MOBILITY ENGINEERING and SUSTAINABILITY

Programme of CAR2026

CAR 2026
www.siarcongress.eu

SOCIETY OF AUTOMOTIVE ENGINEERS OF ROMANIA
SIAR
SOCIETATEA INGINERILOR DE AUTOMOBILE DIN ROMANIA

ENDORSED BY FISITA

with the support of
Academia de Științe Tehnice din România
Technical Sciences Academy of Romania

The 36th SIAR International Congress of Automotive and Transport Engineering

SIA SOCIÉTÉ DES INGÉNIEURS DE L'AUTOMOBILE

acarom ASOCIAȚIA CONSTRUCTORILOR DE AUTOMOBILE DIN ROMÂNIA

Departamentul
1969
Autovehicule și Transporturi

National University of Science and Technology
"POLITEHNICA" Bucharest
Pitești University Center, Romania
5-7 November 2026

POLITEHNICA BUCUREȘTI
CENTRUL UNIVERSITAR PITEȘTI
1818

HOI 108

808 MOI

Pitești University Centre (founded in 1962) is a multi-disciplinary branch of the **National University of Science and Technology POLITEHNICA Bucharest**. It now has over 8.000 students and approximately 550 teaching and administrative staff. It consists of 6 different faculties offering Bachelor, Master and Doctor Diplomas (www.upit.ro). The areas in which our university centre is active and delivers services are education & training; scientific & applicative research; guidance & counselling; professional orientation; international cooperation in different fields; publishing activities.

Mihnea COSTOIU
Rector

Department Automobiles and Transport of our university is part of **Faculty of Mechanics and Technology** and was founded in 1969. Since then, it has been actively participating in the development of the Romanian technical higher education. Its prestige is owed to almost 60-year-long teaching activity and scientific research of competent department staff who, together with its graduates, have managed to make the existence of such a department well-known at national and international level. Currently, the activity of the Department Automobiles and Transport is conducted on all the three levels of academic training (Bachelor or Licence, Master and Doctorate).

The primordial mission of the department is to offer high-quality education with the purpose of developing the students' specific technical knowledge, intellectual capacities, and moral character, as essential premises for the creation of a professional elite. At the same time, Department Automobiles and Transport takes the responsibility to conduct high-level scientific research in order to disseminate authentic engineering culture, as a condition for social and economic progress.

Today the ambition of the Department Automobiles and Transport is to continue its tradition of excellence in the Automotive and Transport Engineering field and to succeed in establishing itself as one of the leading Romanian academic departments in the field of sustainable mobility.

Pitești University Centre

www.siar.ro

The Society of Automotive Engineers of Romania (Societatea Inginerilor de Automobile din România) was founded in 1990 and is the professional organization of Automotive and Transport Engineers. SIAR is an active member of FISITA (International Federation of Automotive Engineers Societies).

SIAR motto

„Cunoaștere și dezvoltare prin colaborare!"
„Knowledge and development through cooperation"

VISION

Assuring an institutional frame favorable to initiation and development of cooperation between specialists working in the field of Automotive and Transport Engineering.

Development through tripartite cooperation: State – Industry - Academia

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FISITA (Fédération Internationale des Sociétés d'Ingénieurs des Techniques de l'Automobile) was founded in Paris in 1948 and is the umbrella organisation for the national automotive societies around the world - controlled by the engineering profession and supported by the global automotive industry.

FISITA motto

"Progressons en Commun – Together we Progress"

VISION

Bring together engineers from across the globe to share ideas and advance the technological development of the automobile. FISITA's goal is to provide a forum for dialogue amongst these engineers

FOREWORD

The main mission of the Society of Automotive Engineers of Romania (SIAR) is to support the exchange of experience, promote Romanian scientific research and cutting-edge technologies, and strengthen international cooperation in the field of automotive engineering and road transport.

SIAR is a community of visionary, creative, and dedicated individuals, united by the desire to bring added value and a deeper meaning to their profession. The true strength of SIAR comes from the energy and synergy of its community: from academia (faculty and students) to partners in the Romanian and international automotive industry—such as FISITA, SAE, SIA, RAR, or ACAROM. This energy is fuelled by the close bonds between members, the valuable legacy built through SIAR Congresses, and, above all, the passion of the remarkable people who compose it.

For those of us in the field of Automotive Engineering, as well as for many others who love automobiles and love people, the annual Congresses of the Society of Automotive Engineers of Romania are heartfelt events, true celebrations that we eagerly look forward to! These Congresses represent a privileged setting for meeting and dialogue, where scientific research results, inventions, innovative technological solutions, and bold ideas in automotive engineering, transport, and environmental protection are presented, analysed, and debated.

A strong link in the chain of national and international events organized by SIAR on a rotating basis across major university centres in the country and the region is the CAR Congress. The host of the 36th edition of the SIAR Congress is the Pitești University Centre of the National University of Science and Technology POLITEHNICA Bucharest (the largest university in Romania, recognized both nationally and internationally).

CAR is designed as an event where participants can gain insights into cutting-edge trends, update technical knowledge, and build valuable bridges of collaboration between various participating institutes and organizations, and above all, between people!

Let us be together! Let us enjoy the opportunity to be alongside one another!

Professor Nicolae BURNETE,

SIAR President,

CAR 2026

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International Congress of Automotive and Transport Engineering,
Mobility Engineering and Environment,
www.siarcongress.eu
car2026@upit.ro

FOREWORD

The Congress of Automotive and Transport Engineering (in short, CAR) is a traditional scientific event initiated by the former University of Pitești, Romania in 1978. CAR is at its 12th edition in 2026 and is part of the series of similar annual scientific events organized by Society of Automotive Engineers of Romania (SIAR) and various Romanian universities with interests in Automotive and Transport Engineering. The current edition is endorsed by FISITA (Fédération Internationale des Sociétés d'Ingénieurs des Techniques de l'Automobile) and was organised with the support of ASTR (Academy of Technical Sciences of Romania), SIA (Société des Ingénieurs de l'Automobile) and ACAROM (Romanian Automotive Manufacturers Association).

Considering that car manufacturers are redefining themselves as mobility providers and adding the fact that currently, more than ever, there is an obvious need to strike a balance between natural increase of road mobility and environmental protection, SIAR's decision concerning the general theme of CAR2026 was **Mobility Engineering and Environment**.

