Duch 235

15.00 - 15.30

COFFEE BREAK

15.30 – 17.30

ROOM A – Salle 61-101 - 15.30-17.30

BUS

SIMULATION IN BUSINESS APPLICATIONS

Chair: Mamadou K. Traoré, University of Bordeaux, Talence, France

SIM_METH_METH_01_SERV

Data-Based Estimation of Parameters for Time-Inhomogeneous CTMC Birth-and-Death of Call Centers

Maciej Rafal Burak 67

SIM_METH_08_BUS

Analysing Privacy Aspects of Business Processes using Augmented Process Mining Results

Maria Weinreuter, Sascha Alpers and Marius Take 76

SIM_METH_12

Speculative Time Series: Theory and Practice

Igor Litvine 82

SIM_AI-FUZ_03

Investing under Uncertain Dynamics using the Concept of Unstable Fuzziness: Selecting a Portfolio from ESG Funds

Adam Borovička 88

Tuesday, 24th October 2023

ROOM B – Salle 61-102 -15.30-17.30

AI

AGENT BASED SIMULATION

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

SIM_AGENT_03

Agentizing the Cobb-Douglas Production Function

Mihika Dusad and William G. Kennedy 173

SIM_AGENT_05

Modelling Multi-Agent Interaction, Perception, and Turnover in Diverse Organizations

Nina Carmichael-Tanaka and Neal B. Outland..... 178

SIM_AGENT_02

A Multi-Objective Combinatorial Optimisation Framework for Large Scale Hierarchical Population Synthesis

Imran Mahmood, Nicholas Bishop, Anisoara Calinescu, Michael Wooldridge and Ioannis Zachos183

SIM_AGENT_01

Creating Cooperative NPCs using Unity's ML-Agents

Yurii Voronenko, Felix Benjamin Gruber and Helmut Hlavacs.....191

17.30

END OF DAY I

The shuttle bus will take all participants back to the city centre

Wednesday, 25th October 2023

Registration

08.30 - 17.00

09.00 – 10.00

ROOM A – Salle 61 101 - 09.00-10.00

INV

INVITED SPEAKER

Chair: Pierre de Saqui-Sannes, ISAE-SUPAERO, Toulouse, France



INV_01

**MOCASAS: A Model based on the Ascending Heritage of
Object Composition and Time Fuzzy Vector Spaces
Adjusting the Emergence of Attributes**

Joël Colloc.....5

ROOM B – Salle 61 102 - 09.00-10.00

AI

LEARNING AGENTS I

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

SIM_AI_01_AUTO

PALAESTRAL: A Training Ground for Autonomous Agents

Eric MSP Veith, Stephan Balduin, Nils Wenninghoff, Thomas Wolgast, Marcel
Baumann, David Winkler, Lasse Hammer, Alya Salman, Marvin Schulz, Amin
Raeiszadeh, Torben Logemann and Arlena Wellßow 199

SIM_AI_02_SERV

**Architecture for a Training Algorithm using a Simulation-as-a-Service
Infrastructure**

Stephan Balduin, Alexander Berezin, Sebastian Peter and Thomas Oberließen ... 205

ROOM C – Salle 61 103 - 09.00-10.00

LOGIS

SIMULATION IN LOGISTICS I

Chair: Pierre de Saqui-Sannes, ISAE-SUPAERO, Toulouse, France

Wednesday, 25th October 2023

SIM_MOD_ENG_01_ONL

Simulation Based Acquisition- Polish Concepts and Tools

Andrzej Najgebauer 355

SIM_METH-07-AERO-LOGIS-MANUF

Towards an Automated System to support the Complex Parts Manufacturing Quotation in the Aerospace Industry

