

#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution



# **Final Congress Programme**

With the active support of the Ministry of Infrastructure and Transportation



HELLENIC REPUBLIC MINISTRY OF INFRASTRUCTURE AND TRANSPORT



ΙΝΣΤΙΤΟΥΤΟ ΒΙΩΣΙΜΗΣ ΚΙΝΗΤΙΚΟΤΗΤΑΣ και ΔΙΚΤΥΩΝ ΜΕΤΑΦΟΡΩΝ HELLENIC INSTITUTE OF TRANSPORT

ΣΥΛΛΟΓΟΣ ΕΛΛΗΝΩΝ ΣΥΓΚΟΙΝΩΝΙΟΛΟΓΩΝ Hellenic institute of transportation engineers





### About the organisers



#### Hellenic Institute of Transport (HIT)

The Hellenic Institute of transport (HIT) was established by Presidential Decree 77 in the year 2000 under the umbrella of the Centre for Research and Technology Hellas (CERTH), which is under the supervision of the General Secretariat for Research and Technology (GSRT) of the Ministry of Development and Investment. Since its establishment in 2000, HIT has evolved towards becoming the leading research institution in Greece. It is also a highly accredited, internationally recognized and acclaimed research organization that is considered to be a source of innovation and entrepreneurship in the field of transport in Europe and is identified as a Center of Excellence. HIT provides specialized research and technical services and cooperates with local private and public bodies, as well as a large number of other institutions in Europe and all over the world.

HIT's Primary objectives are:

- Promoting and conducting advanced research in the Transportation field.
- Providing high-level services in the Transportation sector.
- Supporting Transport Innovation.
- Supporting the decision making process at government level.
- Provision of Education and Training of scientists and professionals in Transport.
- Disseminating and exploiting research results.
- Cooperation with national, local, private and public bodies and with many European and International institutes and research centers.

#### Hellenic Institute of Transportation Engineers (HITE)



The Hellenic Institute of Transportation Engineers was founded in 1976 in Athens, Greece. It currently includes over 600 members, all of them holding a postgraduate degree in transportation and carrying a long experience in the subject matter. The main objectives of HITE are:



- The promotion and propagation of scientific and technological knowledge in the field of transport by organizing seminars, conferences and roundtables, participating in international conferences and maintaining a library and archives of relevant editions and journals.
- The support of scientific and technological research in the domain of transport at national level by collaborating with public and private organisations.
- The co-operation with competent or relevant to the Institute, scientific foundations of national and international level for exchanging information, organising joint scientific meetings etc.

www.ses.gr

The recognition on the part of decision makers, public authorities, the private sector, the educational sector and the society at large, of the necessity for scientific approach and solutions to various transport related problems.

- The establishment and dissemination of technical standards for the study, realisation and management of projects related to passenger and cargo transportation.
- The advisory role to public authorities and corporations as scientific expert supporting decision making.







#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution

## Welcome letters



#### Dear all,

With great pleasure I welcome you in the 9<sup>th</sup> International Congress on Transportation Research (ICTR2019).

The Hellenic Institute of Transport has been chairing this time the Congress Scientific Committee. The challenge has been great as the Congress' focus this time is "Transport 4.0: The Intelligent Evolution"; thus very much aligned with the emerging megatrends on Artificial Intelligent, Big Data analytics and Intelligent Transportation Systems.

This challenge was approached by 183 Abstracts submitted, that resulted in 175 initially accepted papers, and finally to 130 papers accepted for publication. The

above papers were clustered in 13 thematic areas, ranging from Autonomous Transport, Electrification and C-ITS to Logistics, Transport Modeling and Economics. Within these sessions, 75 papers are presented. In addition, many young researchers present 24 short papers ("Pecha Kutcha"), to select and honor the best of them. We strongly believe that they will be the main authors of key papers in our forthcoming Congresses. Finally, 31 Poster presentations are also included in the Congress Programme.