Moreover, the motto of the Congress (**Academia, Industry and Government: together for automotive and transport engineering development**) is an indication of SIAR's belief that there is a need for meetings and discussions about the current and future challenges of the automotive and transport world in order to find the best solutions. In other words, we are convinced that the challenges of the future can only be overcome if these tripartite discussions occur permanently.

The papers of CAR2026 were selected by the Scientific Committee amongst over 160 proposals submitted via the online platform of the Congress. The papers cover the latest topics in the field of mobility engineering such as fuel economy and environment, materials and technologies, automotive safety, traffic and road transport systems, advanced engineering methods, advanced powertrains and hybrid and electric drives.

Therefore, I hope these papers will generate fruitful discussions about a very exciting topic: the automotive and road transport engineering in the light of the future challenges.

Professor Adrian CLENCI,

Chairman of CAR2026,

SIAR President between 2012 and 2020

CAR 2026

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International Congress of Automotive and Transport Engineering

Mobility Engineering and Environment

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SHORT HISTORY of CAR Congress

First of all, CAR is an acronym coming from the Romanian expression *"**C**ongres de **A**utovehicule **R**utiere"*, meaning Congress of Passenger Cars. In Romania, *"**A**utovehicule **R**utiere" (i.e., Road Vehicles)* is one of the most known academic specialization, attracting each year many students in the 12 universities dealing with Automotive Engineering.

CAR Congress is a scientific event initiated by the former University of Pitești in 1978. The city of Pitești is one of the main pillars of the national automotive industry, Dacia automotive plant created in 1966 being located at 15 km away from the city. Therefore, CAR Congress aimed and still aims at bringing together specialists from academia and industry to present their achievements and establish opportunities for collaboration in the field of automotive and transport engineering. After the birth of SIAR (in 1990), CAR Congress became one of SIAR's scientific events.

Below, there is a brief statistic of the past CAR Congress.

CAR edition	Type of event	Number of participants	Number of papers	Other details
1978, 6-8 June	National	83	49	-
1982, 14-16 October		121	91	-
1985, 17-19 October		124	102	-
1989, 26-28 October		131	118	-
1992, 5-7 November	International	178	127	SIAR event
1994 3-5 November		165	121	
1997, 6-8 November		189	129	SIAR event, FISITA & EAEC patronage
2000, 26-28 October		218	136	
2005, 2-4 November		242	152	
2011, 2-4 November		278	170	
2017, 8-10 November		154	128	
2026, 5-7 November		-	103	Endorsed by FISITA Supported by ASTR, SIA, ACAROM

Like other SIAR scientific events, CAR Congress is an opportunity for delegates to:

- *update skills and knowledge by attending focused technical sessions*
- *gain insights into the automotiveindustry*
- *network with potential new partners, clients and suppliers*
- *view the latest technology products and services in the commercial exhibition*

CAR 2026

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International Congress of Automotive and Transport Engineering

Mobility Engineering and Environment

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Sabin BULARDA	Managing Director, FEV Romania
Cristian GENTEA	Mayor of Pitești City

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The Organizing Committee would like to thank the following companies for their support:

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REGISTRUL AUTO ROMÂN

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CAR 2026

PROGRAMME

WEDNESDAY, 4th of November

18h00 **Welcoming Cocktail** *(NUSTPB, Rectorate of the Pitești University Centre, 1, Tg. din Vale Street)*

THURSDAY, 5th of November

07h45 – 08h45 **Registration** *(Pitești University Centre, 1st floor of the Central building, 1, Tg. din Vale Street)*

08h45 – 10h00 **Opening speeches** *(Central building, Main amphitheater, 1st floor)*

- **Mihnea COSTOIU** *Rector of NUST "POLITEHNICA" Bucharest*
- **Nicolae BURNETE** *SIAR President*
- **Cristian GENTEA** *Mayor of Pitești City*
- **Lucian BOGDAN** *Tuning & Software Director, HORSE Technology Division*
- **Dan GHIRIŞAN** *Vehicles Operations Manager, FORD OTOSAN*
- **Thierry HILAIRE** *General Manager, Renault Technologie Roumanie (RTR)*
- **Sabin BULARDA** *FEV Romania, Manager*
- **Virgil RADU** *Director of Individual Homologation, Romanian Auto Register (RAR)*
- **Adrian CLENCI** *Chairman of the Congress*

10h00 – 10h30 **Coffee break**

10h30 – 11h15 **Keynote presentations, 1st part** *(Central building, Main amphitheater, 1st floor)*

- **Guillaume TUFFIER,** *Vice President of Innovation at HORSE Powertrain Ltd*
  Ultra Low Emission Engine: optimizing decarbonization and air quality
- **Christoph MENNE,** *Executive Vice President and Managing Director of FEV Europe GmbH*
  Virtualization, AI and smart testing - key ingredients to manage complexity and cost in automotive R&D

11h15 – 11h30 **Coffee break**

11h30 – 12h15 **Keynote presentations, 2nd part** *(Central building, Main amphitheater, 1st floor)*

- **Andrei-Eduard NEGRU,** *Project Manager HORSE Powertrain Romania*
  Renewable Fuels - A Pathway to a Sustainable Future
- **Morgan LE COSSEC,** *Department Manager at AVL List, Austria*
  A Practical Path to Virtual Powertrain Development and Validation

12h30 – 14h00 **Lunch** *(Restaurant Hotel Ramada)*

14h30 – 15h30 **Panel discussion:** *Future of passenger cars in Europe: electrons or molecules? (Library Room)*
Experts: **Guillaume TUFFIER** (HORSE), **Christoph MENNE** (FEV), **Morgan LE COSSEC** (AVL), **Türkan EDEGE** (FORD Otosan). **Moderator**: **Adrian CLENCI** (NUSTPB).