Murillo Skrzek, Anderson L. Szejka, Leonardo C. Hernandez
and Fernando Mas 361

10.00 – 10.30

COFFEE BREAK

10.30 – 12.30

ROOM A – Salle 61 101 - 10.30-12.30

ENG

ENGINEERING SIMULATION

Chair: Eric MSP Veith, Carl von Ossietzky Univ. Oldenburg, Germany

SIM_CYBER_01

Modeling and Mapping of Automotive Real-Time Applications on Future E/E Architectures

Morgan Gauthier, Jean-Baptiste Chaudron, Rob Vingerhoeds
and Philippe Cuenot 265

SIM_ENG_02

From Model-Based Systems Engineering to Real Product Life-Cycle Management

Raquel Arrontes Quiroga, Rhea Mathew and Rob Vingerhoeds 270

SIM_OPT_01_ONL

Numerical Optimization of Ballistic Panels

Beata Jackowska-Zduniak..... 249

SIM_FLUID_01_ONL

A One-Dimensional Simulation Study on the Performance Characteristics of Siameze Engines

Carl Caruana 257

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ROOM B – Salle 61 102 - 10.30-12.30

ANMT

ANALYTICAL AND NUMERICAL ANALYSIS

Chair: Joël Colloc, Université of Le Havre, Le Havre, France

SIM_ANMT_01_ONL

Numerical Modelling of Waves Scattering by an Arc with Mixed Boundary Conditions

V.F. Emets and Jan Rogowski 45

SIM_ANMT_02

Searching for the Best Tree Parameters in the IFPIES

Andrzej Kuźelewski and Eugeniusz Zieniuk 48

SIM_ANMT_04

Nurbs Surfaces in 2D Elastoplastic Boundary Problems solved by Pies

Agnieszka Bołtuć and Eugeniusz Zieniuk 53

SIM_ANMT_06

Trajectory Estimation with Modified Complete Spline and Exponential Parameterization

Ryszard Kozera, Magdalena Wilkolazka and Alicja Smoktunowicz 60

ROOM C – Salle 61 103 - 10.30-12.30

LOGIS

SIMULATION IN LOGISTICS II

Chair: Pierre de Saqui-Sannes, ISAE-SUPAERO, Toulouse, France

SIM_BIO_07_LOGIS

Combining Supply Chain Modelling Concepts and Life Cycle Assessment for Sustainable Medicine Supply Chain Reconfiguration

Indra Castro Vivar, Catherine Azzaro-Pantel and Alberto A. Aguilar-Lasserre 367

SIM_OPT_04_LOGIS

Methods and Tools for Optimising Supply Chains Modelled as Mixed-Integer Bilevel Programming Problems

Vincent Jacquot, Jose Manuel Flores-Perez, Catherine Azzaro-Pantel, Sylvain Bourjade and Catherine Muller 375

SIM_OPT_LOGIS_07_ONL

Literature Review on Supply Chain Operations Reference Model

Anastasiia Rozhok, Emanuele Adorni and Roberto Revetria 383

Wednesday, 25th October 2023

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Last Mile Delivery – Optimization Problems in the Context of Industry 4.0

Eryka Probiez, Wojciech Sikora and Adam Gałuszka 389

12.30 – 13.30

LUNCH BREAK

13.30 - 15.00

ROOM A – Salle 61 101 -13.30-15.00

BUS

STRATEGIC DECISION MAKING

Chair: Igor Litvine, Nelson Mandela University, South Africa

SIM_PRED_01_ONL

Integrating Game Theory into Technology Roadmapping: A Pathway to Strategic Decision Making

Ariane Beaudoin-Bussi res and Rob Vingerhoeds..... 99

SIM_EVAL_INTERACT_01_ONL

Simulation and Computational Intelligence Methods for Combat Groupings Operational Capabilities Analysis in Cross-Domain Operations