Our Congress comes at a critical timeline, at the crossroads between the ending Horizon2020 and the planning of the Horizon Europe EC Research Programmes. Thus, our key research results per area will constitute important input to guide the future research topics and especially in contributing to the scientific debate on research priorities for the novel Smart Cities Mission and the emerging CCAM European Partnership.

The Congress opens with two keynote speeches, from the esteemed Professors Cristina Pronello of Politecnico di Torino and Nebojša Bojović from the University of Belgrade; focusing on the two main Pillars of transport research; people and goods transportation, respectively. The program includes also a special session on Research and Technological Innovation; that brings together the views of the Congress Sponsors with ENIRISST project outcomes.

We aim to keep our ICTR established record on developing scientific excellence on all Transport Research Topics.

Enjoy our Congress and get innovative ideas for the Transportation Sector future to come!

Evangelos Bekiaris CERTH/HIT Director President, ICTR 2019 Scientific Committee









Dear colleagues,

We are delighted to welcome you to the 9<sup>th</sup> International Congress on Transportation Research (ICTR)! The Congress is jointly organized by the Hellenic Institute of Transportation Engineers (HITE) and the Hellenic Institute of Sustainable Mobility and Transport Networks under the support of the Hellenic Ministry of Infrastructure and Transport and its sponsors.

HITE, as the steady co-organizer of this Congress for over 15 years, is grateful that, throughout the years, the ICTR has been embraced by the research and professional transport community as a major event that deals with innovative

new approaches to long-standing issues in all fields of transportation while additionally pointing to future opportunities and challenges that are yet to be explored. The drive behind this effort can be found in ICTR's vision for an energy-efficient, environmentally friendly, economically sustainable and community-oriented transportation sector. In this respect, "The Smart Evolution", theme of the present Congress, is particularly pertinent in the dawn of the new era; today's communities face multiple challenges (including, but not limited to, restricted economical and human resources, climate change-related phenomena, societal upheaval etc.) which put stress on the modern way of living and the functioning of the community and, in turn, call for "smart" solutions to be overcome. Transportation, as an underlying, yet remarkably important, agent in almost every aspect of human activity can help in this direction, acting as a lever towards economic and societal growth and prosperity. As such, the transportation "evolution" can be easily seen by the way information technologies (IT), intelligent transport systems (ITS), autonomous vehicles (AVs) and transport electrification gradually pave their way into everyday life, overcoming the difficulties of the past and setting themselves in position to become the norm over the years to come.

As with the previous organizations, this year too, the ICTR has been honored with a great number of submissions; from them only the finest, most novel scientific papers were selected for presentation. These papers are deemed to help advance the current knowledge on various transportation topics that are of interest not only to the research community, but to industrial partners and transportation stakeholders as well. We are, indeed, especially thankful that well-renowned researchers and professionals from all over the country and abroad chose to, once again, participate in this year's Congress, making us feel confident that ICTR 2019 will be remarkable experience for all participants and a significant milestone in transportation research, at least up until our next event!

I wish you an intellectually fruitful participation in ICTR 2019 and I sincerely hope that you enjoy your stay in Athens!