14h30 – 15h30 **Student Workshop:** *RDE via PEMS,* **Tiberiu MELENCU** *- Romanian Auto Register, RAR*
(Central building, Main amphitheater, 1st floor)

15h30 – 19h00 **Oral presentations on sections** *(Rooms 1-5, 2nd floor. Sections S1–S10)*

15h45 – 17h45 **Automotive CAD Student National Contest:** *preliminary phase (Rooms T004 and T015)*

17h45 – 19h45 **SIAR General Assembly and Meeting of the Academic Alliance for Automotive and Transport Engineering (ALIAT)** *(Central building, Main amphitheater, 1st floor)*

20h00 **Dinner** *(Restaurant Hotel Ramada)*

FRIDAY, 6th of November *(NUSTPB, Pitești University Centre, Central building, 1, Tg. din Vale Street)*

08h00 – 12h30 **SIAR Student National Contests:** *Vehicle Dynamics (Room T309) and Automotive Computer Aided Design (Rooms T004 and T015)*

08h30 – 09h15 **Keynote presentations, 3rd part** *(Central building, Main amphitheater, 1st floor)*

- **Marius IONDA**, *Lead Vehicle Engineering for Derivative Programs, RENAULT Group and*
- **Florin FILCESCU**, *Project Platform Leader at RENAULT Group*
  Hybrid G150 4x4 delivering accessible performance, lower emissions and real customer value

09h15 – 09h40 **Coffee break**

09h40 – 11h00 **Workshops** *(Central building, Main amphitheater, 1st floor)*

- **Iulia MIHAIL**, *Institute of Physical Chemistry "Ilie Murgulescu"*
  Brilliant Idea, Empty Wallet? The EU Might Have Your Answer - EU policies and funding opportunities for sustainable mobility
- **Diana RĂDULESCU**, *Deputy Managing Editor at MDPI Romania*
  Ethics and AI in Publishing

11h00 – 12h40 **Oral presentations on sections** *(Rooms 1-5, 2nd floor. Sections S11–S15)*

13h00 – 14h30 **Lunch** *(Restaurant Hotel Ramada)*

15h15 – 18h00 **Oral presentations on sections** *(Rooms 1-5, 2nd floor. Sections S16–S25)*

18h15 – 19h15 **Awarding ceremony for the student contests and Congress Closing Ceremony**
(Central building, Main amphitheater, 1st floor)

20h00 **Congress Gala Dinner** *(Restaurant Hotel Ramada)*

SATURDAY, 7th of November

08h30 – 14h30 **Touristic visits**

- National Museum Brătianu - Vila Florica;
- Golești Museum

MOTTO

"Academia, Industry and Government. Together for Automotive Engineering Development"

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Oral Presentations by Sections

25 sections · 107 papers · 15 min per paper (Q&A included)

Room	Thu 5 Nov 15h30–16h50	Thu 5 Nov 17h00–18h20	Fri 6 Nov 11h00–12h40	Fri 6 Nov 15h15–16h30	Fri 6 Nov 16h30–18h00
1	**S1 TRT** #716 #735 #788 #844	**S6 TRT** #672 #674 #783 #821 #865	**S11 TRT** #742 #831 #838 #856	**S16 TRT** #659 #709 #829 #857	**S21 AEM** #663 #722 #748 #795 #828
2	**S2 TRT** #734 #802 #840 #853	**S7 TRT** #662 #664 #688 #819	**S12 AEM** #673 #678 #721 #836	**S17 ICE** #657 #731 #782 #826	**S22 HEV** #671 #734 #798 #817 #852
3	**S3 AEM** #710 #714 #720 #854	**S8 AEM** #764 #778 #859 #860	**S13 HSV** #680 #800 #807 #808 #864	**S18 SAF/ARA** #725 #790 #818 #824	**S23 HEV** #653 #654 #656 #803 #814
4	**S4 HSV** #656 #676 #802 #843 #851	**S9 SAF/ARA** #666 #689 #773 #847	**S14 ICE** #746 #779 #858 #861 #863	**S19 MAT** #761 #767 #799 #823	**S24 HEV** #706 #719 #723 #809 #816
5	**S5 MAT** #751 #752 #775 #833	**S10 MAT** #708 #750 #811	**S15 MAT** #660 #675 #766 #862	**S20 MAT** #698 #771 #842 #850	**S25 VES/TSYS** #651 #724 #743 #815 #855

Section codes: ARA – Accident Research and Analysis · SAF – Active and Passive Safety · AEM – Advanced Engineering Methods · MAT – Advanced Materials, Manufacturing Technologies and Logistics · TRT – Advanced Transport Systems and Road Traffic · HSV – Heavy and Special Vehicles · HEV – Hybrid & Electric Vehicles · ICE – Fuels, Lubricants and Internal Combustion Engines · TSYS – Transmission Systems · VES – Vehicle Electronics and Software

THURSDAY, 5th of November 15h30 – 16h50

S1 · Room 1 · 15h30 Advanced Transport Systems and Road Traffic (TRT) – Road Traffic Studies

Chairpersons: 1. Dan MICU 2. Laurențiu RĂCILĂ

#716	**Assessment of Urban Traffic Emissions in Relation to Vehicle Fleet Structure** *Alexandru-Constantin OPRICA, Dragoș TUTUNEA, Ilie DUMITRU, Andretti CIUNGU*
#735	**Evaluating Propulsion Latencies and Human Behavior: A Driver-in-the-Loop Comparative Study** *Daniel-Levente NAGY, Călin ICLODEAN*
#788	**The influence of road markings and signs visibility on driver reaction time** *Iulia Maria BOBEȘ, Sonia Ștefania CALCEA, Horia BELEȘ, Dragoș Daniel TRUȘCĂ, Csaba ANTONYA*
#844	**AI-Enhanced Laboratory Methodologies for Road Traffic Simulation and Analysis** *Ilie DUMITRU, Oana-Victoria STANCIUC-OTAT, Alexandru OPRICA, Andretti CIUNGU*

S2 · Room 2 · 15h30 Advanced Transport Systems and Road Traffic (TRT) – Autonomous Mobility, Public Transport and Traffic Accidents

Chairpersons: 1. Dinu COVACIU 2. Lucian MATEI

#734	**Advanced Eco-Driving Strategies for Autonomous Electric Vehicles Using V2I Data and Free-Coasting** *Daniel-Levente NAGY, Gabriel PRUNEAN*
#802	**Autonomous-Ready Bus Stops: An Integrative Evidence Map and Conceptual Research Architecture** *Melania PETREA, Răzvan Gabriel BOBOC, Stelian TARULESCU, Gheorghe Daniel VOINEA, Adrian SOICA*
#840	**Identification of Patterns in Autonomous Vehicle Traffic Accidents Using Unsupervised Machine Learning Analysis of NHTSA Crash Data** *Florin GÎRBACIA*
#853	**A Reproducible Measurement System for Assessing the Operational Compatibility of Public Transport Infrastructure with Autonomous Vehicles** *Grigore AMBROSI, Răzvan Gabriel BOBOC, Eugen Valentin BUTILĂ, Gheorghe-Daniel VOINEA, Igor BEȘLEAGĂ, Eduard BANARI, Nicolae DARADUDA*