Andrzej Najgebauer and Dawid Ma lanik..... 105

SIM_RISK_INTEL_02

New Trends in the Use of Simulations for Crisis Management

Bronislava Hal uskov  and Jozef Ristvej..... 115

ROOM B – Salle 61 102 -13.30-15.00

AI

LEARNING AGENTS II

Chair: Jo l Colloc, Universit  of Le Havre, Le Havre, France

SIM_AI_EX_01_ONL

A Novel Rule-Based Oversampling Approach for Imbalanced Data Classification

Xiao Zhang, Iv n Paz and  ngela Nebot..... 208

SIM_LOGIS_ON_ONL

Prediction of FTL Transport Cost based on Historical Data and Multiple Linear Regression Model

Adam Gałuszka, Jarosław Smieja, Tomasz Grzejszczak, Marcin Wolak, Marek Harasny, Karol Jedrasiak, Maciej Zalwert and Eryka Probiez 213

Wednesday, 25th October 2023

SIM_GRAPH_01_ONL

E -Learning Platform with Project-Based Learning and Artificial Intelligence

Sonia Amamou, Nezar Torche and Lilia Chniti 217

ROOM C – Salle 61 103 -13.30-15.00

AI

TRAFFIC SIMULATION

Chair: Pierre de Saqui-Sannes, ISAE-SUPAERO, Toulouse, France

SIM_DISC_03_LOGIS

Identifying Under-Served Areas by Simulating Taxi Rides

Dhananjai M. Rao 397

SIM_AERO_01_LOGIS_WEB

Development of Flight Guidance Control Laws for a Web Based Air Traffic Control Simulator

Thierry Miquel, Antoine Pierre and Mikael Frenot 402

SIM_TRAF_01_ONL

Extraction and Processing of Geographic Data for the Automatic Generation of 3D Traffic Environments

Ben De Schamphelleire, Benoît Pairet and Rob Haelterman 407

15.00 - 15.30

COFFEE BREAK

15.30 – 17.30

ROOM A – Salle 61 101 - 15.30-17.30

ENV

ENVIRONMENTAL SIMULATION MANAGEMENT

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

SIM_RISK_01

Combining Shape-Based and Raster-Based Approaches for Forest Fires Simulation

Yves Dumond 131

SIM_AI_FUZ_01

An Expert System that solves the Sugarcane Harvest Programming Problem: A Case Study in a Mexican Sugar Mill

Jose Manuel Flores-Perez, Catherine Azzaro-Pantel, Alberto A. Aguilar Lasserre and Gregorio Fernandez Lambert 139

Wednesday, 25th October 2023

SIM_AI_NEUR_01_BIO

**Performance Analysis of Residual Neural Networks in Soil Bacteria
Microscopic Image Classification**

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Chair: TBA

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Wednesday, 25th October 2023

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Systematic Look at MCDM Methods for Designing Smart Home System

Victor Danev, Tatiana Atanasova and Dimitar Parvanov 324

17.30

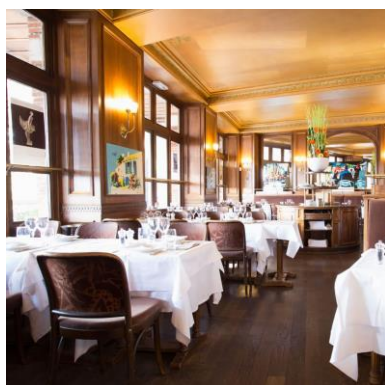
END OF DAY II

The shuttle bus will take all participants back to the city centre

20.00

CONFERENCE DINNER

All **ESM®'2023** participants are invited to the Conference Dinner which will be held from 20.00 p.m. at the:



Brasserie Beaux-Arts

1 Quai de la Daurade

F-31000 Toulouse, France

<https://brasserielesbeauxarts.fr/>

Tel: +33.(0)5 61 21 12 12

Email: contact@brasserielesbeauxarts.fr

Thursday, 26th October 2023

Registration

09.00 - 09.30

09.00 – 10.30

ROOM A – Salle 61 101 - 09.00-10.30

DIGI

DIGITAL TWINS

Chair: Yves Dumond, Université Savoie Mont Blanc, France

SIM_BIO_05_ONL

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Exploring Blockchain Based Digital Twins with Remote Attestation

Kaisa Jatkola and Ian Oliver **324**

ROOM B – Salle 61 102 - 09.00-10.00

BACK-UP

BACK-UP SESSION

Chair: TBA

This is a session for authors who through unforeseen circumstances were unable to present their paper at the allocated timeslot. Contact the registration desk for further info.