Konstantinos Kepaptsoglou

President, Hellenic Institute of Transportation Engineers







## **Programme overview**

#### Day 1: Thursday 24/10/2019

09:00-12:00	
Plenary – Opening Ceremony Room: OLYMPIA I Session Chairman: E. Bekiaris Rapporteur: K. Kepaptsoglou	
9.00-10.30	Welcome speeches from Organizers, Authorities and Sponsors
10.30-11.30	Keynote speeches
	• <b>"A socio-technological approach to make mobility smart and sustainable"</b> Prof. Cristina Pronello, Full professor Sorbonne Universités-UTC and Politecnico di Torino
	• <b>"Shifting patterns: The Future of Transportation and logistics"</b> Prof. Nebojša Bojović, Full time professor, The Dean of the Faculty of Transport and Traffic Engineering, University of Belgrade
11.30-12.00	Honorary Awards
	Konstantinos Abakoumkin, Prof Emeritus, NTUA Vassilios Strefanis, Prof Emeritus, DUTh
12.00-12.30	Coffee Break
12:30-14:30	
Session II(A) - Autonomous Transport Room: OLYMPIA IV Session Chairman: M. Panou Rapporteur: E. Vlahogianni	
<b>98</b> Autonomous Cars as Public Technology: Aspects and Approaches for the Social Acceptance and the Co-production <i>Matina Loukea and Efstathios Arapostathis</i>	
<b>37</b> Autonomous Car: Investigating Issues of Acceptance of Autonomous Vehicles by Society and Individual Citizens Ioannis Matsas, George Mintsis, Socrates Basbas and Christos Taxiltaris	
<b>173</b> Perceptions, attitudes and stated intentions towards autonomous vehicles: The case of Greece <i>Katerina Viopoulou and Tsirimpa Athina</i>	
<b>168</b> Using Autonomous vehicles in car pooling and car sharing systems: A comparison between user perceptions and performance estimations <i>Eftihia Nathanail, Panos Prevedouros, Georgia Aggida and Vaia Drakouli</i>	

**18** Optimization-based path-planning for automated vehicles Panagiotis Typaldos, Kyriakos Simon Mountakis, Markos Papageorgiou and Ioannis Papamichail

**13** Optimal route network design for shared autonomous vehicles *Theodoros Alpos, Christina Iliopoulou and Konstantinos Kepaptsoglou* 







## 9th INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH

**TRANSPORT 4.0: The Smart Evolution** 

Day 1: Thursday 24/10/2019

Session II(B) – Logistics **Room: OLYMPIA I** Session Chairman: A. Ballis **Rapporteur: M. Kapros** 

181 Freight Facility Development – A Methodological Approach for Site Selection and Assessment Maria Boile and Sotirios Theofanis

130 Analytical exploration of Big Data analytics capability in seaport Xiaotian Xie, Chukwuneke Okorie, Luciana Dalla Valle and Yi Wang

24 Very short distance Ferry crossings in Europe and Greece, an overview Georgios Papaioannou and Aristotelis Naniopoulos

117 Advanced GIS-based Vehicle Routing & Cost Estimating of Palletized loads in Distribution Planning Vasilios Apostolopoulos, George Kasselouris and Athanasios Gkardiakos

167 Can night deliveries actually work in a medium size Greek city? Nikolaos Hatzistamatis, Ioannis Karakikes and Eftihia Nathanail

108 Case Study of Port Piraeus on the OBOR Trade Route: Analysis of Throughput-growth Potential and Logistics-based Investments

Anastasios Theodosiou and Chukwuneke Okorie

Session II(C) – Transport Economics **Room: OLYMPIA III Session Chairman: E. Sabracos Rapporteur: D. Dimitriou** 

136 Open Science in Transport Research George Yannis, Martin Böhm, J. Rod Franklin, Sarah Jones, Tatiana Kovacikova, Katarzyna Nowicka and Katerina Folla

107 A methodological assessment of transport technologies in European research and innovation projects Konstantinos Gkoumas, Mitchell van Balen, Anastasios Tsakalidis and Ferenc Pekar

125 Towards a pan-European Transport master curriculum George Smyrnakis, Matina Loukea, Ioannis Ergas and Zoe Agiasophiti

138 Quantify the climate change impact implication to air transport development for tourist destinations Dimitrios Dimitriou, Maria Sartzetaki, Aristi Karagkouni and Simoni Lintzerakou

64 Incorporating Spatial Dependence in Analyzing European Road Traffic Fatalities Paraskevas Nikolaou and Loukas Dimitriou

132 The dynamics of the shipbuilding industry in the Mediterranean region: New skills and competences for supporting competitiveness via targeted educational and training programs Eleftherios Sdoukopoulos, Georgios Tsafonias, Vasiliki Perra and Maria Boile

14:30-15:00: Lunch Break

#### 15:30-17:30

Session III(A) - C-ITS Implementation **Room: OLYMPIA IV Session Chairman: E. Mitsakis Rapporteur: P. Papantoniou** 67 Hybrid methodology for improving air traffic demand forecasts