S3 · Room 3 · 15h30 Advanced Engineering Methods (AEM) – Vehicle Dynamics and Suspension Modelling

Chairpersons: 1. Nicolae Doru STĂNESCU 2. Alexandru DOBRE

#710	**Modeling and simulation of vehicle behavior in Simulink using a 7-DOF dynamic model** *Nicoleta OLĂRESCU, Dinel POPA, Elena Eliza VOICA*
#714	**Analysis of dynamic response for a vehicle with rigid rear axle using a 7-DOF model** *Nicoleta OLĂRESCU, Dinel POPA, Elena Eliza VOICA*
#720	**Influence of Design Parameters on the Dynamic Behaviour of a Vehicle Suspension** *Elena Eliza VOICA, Nicoleta OLĂRESCU, Dinel POPA*
#854	**Recovering Kinematics & Compliance Targets in an Outboard In-Wheel Motor Front Suspension** *Valentin POPOVICI, Edward RAKOSI, Tudor Marian ULIAN, Gheorghe MANOLACHE, Alexandru Gabriel POPA, Ștefan PETROVAN, Ioana Ramona GRIGORAȘ*

S4 · Room 4 · 15h30 Heavy and Special Vehicles (HSV)

Chairpersons: 1. Cristian ANDREESCU 2. Radu VILĂU

#656	**Multidimensional Lookup Table for Fast, High-Fidelity Prediction of Longitudinal Tire Forces on Deformable Terrain** *Sadegh YARMOHAMMADISATRI, Corina SANDU*
#676	**Comparative Analysis of Real Driving Emissions for Spark Ignition and Compression Ignition Vehicles on Urban Routes in Constanta** *Adrian Mircea BELDUGAN, Traian DORDEA, Lucia-Violeta MELNIC, Camil TUDOR, Sorin Lucian IONASCU, Lucian STANIA*
#802	**Study on the Scaling of the High-Voltage Battery in a Commercial Electric Vehicle and the Influence on Energetic Performances in Real Driving Conditions** *Alexandru Adrian ANCUȚA, Cristian Alexandru RENȚEA, Dan Alexandru MICU, Marius Valentin BĂȚĂUȘ*
#843	**Parameter Identification of a Snow Material Model from In-situ CTI Penetrometer Test Data** *Maheep BUBNA, Costin UNTĂROIU*
#851	**Self-propulsion systems for ground drones** *Alexandru-Dănuț BÎNDAC*

S5 · Room 5 · 15h30 Advanced Materials, Manufacturing Technologies and Logistics (MAT) – Additive Manufacturing and Product Design

Chairpersons: 1. Monica IORDACHE 2. Ana GAVRILUȚĂ

#751	**Ergonomic Design of Industrial Exoskeletons with FDM Components: A Critical Synthesis and Integrated Framework** *Adrian PREDA, Nicolae CIOCÎRLAN, Daniel-Constantin ANGHEL*
#752	**Additive Manufacturing, Artificial Intelligence and Human-Centered Production in Industry 5.0: A Review for Personalized Automotive Applications** *Maria-Rafaella ȘERB, Alexandru SOVER, Alina-Ionela APARASCHIVEI, Gina-Mihaela SICOE, Daniel-Constantin ANGHEL*
#775	**CAD-Based Virtual Validation and Multi-Criteria Material Selection of an Additively Manufactured Six-Degree-of-Freedom Robotic Arm** *Andreea-Ruxandra IONIȚĂ, Daniel-Constantin ANGHEL, Eduard Laurențiu NIȚU, Aurica Luminița PÂRV*
#833	**Effects of Layer Height and Boss Geometry on the Pull-Out Performance of Heat-Set Inserts in FDM-Printed PET-G Components** *Cristina-Florena BANICĂ, Alexandru SOVER, Daniel-Constantin ANGHEL, Eduard-Laurentiu NITU, Daniela Monica IORDACHE, Alin-Daniel RIZEA, Nicanor CIMPOESU*

THURSDAY, 5th of November 17h00 – 18h20

S6 · Room 1 · 17h00 Advanced Transport Systems and Road Traffic (TRT) – Urban Networks and Congestion

Chairpersons: 1. Nicolae FILIP 2. Gabriela MITRAN

#672	**Analyses of traffic and urban public transport network configurations. Case study for the municipality of Bucharest** *Cristian-Răzvan MARIN*
#674	**Topological Properties of Urban Public Transport Network: A case study of Bucharest** *Paul-Alexandru BOTA, Eugenia-Alina ROMAN, Maria-Eliza VOINEA*
#783	**Assessing the Potential Impact of a Pedibus Program on Urban Traffic Congestion: A Case Study of a Critical Intersection in the Municipality of Pitesti** *Floriana IORDACHE (Cinca), Laura Christina SIMIONESCU (Dobrescu), Alexandru BOROIU*
#821	**Traffic Congestion Impacts in Major Urban Agglomerations: A case study of Bucharest** *Maria-Eliza VOINEA, Paul-Alexandru BOTA*
#865	**Case Study on Operational Organization in an Intermodal Terminal under Variable Operational Demand** *George Nicusor CRISTESCU, Vasile DRAGU*

S7 · Room 2 · 17h00 Advanced Transport Systems and Road Traffic (TRT) – Intersections, Parking and Traffic Simulation

Chairpersons: 1. Stelian ŢARULESCU 2. Andrei BOROIU

#662	**Assessment and Simulation of Traffic Conditions at a Signalized Urban Intersection** *Asen ASENOV, Andrei-Alexandru BOROIU, Kremena MINEVA, Velizara PENCHEVA*
#664	**Assessment of Conflict Volume in Roundabout Intersections Using Artificial Intelligence-Based Tools - A DataFromSky Case Study** *Andrei Alexandru BOROIU, Ionela Alina APARASCHIVEI, Ana BADEA, Helene BĂDĂRĂU-ŞUSTER*
#688	**Setting Simulation Parameters for Digital Twin-Based Analysis of Parking Accessibility in Multimodal Transport Systems** *Dan NICOLAE, Oana DINU, Valentin STAN, Alina ROMAN, Armand STERE, Florin RUSCA*
#819	**Standard-Compliant Intelligent Parking Reservation System (IPRS): A Multi-Tiered Architecture for Sustainable Urban Mobility and Automated Access Control** *George Daniel ENACHE, Valerian CROITORESCU*