10.00 - 10.45

COFFEE BREAK

Parallel Sessions - Thursday

Thursday, 26th October 2023

10.30 – 12.30

ROOM A – Salle 61 101 - 10.30-12.30 **AI**
CHATBOTS, SOCIAL BOTS AND TEXT PROCESSING
Chair: Joël Colloc, Université of Le Havre, Le Havre, France

SIM_IOT_SMART_03
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SIM_AI_05
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SIM_AI_06
Application of Data-Collecting Chatbot for Polish Text Emotion Analysis
Kamil Skowroński 161

SIM_ANMT_07_ONL
From Text Processing to Data Structuration in the Geographic Context
Nesrine Hassini, Khaoula Mahmoudi and Sami Faiz 166

ROOM B – Salle 61 102 - 10.30-12.00 **BIO**
SIMULATION IN BIOLOGY
Chair: Philippe Geril, ETI, Ostend, Belgium

SIM_METH_03_BIO
An Integrative Coinfection Modeling & Simulation Framework
Cheick A. T. Camara and Mamadou K. Traoré..... 415

SIM_BIO_02
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SIM_BIO_03_ONL
A Simple SIS Model with a Transmission Function built on the Natural Logarithm
Marcin Choiński 425

Thursday, 26th October 2023

ROOM A – 12.30 - 12.45

BEST PAPER

CLOSING SESSION AND BEST PAPER AWARD

Chair: Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

Prof. Rob Vingerhoeds, ISAE-SUPAERO, Toulouse, France

Philippe Geril, EUROSIS, Ostend, Belgium

12.45

END OF CONFERENCE

The shuttle bus will take all non- AIRBUS participants back to the city centre



AIRBUS

**12.30 – 13.30
LUNCH BREAK**

FOR AIRBUS PARTICIPANTS ONLY

13.30- 16.30 VISIT TO AIRBUS

The shuttle bus will take all AIRBUS participants back to the city centre and/or
Toulouse Airport