## 9th INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH

**TRANSPORT 4.0: The Smart Evolution** 

#### Day 1: Thursday 24/10/2019

Stylianos Kolidakis, George Botzoris and Vasilleios Profyllidis

175 Building up the Use Cases for an in-pavement C-ITS system taking into account key influencing factors and parameters Michael Gogas, Maria Gkemou, Aristotelis Spiliotis and Maria Panou

114 C-ITS bundling for integrated traffic management Areti Kotsi, Evangelos Mitsakis and Vasileios Psonis

112 A microsimulation approach for the impact assessment of a Vehicle-to-Infrastructure based Road Hazard Warning system

Kallirroi N. Porfyri, Areti Kotsi and Evangelos Mitsakis

135 National Access Points for Intelligent Transport Systems Data: From Conceptualization to Benefits Recognition and Exploitation

Georgia Aifantopoulou, Chrysostomos Mylonas, Alexandros Dolianitis, Afroditi Stamelou, Vasileios Psonis and Evangelos Mitsakis

39 Data collection and processing for intelligent urban mobility and cooperative transport systems Panagiotis Tzenos, Georgia Aifadopoulou, Josep-Maria Salanova and Neofytos Boufidis

#### Session III(B) - Electrification Room: OLYMPIA III Session Chairman: M. Gkemou Rapporteur: Ch. Milioti

84 European Citizens' Mindset versus European Commission's Targets for Alternative Fuels Anna Drivakou, Eleni Mantouka, Tatiana Moschovou and Eleni Vlahogianni

12 Electric Transit Route Network Design Problem with Dynamic Wireless Charging Infrastructure Location Christina Iliopoulou and Konstantinos Kepaptsoglou

116 Impacts of Dynamic Eco-driving on the Energy Consumption of Electric Vehicles and Hybrids Sokratis Mamarikas, Evangelos Mintsis, Stylianos Doulgeris, Leonidas Ntziachristos, Eleni I. Vlahogianni and Evangelos Mitsakis

133 The impact of LNG ports in the European energy security Athanasios Ballis and Tatiana Moschovou

120 Planning for the development of a Greek National Network of Electric Vehicles' Charging Infrastructure Katerina Chrysostomou, Andreas Nikiforiadis and Georgia Aifadopoulou

157 Is A Temporary Change In Mode Choice A Motivation To Switch Individuals Travel Behavior? Findings From A Latent Class Model

Nikoleta Krousouloudi and Amalia Polydoropoulou

### Session III(C) – Transport Modelling **Room: OLYMPIA I**

Session Chairman: E. Nathanail **Rapporteur: I. Spyropoulou** 

59 Comparing the performance of Artificial Neural Networks and Social Force model on pedestrian simulation George Kouskoulis, Ioanna Spyropoulou and Constantinos Antoniou

45 Mining spatio - temporal features of city traffic Panagiotis Fafoutellis and Eleni Vlahogianni

27 A mixed-integer programming approach to infer trip-chains from transient OD matrices Theocharis Ballis and Loukas Dimitriou

20 Using Luti models to develop Key Performance Indicators (KPIs) for evaluating land use impacts







#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution

Day 1: Thursday 24/10/2019

Paraskevi Sarri, Ioannis Kaparias, Konstantinos Kepaptsoglou, Andrei Leon and Tomas de la Barra

**62** Operational Analyses of Freeway Off-Ramp Bottlenecks Fanis Papadimitriou, Dimitris Sermpis, Alexander Skabardonis and Bill Halkias

**121** Identification of Critical Driving Parameters Affecting Speeding Using Data from Smartphones *Aristotelis Kokkinakis, George Yannis and Dimitrios Tselentis* 

**46** Greek driver attitudes towards aggressive driving Angeliki Stefatou, Apostolos Ziakopoulos, Athanasios Theofilatos and George Yannis

## **Official Dinner**

### Thursday 24.10.2019, time 20:00pm SIN ATHINA ROOF Garden, 2 Heraklidon str., Thissio

#### http://www.sinathina.gr





ΙΝΣΤΙΤΟΥΤΟ ΒΙΩΣΙΜΗΣ ΚΙΝΗΤΙΚΟΤΗΤΑΣ και ΔικτύΩν Μεταφορών Hellenic institute of transport