S8 · Room 3 · 17h00 Advanced Engineering Methods (AEM) – Modelling and Simulation Methods

Chairpersons: 1. Ion PREDA 2. Ionuţ Daniel GEONEA

#764	**Nonlinear vibrations of the suspension of a quarter of an automobile** *Alexandru-Cristian POPA, Nicolae-Doru STĂNESCU*
#778	**Architecture of individual transportation vehicles characterized by a vertically positioned driving posture** *Mihai Ion HORTOPAN*
#859	**Study of Heat Exchange Under Pulsating Flow in a Tubular Heat Exchanger: Experimental and Numerical Approach** *Mihai BADEA, David UYSTEPRUYST, François DELCOURT, Éric DELACOURT, Céline MORIN, Adrian CLENCI*
#860	**Numerical investigation of the effect of pitch-line velocity of gears on churning losses using LS-DYNA** *Gabriel CÎMPEANU, Ştefan TABACU, Mihai STIROSU*

S9 · Room 4 · 17h00 Active and Passive Safety (SAF) / Accident Research and Analysis (ARA) – Crash Safety, Accident Reconstruction and Human Factors

Chairpersons: 1. Nicolae ISPAS 2. Florian IVAN

#666	**Smartphone-Based 3D Documentation of Vehicle Collision Damage for PC-Crash Applications** *Iulius Alexandru TUDOR, Florin GÎRBACIA*
#689	**Relationship between crash pulse characteristics and whiplash risk in an advanced anti-whiplash front seat** *Selçuk HIMMETOGLU, Zeynepnur CENGIZ*
#773	**An overview of current and proposed speed limits in consideration of different crash scenarios** *Onur Güven TAŞ, Selçuk HIMMETOGLU*
#847	**Current research on the influence of human factors on vehicle driving in simulated and real environments: a literature review** *Iulia-Maria BOBEȘ, Sonia-Ștefania CALCEA, Horia BELEȘ, Dragoș Daniel TRUȘCĂ, Csaba ANTONYA*

S10 · Room 5 · 17h00 Advanced Materials, Manufacturing Technologies and Logistics (MAT) – Welding and Materials

Chairpersons: 1. Cătălin DUCU 2. Alin RIZEA

#708	**Manufacturing Time Optimization for Double Wishbone Steering Knuckles in LCVs** *Alexandru DOBRE, Vicentziu-Constantin MIHĂILĂ, Gabriel BURDUȘ, Răzvan-Alexandru DURIGON*
#750	**Mechanical Performance and Microstructural Characteristics of Cu-DHP Copper Sheets Welded by Hybrid FSW-TIG** *Răducu Nicolae BULACU, Younès DEMMOUCHE, Matthieu DHONDT, Claudiu BĂDULESCU, Eduard Laurențiu NIȚU, Claudiu Ionuț MALEA, Alin Daniel RIZEA, Daniela Monica IORDACHE*
#811	**Finite Element Analysis of Temperature and Longitudinal Force in Micro-FSW of 6061-T4 Aluminum Sheets** *Lidia-Diana COPOȚ, Răducu-Nicolae BULACU, Daniela Monica IORDACHE, Maria-Crina RADU, Eugen HERGHELEGIU, Cătălin TÂMPU, Bogdan-Alexandru CHIRIȚĂ, Bogdan NIȚĂ*

FRIDAY, 6th of November 11h00 – 12h40

S11 · Room 1 · 11h00 Advanced Transport Systems and Road Traffic (TRT) – Autonomous Vehicles: Perception and Maturity

Chairpersons: 1. Silviu IONIȚĂ 2. Andrei BOROIU

#742	**Development and Evaluation of a LiDAR-Vision Navigation Framework Toward Future Sidewalk Service Robots** *Yifei ZHOU, Xiaowei HUANG, Moein MEHRTASH*
#831	**Quantifying the Technological Maturity of SAE Level 5 Autonomous Vehicles through the Development of a Multidimensional Index** *Grigore AMBROSI, Răzvan Gabriel BOBOC, Eugen Valentin BUTILĂ, Gheorghe-Daniel VOINEA, Igor BEȘLEAGĂ, Eduard BANARI, Nicolae DARADUDA*
#838	**Comparative Point-Cloud Characterization of Two 32-Channel Rotary LiDARs for Mobile Robot Perception** *Nicolas POLGA, Moein MEHRTASH*
#856	**Autonomous Systems in Transport and Industrial Vehicles: Current Status and Challenges** *Florin Bogdan SCURT, Vlad Imre TENT, Horia BELEȘ, Tiberiu VESSELÉNYI, Bogdan Adrian TOLEA, Tudor MITRAN, Alexandru RUS, Ioana-Diana BUZDUGAN*

S12 · Room 2 · 11h00 Advanced Engineering Methods (AEM) – Vehicle Aerodynamics and CFD

Chairpersons: 1. Amélie DANLOS 2. Dragoș TUTUNEA

#673	**Numerical Investigation of the Aerodynamic Performance of a Sport Car by Employing Steady and Pulsed Blowing Flow Control Techniques** *Nisa Busenaz İNCI, Emre KARA*
#678	**A Comparative Numerical Investigation of a Multi-element Race Car Rear Wing Featuring a Novel Aviation-inspired Aircraft Mode for Drag Reduction and Energy Management** *Beykan KÖSEOĞLU, Emre KARA*
#721	**Impact of Platooning Configurations on the Aerodynamic Performance of Commercial Vehicles** *Robert MANCAȘ*
#836	**A Downforce and Efficiency CFD Study of Endplates and Anhedral Winglets on a Car Rear Wing** *Emanuel HANDRA*

S13 · Room 3 · 11h00 Heavy and Special Vehicles (HSV) – Commercial Vehicles, Braking and Vehicle Architecture