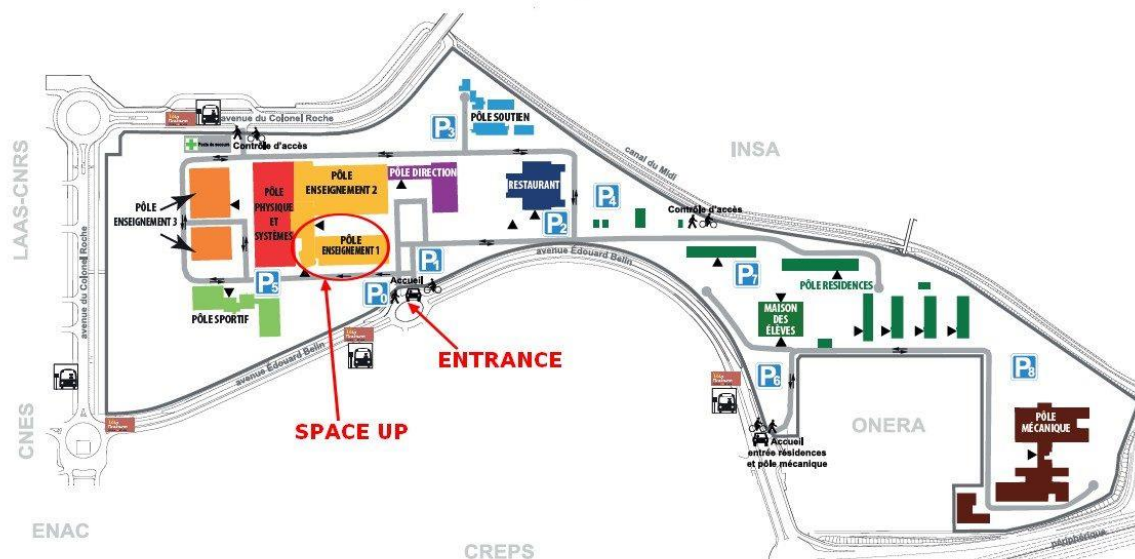
Closing Session - Thursday

CAMPUS MAP Overview of the Conference Site



Plan du campus ISAE-SUPAERO

10 avenue Edouard Belin - Toulouse



SHUTTLE BUS OVERVIEW

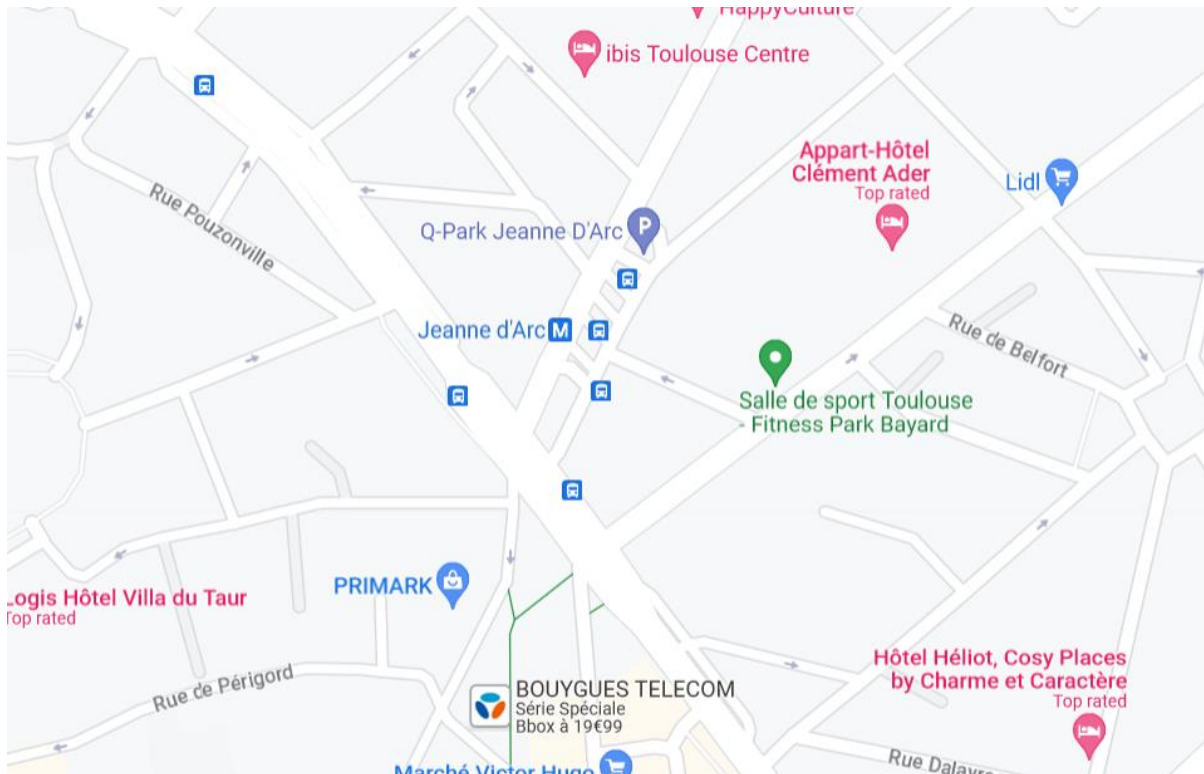


The bus company taking the participants to ISAE-SUPAERO and back is VERBUS

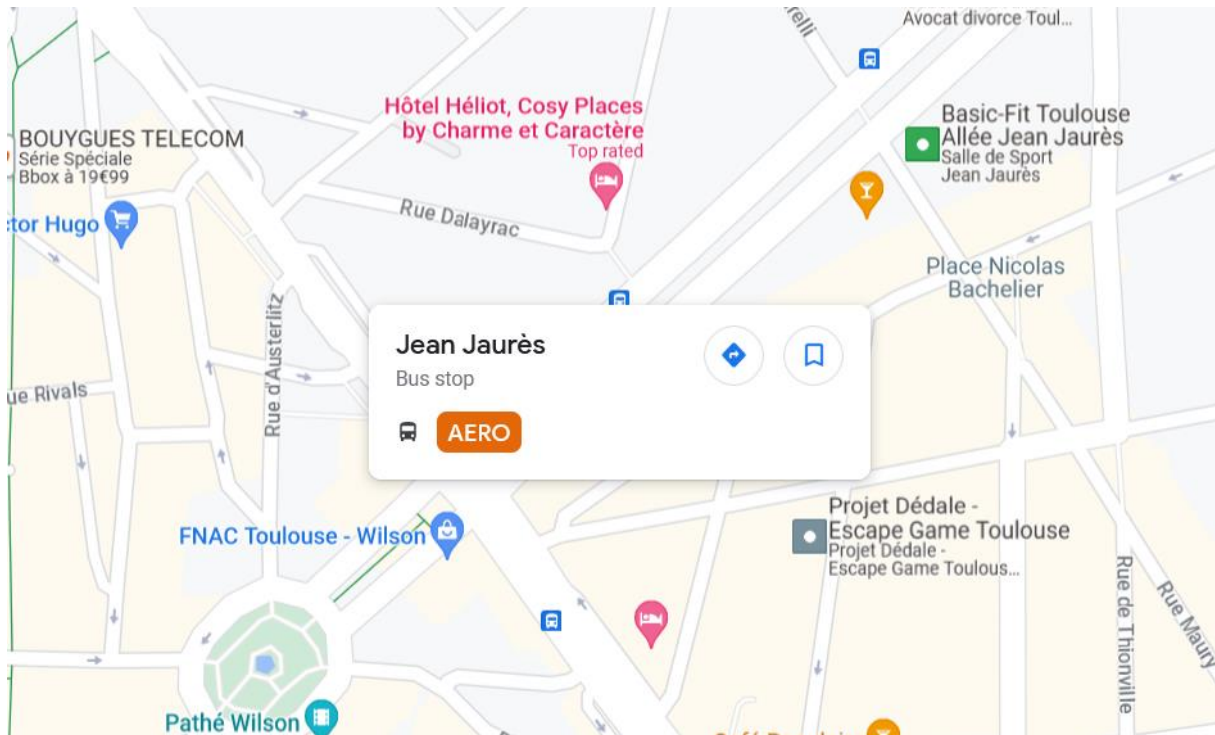
<https://www.verbus.com/>

Tuesday October 24	
07.45 AM:	Bus departs from Rue Jean Jaures at the Navette Aeroport Stop
08.00 AM:	Bus halts at the Navette Aeroport stop Jeanne d'Arc to leave for ISAE-SUPAERO
17.45 P.M.:	Bus departs from ISAE-SUPAERO and halts at Rue Jean Jaures at the Navette Aeroport Stop and at the Navette Aeroport stop Jeanne d'Arc
Wednesday October 25	
07.45 AM:	Bus departs from Rue Jean Jaures at the Navette Aeroport Stop
08.00 AM:	Bus halts at the Navette Aeroport stop Jeanne d'Arc to leave for ISAE-SUPAERO
17.45 P.M.:	Bus departs from ISAE-SUPAERO and halts at Rue Jean Jaures at the Navette Aeroport Stop and at the Navette Aeroport stop Jeanne d'Arc
Thursday October 26	
07.45 AM:	Bus departs from Rue Jean Jaures at the Navette Aeroport Stop
08.00 AM:	Bus halts at the Navette Aeroport stop Jeanne d'Arc to leave for ISAE-SUPAERO
13.00 P.M.:	Bus departs from ISAE-SUPAERO and halts at Matabiau, at Rue Jean Jaures at the Navette Aeroport Stop and at the Navette Aeroport stop Jeanne d'Arc
13.30 P.M.:	Bus departs from ISAE-SUPAERO for AIRBUS.
14.30 P.M.:	Bus arrives at AIRBUS Blagnac