#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution

Day 2: Friday 25/10/2019

09:00-11:00

Session IV(A) – Transport Infrastructure Room: OLYMPIA IV Session Chairman: S. Mavromatis Rapporteur: M. Sartzetaki

**65** Aspects of Safe Road Design for the Aging Road Users Sophia Vardaki, George Kanellaidis

**7** A computational framework for the safe movement of Automated Straddle Carriers in ports *Georgios Tsaples, Georgia Aifadopoulou and Josep Maria Salanova Grau* 

**54** Investigating Traffic Impacts of Connected and Autonomous Vehicles (CAVs) on Multi-lane Roundabouts *Apostolos Anagnostopoulos and Fotini Kehagia* 

**25** Parametric investigation of vehicle minimum turning path *Panagiotis Lemonakis, George Kaliabetsos and Nikolaos Eliou* 

**161** Development of a Composite Accessibility Indicator for Sites of Special Interest: The case of the Egnatia Motorway *Ioannis Politis, Eleni Verani, Anastasia Tasopoulou, Anastasia Nikolaidou, Charikleia Kiriakidou and Vasilios Fourkas* 

**137** Airport asset valuation: a commercial perspectives approach *Maria Sartzetaki and Dimitrios Dimitriou* 

Session IV(B) – Transport Planning Room: OLYMPIA III Session Chairman: M. Boile

Rapporteur: A. Anagnostopoulou

**3** Crowd-learning techniques exploitation for acceptable and effective transport planning; the MOTIVATE app paradigm *Maria Morfoulaki, Glykeria Myrovali, Kornilia Maria Kotoula and Bartholomew-Michael Vassilantonakis* 

**103** Decision Support System for Minimizing Risk in Traffic Control *Eleni Papatzikou and Antony Stathopoulos* 

**80** The role of Motorway Operators in the provision of Mobility as a Service *Bill Halkias, Helen Tyrogianni and Natalie Kalfa* 

**34** Applicability verification - A supportive tool for undertaking feasibility studies on urban railway systems *Christos Pyrgidis* 

**19** Planning and development of a Hub and Spoke network for maritime transport. Case study area: Cyclades, Greece *Panagiota Georgia Saranti and Dimitra Chondrogianni* 

**32** Flying a swarm of drones over Athens: Our experience from a first-of-its kind experiment *Emmanouil Barmpounakis and Nikolas Geroliminis* 

Session IV(C) – Pecha – Kucha presentations (up to 5' each) Room: OLYMPIA I Session Chairman: K. Kepaptsoglou Rapporteur: V. Kappatos

**Autonomous Transport** 

**75** Impact of an industry developed safety framework for automated vehicles on highway traffic flow *Konstantinos Mattas, Michail Makridis, George Botzoris, Biagio Ciuffo and Basil Papadopoulos* 

**68** Connected, Autonomous & Electrical Vehicles:Environmental Impacts – A review *Pantelis Kopelias, Elissavet Demiridi and Alexandros Skabardonis* 







## 9th INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH

TRANSPORT 4.0: The Smart Evolution

### Day 2: Friday 25/10/2019

**74** Investment in innovative technology versus traditional infrastructure improvements: a preliminary analysis of CAV implementation for network bottleneck removal in Maryland *Eirini Kastrouni, Carlos Carrion and Lei Zhang* 

**180** Needs and expectations of older passengers in using autonomous public transport *Maria Panou and Miranda Maglavera* 

#### **Transport Economics**

**96** Urban Mobility, Demand Elasticity and Financial Crisis *Despoina Nimorakiotaki and Evangelos Sambracos* 

**160** Uber vs taxis: investigating public opinion in Greece Sofia Athanasopoulou, Evangelos Genitsaris, Aristotelis Naniopoulos and Dimitrios Nalmpantis

**129** How efficient are Greek airports? The role of low cost and charter airlines *Annitsa Koumoutsidi, Ioanna Pagoni and Paraskevi Psaraki-Kalouptsidi* 