Chairpersons: 1. Corina SANDU 2. Ștefan TABACU

#680	**Worldwide regulations, force analysis and parametric evaluation for the safe transport of steel strip slit coils** *Marius Robert CIAUȘU-SLIWA, Maria Loredana NECSOI*
#800	**Driving cycles for a bus on a suburban route for driving strategy development** *Ștefan-Alexandru NECULA, Marius-Valentin BĂȚĂUȘ, Gheorghe FRAȚILĂ*
#807	**Experimental studies of the dynamics of light commercial vehicles under various loading conditions and load positioning** *Daniel Tiberiu IONIȚĂ, Tiberiu MELENCU, Anghel CHIRU, Gheorghe CREANGĂ, Dragoș Daniel TRUȘCĂ, Nicolae ISPAS*
#808	**Studies and research on the effect of overloading on the braking performance of light commercial vehicles** *Daniel Tiberiu IONIȚĂ, Dinu COVACIU, Gheorghe CREANGĂ, Nicolae ISPAS, Bogdan NIȚULEASA*
#864	**The Reference Pair method: metrological qualification of digital twins for the continuous homologation of software-defined vehicles** *George DICU, Mihai STIROSU, Gheorghe FRĂȚILĂ*

S14 · Room 4 · 11h00 Fuels, Lubricants and Internal Combustion Engines (ICE) – Alternative Fuels and Engine Performance

Chairpersons: 1. Silvia MEROLA 2. Edward RAKOSI

#746	**Hydrous Ethanol–Gasoline Blends in a Small Turbocharged SI Engine: A Simulation of Performance and Emissions** *Rareș CONȚIU, Radu CHIRIAC, Adrian BIRTAȘ*
#779	**Hydrotreated Vegetable Oil (HVO) as a Fuel for Sustainable Mobility: Development of a Production Method and Fuel Characterization** *Maria OPREA, Rodica NICULESCU, Adrian CLENCI, Gabriel VASILIEVICI, Ana Maria APOLOZAN, Sorin Georgian MOGA*
#858	**The Effects of Clogged Air Filter Over Power, Torque and Consumption of Hybrid Motor-Vehicle** *Marius Florin TOMA, Stefan VOLOACA, Adrian Aristide ASIMOPOLOS, Cornelia STAN*
#861	**Three-Dimensional CFD Simulation of Compressed Natural Gas Combustion in a Light-Duty Diesel Engine Retrofitted for Spark-Ignition Operation: Experimental Validation and Combustion Analysis** *Catalin MAGHERU, Adrian CLENCI, Robert POPA*
#863	**A study on combustion process in dual fuel diesel-methane engine using CFD simulation: impact of diesel substitution ratio** *Borislav DIMITROV, Plamen PUNOV, Adrian CLENCI, Svetoslav MIHALKOV*

S15 · Room 5 · 11h00 Advanced Materials, Manufacturing Technologies and Logistics (MAT) – Logistics and Quality

Chairpersons: 1. Daniel ANGHEL 2. Viorel NICOLAE

#660	**Cost Optimization in Automotive Logistics under Supply Chain Disruptions** *Ciprian-Mihai ȚUGUI, Florin-Valentin RUSCĂ, Eugenia Alina ROMAN, Oana-Maria DINU*
#675	**A theoretical analysis of the differences and conditionalities for a series of concepts used in quality assurance** *Alexandru BOROIU, Sorin MIHĂILESCU, Andrei-Alexandru BOROIU, Aurel Mihai ŢÎŢU*
#766	**Quantifying the Impact of Intelligent Process Automation on Air Freight Forwarding Operations: An Empirical Case Study** *Laura Cătălina TUDOSE, Ana Cornelia GAVRILUȚĂ*
#862	**Development of a Rapid Computational Tool for Reliability Distribution Functions.** *Florin Ioan PĂUNESCU, Nicolae FILIP*

FRIDAY, 6th of November 15h15 – 16h30

S16 · Room 1 · 15h15 Advanced Transport Systems and Road Traffic (TRT) – Transport Planning, Logistics and Policy

Chairpersons: 1. Ilona COSTEA 2. Alexandru BOROIU

#659	**Identification of quiet areas for tourism development: A Case Study in Brasov, Romania** *Radu TARULESCU, Stelian TARULESCU, Dinu COVACIU, Razvan BOBOC, Florin GIRBACIA*
#709	**Decision-Making Methods for Transport Infrastructure Megaprojects** *Eugen Marius DEDU, Eugen ROSCA*
#829	**The role of specialist competencies in enhancing the competitiveness of freight transport enterprises in the Republic of Moldova** *Maria GHEORGHIȚA, Natalia ȘESTENCO-DIACEK, Margareta VÎRCOLICI*
#857	**Multilayer network modeling of substitution and complementarity effects in inland waterway transport systems: a data-driven RoRIS approach** *Laura Christiana DOBRESCU, Ștefan VOLOACĂ, Cătălin COMAN, Eugen ROȘCA*

S17 · Room 2 · 15h15 Fuels, Lubricants and Internal Combustion Engines (ICE) – Combustion and Engine Simulation

Chairpersons: 1. Michael DELIGANT 2. Radu CHIRIAC

#657	**Analysis of combustion and related water injection effects through ion current sensing and optical diagnostics in a spark ignition engine** *Simona Silvia MEROLA, Adrian IRIMESCU, Giovanni CECERE*
#731	**1D-Engine-Process-Simulation of a Cylinder-Individual Compression Ratio Four-Cylinder-SI-Engine for Flexible Hydrogen-Methane-Mixtures** *Tobias DOST, Joern GETZLAFF*
#782	**Combustion and emission tradeoffs in a diesel engine retrofitted with multipoint LPG port injection** *Cristian PERCEMBLI, Lucian MIRON, Marcin DZIEWIĄTKOWSKI, Radu CHIRIAC, Piotr Jacek SOCHACKI*
#826	**Numerical investigation of N2O formation in the crevices of a heavy-duty ammonia-fueled spark-ignition engine** *Stefany SAENZ, Juan M. TRUJILLO, Cosmin E. DUMITRESCU*

S18 · Room 3 · 15h15 Active and Passive Safety (SAF) / Accident Research and Analysis (ARA) – Active Safety and Autonomous Systems