16.05 P.M.:	Bus departs from AIRBUS Blagnac to the Blagnac Airport (16.15 P.M.)while halting afterwards at Matabiau Station (17.15 P.M.) at Rue Jean Jaures at the Navette Aeroport (17.30 P.M.) and Stop and at the Navette Aeroport stop Jeanne d'Arc

STOP AT JEANNE D'ARC



STOP AT JEAN JAURES



ESM'2024



SEE YOU ALL AT
ESM'2024, October 2024

Locations and exact dates to be confirmed shortly

Track proposals and tutorial proposals can be sent in by
January 15th, 2024

Proposals for future ESM locations can be emailed to
philippe.geril@eurosis.org

Other upcoming EUROSIS conferences



MESM'2023, November 20-22, 2023, Al-Farahidi University, Baghdad, Iraq



FOODSIM'2024 April 7-11, 2024, **University of Leuven/Campus Ghent**, Ghent, Belgium



ISC'2024 June 3-5, 2024, **Universitat Politecnica de Valencia**, Valencia, Spain

ESM'2024




EUROSIS was borne out of discussions with the European Community to set up a new kind of Society, which would be project-driven instead of driven by pure membership and conferences.

The aim of the Society is to set up and manage topic related Technical Committees which will link directly to European Projects in the field of computer simulation and related areas and to act as a knowledge pool for future European Networks of Excellence, like MOSAIC, HORIZON2020, ERASMUS+ by seeking out the latest innovations in simulation, modelling and AI research.

If you would like to receive more information about EUROSIS, please contact

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EUROSIS-ETI

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Torhoytsesteenweg 162 Bix 04.02