#### Electrification

**56** Embracing Electromobility in Greece: Analysis of good practices in the Region of Attica *Foteini Orfanou, Panagiotis Papantoniou, Eleni Vlahogianni and George Yannis* 

#### **Transport Modelling**

**17** Application of geographically weighted regression for identifying factors affecting bus bunching at the station-level

Evangelia Chioni, Christina Milioti, Christina Iliopoulou and Konstantinos Kepaptsoglou

**172** Development of regression models for the examination of parameters affecting bus run time at urban networks

Konstantina Varvatou, Ioanna Spilia and Ioannis Politis

**82** Revisiting Travel Mode and Time of Departure Choices in EU Regions: Differences, Similarities and Some Insights

Eleni Mantouka, Paraskevi Koliou, Foteini Nouskali, Alexandros Papacharalampous, Eleni Vlahogianni and Alexandros Deloukas

**63** Investigation of the operational performance of priority junctions using microscopic simulation *Georgios Makrypoulias and Ioanna Spyropoulou* 

**58** Impact of mobile phone use on the road network *Evangelos Kotsialos and Ioanna Spyropoulou* 

#### **Transport Planning**

**36** Estimating and comparing travel times with all passenger transport means on the Thessaloniki-Athens journey

Christos Pyrgidis and Panteleimon Rapanakis

#### **Urban Mobility**

**152** Estimation of short-time parking demand at off-road stations *Kyriakos Michailidis and Ioannis Politis* 

**164** A multicriteria approach for the optimal selection of measures in Sustainable Urban Mobility Plans *Christina Balla, Ioannis Politis, Panagiotis Papaioannou and Yiannis Xenidis* 

**6** Redefining road network hierarchy towards sustainable mobility. The case of Athens *Stefanos Tsigdinos and Thanos Vlastos* 

**60** Application of the Analytical Hierarchy Process for the investigation of the impact of different event types on the safety and comfort of pedestrians and cyclists in shared-use infrastructures







#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution

Day 2: Friday 25/10/2019

Iliana Marina Garyfalou, Iasonas Meintanis, Thomas Papas, Mirto Trouva, Andreas Nikiforiadis and Socrates Basbas

**49** Investigation of sustainable mobility plans in Mediterranean university campuses *Elisavet Kakridoni, Panagiotis Papantoniou, Eleni Vlahogianni and George Yannis* 

#### **Transport Safety**

**143** Techno-Economical Evaluation of Accidents' Preventing Measures and Remedial Measures in Intersections on Existing Rural Two-Lane Highways

Vassilios Matragos, Konstantinos Apostoleris, Dimitrios Bontozis and Stergios Mavromatis

**44** A review of the impact of driver distraction on driving behavior and road safety *Armira Kontaxi, Apostolos Ziakopoulos, Dimitrios Tselentis and George Yannis* 

**48** Self-assessment and driver behaviour *Mikaela Panagiotopoulou, Panagiotis Papantoniou and George Yannis* 

**71** Tourism and Road Accidents in Greece Dimitrios Nikolaou, Katerina Folla, Evangelos Bellos and George Yannis

#### **Smart Cities & Urban Mobility**

**155** Factors affecting tourists' destination choice in Greek islands and travel behavior during their vacations in Chios island

Pinelopi Tsoukala Nikoleta Krousouloudi and Amalia Polydoropoulou

#### 11.00-11.30 Coffee Break

#### 11:30-14:00

Session V(A) – Urban Mobility Room: OLYMPIA I Session Chairman: G. Aifadopoulou Rapporteur: Y. Tyrinopoulos 170 Assessing the Level of Service of streets with elements of shared space

Ioannis Kaparias and Rui Wang

**149** Innovative aspects for the take up of Sustainable Urban Mobility Plans: The contribution of the InovaSUMP project *Panagiotis Papaioannou, Ioannis Politis, Manos Vougioukas and Anastasia Nikolaidou* 