Chairpersons: 1. Adrian ȘOICA 2. Selçuk HIMMETOGLU

#725	**Excitation Parameters Effect on Damper Performance through Experimental Analysis** *Alexandru DOBRE, Răzvan-Alexandru DURIGON, Gabriel BURDUȘ, Vicentziu-Constantin MIHĂILĂ*
#790	**An approach to research and achievements in the optimization of vehicle structures subjected to extreme dynamic loads, with applications in freight transport** *Vlad Imre TENT, Florin Bogdan SCURT , Tiberiu VESSELENYI, Horia BELES, Bogdan Adrian TOLEA, Madalin Florin POPA*
#818	**Enhancing Decisional Transparency in Autonomous Systems: A Multi-Architectural Approach to Robust Traffic Event Reconstruction** *Alexandra DONOS, Ramona GIRBEA, Valerian CROITORESCU*
#824	**Braking as Active Safety: A Digital Twin Review of Automotive Braking Systems** *Andrei Ionut DONTU, Ioana Ramona GRIGORAS, Teodor ANITA, Laurentiu Constantin COROEANU*

S19 · Room 4 · 15h15 Advanced Materials, Manufacturing Technologies and Logistics (MAT) – Mechanics, Vibrations and Braking Systems

Chairpersons: 1. Ion PREDA 2. Marius Florin TOMA

#761	**Some aspects concerning systems of straight cantilever bars with one common end and errors of fabrication** *Valentin RĂCĂȘAN, Nicolae-Doru STĂNESCU*
#767	**Nonlinear vibrations of a cutting process** *Elena Larisa PREDEL, Nicolae-Doru STĂNESCU*
#799	**Frictionless Electromagnetic Braking for Electric and Autonomous Vehicles: Contactless Operating Principles, Brake-by-Wire Integration, and Research Challenges: A Critical Review** *Lamara ACHITEI, Denis COJOCARU, Lidia GAIGINSCHI, Adrian Constantin SACHELARIE*
#823	**Critical review of electro-mechanical braking systems (EMB)** *Tudor Marian ULIAN, George ACHIȚEI, Daria SACHELARIE, Gelu IANUȘ*

S20 · Room 5 · 15h15 Advanced Materials, Manufacturing Technologies and Logistics (MAT) – Design Automation and Digitization

Chairpersons: 1. Eduard NIȚU 2. Sorin ILIE

#698	**The Role of Design Automation throughout the Automotive Product Development Process** *Andreea ISTRATE, Marius Robert CIAUȘU-SLIWA, Claudiu Iounţ MALEA, Oana DODUN*
#771	**Integrated QFD-TRIZ Approach for the Design of a Storage System for Unirradiated Nuclear Fuel Rods** *Bogdan-Teodor GODEA, Daniel-Constantin ANGHEL, Ana GOGORICI, Daniela-Monica IORDACHE, Adriana-Gabriela ȘCHIOPU, Marian-Cătălin DUCU*
#842	**Performance evaluation of ZEISS T-SCAN hawk 2 for 3D digitization and geometrical inspection of a large automotive component** *Cristian MOISE*
#850	**Methodology with a virtual validation loop for improving the quality of injection-moulded components in the automotive industry** *Ionuț-Nicușor TONE, Cristina Ileana PASCU, Loreta SIMNICEANU*

FRIDAY, 6th of November 16h30 – 18h00

S21 · Room 1 · 16h30 Advanced Engineering Methods (AEM) – Vehicle Testing and Measurement

Chairpersons: 1. Ilie DUMITRU 2. Adrian SACHELARIE

#663	**Assessing the inertia and drag of the twin-roller dynamometer and of the tested vehicle** *Ion PREDA, Adrian BUDALA*
#722	**Design and experimental characterization of a test bench for automotive air flow meters: Voltage response versus mass air flow** *Dragoş TUTUNEA, Cristian Florin PALIU, Alexandru OPRICA, Adrian GIURA*
#748	**Tuning Vehicle Dynamics & Control Functions For Coach** *Kerem BAYAR, Eren ERGIN, Bünyamin AYDIN, Berat ÖZDEMIR, Bahadır AKGÜN, Mustafa GÜLENER, İsmail NALBANTOĞLU, Hendrik TELGES, Heiko MARQUARDT, Peter NIETZELT, Henry MUNITZK, Ege Can ÇILESIZ, Deniz UZUNHASANOĞLU, Baturhan OĞUZER, Volker HEIM*
#795	**Experimental Evaluation of Measurement Techniques for Determining Rolling Resistance in Passenger Car Tires** *Valentin Constantin GHEORGHE, Dan Alexandru MICU, Florin Iordan FILERU, Alexandru Adrian ANCUȚA*
#828	**Modern Rules and Methodologies for Automotive Wiring Harness Design** *Lucian IONITA*

S22 · Room 2 · 16h30 Hybrid & Electric Vehicles (HEV) – Electric Vehicle Systems, Charging and Power Electronics

Chairpersons: 1. Viorel NICOLAE 2. Matei LUCIAN

#671	**Renewable energy usage for electric vehicle charging infrastructure** *Radu TARULESCU, Stelian TARULESCU, Stefano RINALDI, Frederico RODRIGUES, Angel Bayod RUJULA, Corina ILIN*
#734	**Advanced Eco-Driving Strategies for Autonomous Electric Vehicles Using V2I Data and Free-Coasting** *Daniel-Levente NAGY, Gabriel PRUNEAN*
#798	**Impact of Autonomous Vehicle Penetration Rates on Traffic Efficiency and Emissions: A Case Study of Brasov** *Dinu COVACIU, Melania PETREA, Stelian TARULESCU, Nicolae DARADUDA*
#817	**Investigation of a New Method for Detecting an Overheated Cell in an Automotive Electrochemical Battery** *Oleg PETROV*
#852	**Advancements in AI-Driven Control Strategies for Power Electronics in Electric and Hybrid Drivetrains** *Valerian CROITORESCU, Dragos SERBAN*