B- 8400 Ostend, Belgium

 Tel: +32.473.231.297

 **Email: Philippe.Geril@eurosis.org**

Please send me info on EUROSIS:

Name:

Address:

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ESM'2023 at Conference Registration Form

Please legibly print or type and fill out completely. (Check appropriate boxes where necessary)

FIRST NAME	LAST NAME	M.I.
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Mailing address (tick one): <input type="checkbox"/> HOME <input type="checkbox"/> BUSINESS		
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CITY		
ZIPCODE	COUNTRY	
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E-MAIL		
DATE	SIGNATURE	
1. <input type="checkbox"/> EUROSIS member € 595 Member Number: _____		€ _____
2. <input type="checkbox"/> Members of Sponsor or Affiliate Society € 595		€ _____
3. <input type="checkbox"/> Non-Member Participant € 635		€ _____
4. <input type="checkbox"/> Students, <u>who are not authors</u> but who wish to attend the conference, or ONE DAY PARTICIPANTS pay: € 465		€ _____
(Above registration fees include, one copy of the PROCEEDINGS, all midday meals, cocktail, refreshments, coffees and social program,) One Day Participants and Non-Author Students cannot participate in the conference dinner. – NOT APPLICABLE		
5. <input type="checkbox"/> Conference Dinner Ticket for Companion € 65 <input type="checkbox"/> Lunch Ticket for Companion €25 /day		€ _____
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VAT Number if applicable: _____		
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