**147** Enhancing Micromobility economies through Bike Sharing Systems *Ioannis Politis, Ioannis Fyrogenis, Efthymis Papadopoulos, Anastasia Nikolaidou and Eleni Verani* 

**126** Activity patterns analysis of the bike sharing system of Thessaloniki, Greece Neofytos Boufidis, Andreas Nikiforiadis, Josep Maria Salanova Grau, Katerina Chrysostomou, Georgia Aifadopoulou and Athanasios Tolikas

**5** A comparative evaluation of factors affecting students' mode choice in urban and suburban environment – The case of Democritus Thrace University campus decentralization *Kornilia Maria Kotoula and Georgios Botzoris* 

**11** Investigation of the degree of satisfaction of the Athens Metro passengers and the influence of the economic crisis in its use

Yannis Tyrinopoulos and Christina Milioti

**72** Facilitating Mobility in Urban Environments for People with Physical Disabilities: A multimedia application *Iliana Marina Garyfalou, Petros Karkanias, Panagiotis Tsalis and Aristotelis Naniopoulos* 

29 Crowd-learning, target setting and intermodality investing; Corfu leading by example areas of high seasonal demand







#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution

Day 2: Friday 25/10/2019

Glykeria Myrovali, Maria Morfoulaki and Michail Agathos

Session V(B) – Transport Safety Room: OLYMPIA III Session Chairman: G. Yannis Rapporteur: I. Politis

Invited Speech: Safe Road Design, Prof. George Kanellaidis, Emeritus Professor NTUA

**33** Road Safety Education as a key pillar of road safety in modern era, *Stavroula Ntemogianni, George Mintsis, Christos Taxiltaris and Socrates Basbas* 

**43** Mapping risky driving behavior in urban road networks *Georgia Lagou, Emmanouil Barmpounakis and Eleni Vlahogianni* 

**41** Potential of technology-based strategies for mitigating older driver risk *Nikiforos Stamatiadis and Adam Kirk* 

**51** Impaired cycling and crash involvement in OECD countries *George Yannis, Alexandra Laiou, Christina Gonidi, Zoi Christoforou and Régine Seidowsky* 

**83** What is your driving identity? Some empirical findings using large-scale smartphone sensors' data *Eleni Mantouka and Eleni Vlahogianni* 

**115** Investigating Pedestrians' Crossing Behavior While Using A Mobile Phones At Signalized And Unsignalized Intersections In The City Of Thessaloniki *Vasiliki-Maria Perra and Socrates Basbas* 

**141** Mobile phone use and driving behaviour at night *Helen Andrikopoulou and Ioanna Spyropoulou* 

**77** Thematic Fact Sheets on Road Safety Risk Factors in Africa – A Knowledge and Management Tool *George Yannis, Stergios Mavromatis, Alexandra Laiou and Katerina Folla* 

Session V(C) – Poster Session Room: Veranda Г shape Session Chairman: E. Gaitanidou Rapporteur: S. Vardaki

**38** Assessing Greek Consumers' Intension to Adopt Highly Automated Vehicle Technology *Ilias Panagiotopoulos and George Dimitrakopoulos* 

**87** Getting ready for automation - The Drive2theFuture project *Evangelia Gaitanidou and Evangelos Bekiaris* 

**95** Assessing the Readiness of Greece for Autonomous Vehicle Technologies Chrysostomos Mylonas, Charis Chalkiadakis, Alexandros Dolianitis, Dimitris Tzanis and Evangelos Mitsakis

**8** Regional Innovation in Mobility: Development Framework through matching local needs and local capabilities *Panagiotis Iordanopoulos, Georgia Aifadopoulou, Sofoklis Dais and Maria Stefanidou* 

**15** Modeling fare evasion in the Athens metro system Christina Milioti, Aggelos Panoutsopoulos, Konstantinos Kepaptsoglou and Yannis Tyrinopoulos

**88** Estimation of value-of-time and willingness to pay for ride-sharing transport services in Thessaloniki Georgia Aifandopoulou, Maria Konstantinidou, Neofytos Boufidis, Josep Maria Salanova Grau, Georgios Tsaples and Panagiotis Tzenos