S23 · Room 3 · 16h30 Hybrid & Electric Vehicles (HEV) – Batteries and Fuel Cells

Chairpersons: 1. Elie SOLAI 2. Rodica NICULESCU

#653	**Modeling humidity distribution and ohmic losses in PEM Fuel Cells for system-level analysis: the role of anode recirculation** *Noé LABEYRIE, Georges SALAMEH, David CHALET, Michael DELIGANT*
#654	**Multi-scale modeling of lithium-ion batteries cooling: a high-fidelity thermal and electrochemical coupling framework** *Magui MAMA, Elie SOLAI, Tommaso CAPURSO, Amélie DANLOS, Sofiane KHELLADI*
#656	**CFD-Based Study of Geometric Upscaling of Bipolar Plate Flow Fields in PEM Fuel Cells for Heavy-Duty Applications** *Andrei MILITARU, Adriana MARINOIU, Adrian ENACHE, Elena CARCADEA, Adrian CLENCI*

#803	**Low temperature capacity loss in LCO and LFP cells and modules for automotive applications** *Bogdan ENACHE, Adrian CLENCI, Luminița CONSTANTINESCU, Miruna IORDACHE*
#814	**Toward thermal management of proton exchange membrane: experimental study and modeling** *Lucas MARET, François DELCOURT, Eric DELACOURT, Jérémy BASLEY, Céline MORIN, Michael DELIGANT*

S24 · Room 4 · 16h30 Hybrid & Electric Vehicles (HEV) – Hybrid and Electric Powertrains

Chairpersons: 1. Mircea OPREAN 2. Anghel CHIRU

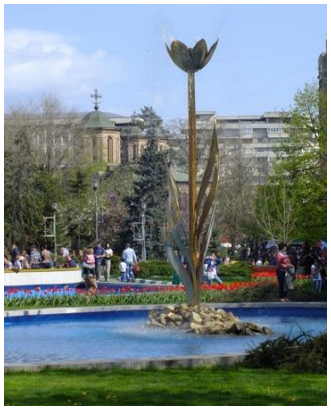
#706	**Solar Electric Vehicle (SEV) definition using a full 4x4 multi-motor powertrain** *Liviu POPESCU, Dănuţ MARINESCU*
#719	**Influence of the configuration of planetary mechanisms in the structure of the mechanical systems of hybrid vehicles on their dynamic behaviour** *Ion PARASCHIV, Dinel POPA*
#723	**Self-propulsion conditions of a hybrid electric vehicle** *Georgiana-Marinela SAVU, Dinel POPA, Ion PARASCHIV*
#809	**Co-Optimization of Electric Motor Capability and Transmission Ratio for Battery Electric Vehicles Using an Efficiency Map Utilization Framework** *Elena-Daniela LUPU, George CĂPRARU, Ștefan Lucian TABACU*
#816	**Multi-Objective Optimization of Fuel Efficiency and Emissions for Ethanol-Fueled Series Hybrid Vehicles Using Metaheuristic NMPC** *Leandro Soares PINHEIRO, Bruno Luiz PEREIRA, Evandro Leonardo Silva TEIXEIRA*

S25 · Room 5 · 16h30 Vehicle Electronics and Software (VES) / Transmission Systems (TSYS) – Vehicle Control and ADAS

Chairpersons: 1. Horia BELEŞ 2. Mihai DUGULEANĂ

#651	**ADAS system for brake-steering control using fuzzy logic** *Maria-Elena STANCIU, Mihai OPROESCU*
#724	**Control Models and Strategies in Autonomous Vehicles** *Silviu IONIȚĂ*
#743	**Learning-Based Replacement of PID Control in Adaptive Cruise Control Systems using TD3 and CarSim-Simulink Integration** *Naman CHAWLA, Martin Semanate ARMSTRONG, Moein MEHRTASH*
#815	**Application of fuzzy logic to the automation of vehicle gear shifting** *Alexandru-Mihai MOCANU, Marius-Florin TOMA, Marius-Valentin BĂȚĂUȘ*
#855	**Real-Time Object Awareness Using Edge AI and YOLO for Intelligent Vehicle Systems: A Human-Centred Framework Coupling On-Board Perception with Augmented Reality** *Mihai DUGULEANA, Tiberiu GHIȚĂ*

Authors' family names are in capitals. Contact: car2026@upit.ro



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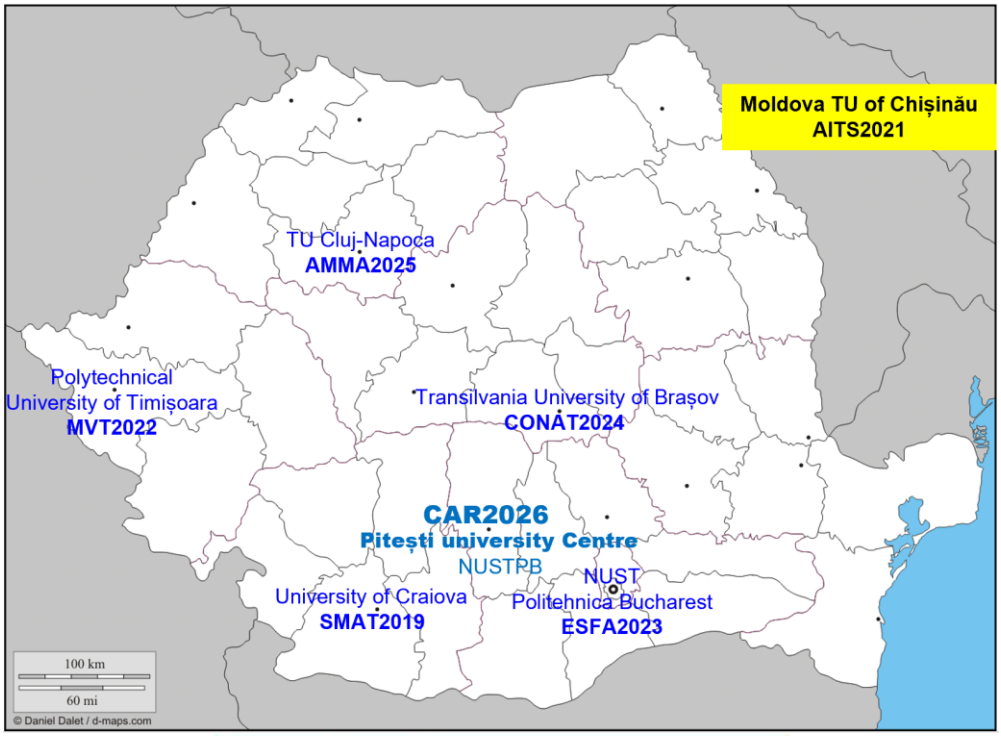

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