171 Methodology for the economic assessment of road safety interventions







#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution

#### Day 2: Friday 25/10/2019

George Yannis, Anastasios Dragomanovits, Julia Roussou and Dimitrios Nikolaou

**9** A cooperative warning system for drivers around level-crossings in Thessaloniki Georgia Aifadopoulou, Neofytos Boufidis, Panagiotis Tzenos, Athanasios Tolikas, Josep-Maria Salanova and Maria Konstantinidou

**105** Harmonization and interoperability of Cooperative Intelligent Transportation Systems Architectures in Europe and USA

Areti Kotsi, Tom Lusco and Evangelos Mitsakis

**106** Training Opportunities for Intelligent Transport Systems and Cooperative Intelligent Transport Systems *Charis Chalkiadakis, Panagiotis Iordanopoulos and Evangelos Mitsakis* 

**111** Overview of Cooperative Intelligent Transportation Systems Deployment Projects in Europe and USA *Areti Kotsi, Dimitris Tzanis and Evangelos Mitsakis* 

**31** Design and development of the National Access Point of ITS data in Greece for the provision of harmonized traveller information services

Georgia Aifantopoulou, Evangelos Mitsakis, Afroditi Stamelou, Alexandros Dolianitis, Chryssostomos Mylonas and Vassilios Psonis

**69** Testing a digital level crossing warning system for road traffic users with a naturalistic driving study *Christian Wille, Neofytos Boufidis, Josep-Maria Salanova, Annika Dreßler and Jan Grippenkoven* 

**127** Investigating alternative signaling priority strategies along tram corridor *Eleni Papatzikou and Panos Papadakos* 

**177** Is car pooling in dense urban environments effective? The case of Zografou municipality employees *Trisevgeni Papagerasimou, Konstantinos Athanasopoulos, Efthimios Bakogiannis and Thanos Vlastos* 

**119** Transition to corridor management and integrated transport planning in Western Balkans *Nedim Begovic and Nerejda Hoxha* 

**50** Methodology of assessing urban mobility interventions in the city of Serres *Foteini Mikiki and Maria Morfoulaki* 

**42** Investigation of the operation of a dedicated bus lane running from the city's center to suburban areas *Panagiotis Vaitsis, Ioanna Zarkali, Georgia Liouta and Socrates Basbas* 

**156** Development of an interactive tool for the performance evaluation of a public transport operator *Olga - Maria Giannakari and Ioannis Politis* 

**145** Measuring the anxiety level at travelers in urban areas through the S-Anxiety psychometric test *Eleni Avrana, Nikoleta Senikidou and Ioannis Politis* 

**21** Dynamic Carpooling as an alternative mode of urban transportation *Panagiota Georgia Saranti and Yorgos Stephanedes* 

**97** Urbanization of Air Transport *Takis Adamidis* 

**183** Mobility-as-a Service in the Smart City Era: The Design of a Stated Adaptation Experiment to Assess the Effects of MaaS on Day-to-Day Travel Mode Choice Behavior Anna-Maria Feneri, Soora Rasouli and Harry Timmermans

**61** Road Safety Inspection - Methodological Approach Assessment *Stelios Efstathiadis and Panteleimon Karageorgos* 

**78** Road Safety Culture Among Car Drivers and Motorcycle Riders in Greece: Examining Influencing Factors







## 9th INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH

**TRANSPORT 4.0: The Smart Evolution** 

#### Day 2: Friday 25/10/2019

Tor-Olav Nævestad, Torkel Bjornskau, Alexandra Laiou and George Yannis

100 Enabling older citizens' safe mobility: the ACTIVAGE project's approach Charis Chalkiadakis, Evangelos Mitsakis and Dimitris Tzanis

122 Underage Drinking and the Risk of Involvement in Road Traffic Accidents Dimitra Georgogianni and Vangelis Makris

10 Towards a full driver characterization to analyse distraction and drowsiness Sónia Soares, Sara Ferreira, António Couto, José Pedro Tavares, António Lobo, Rosaldo Rossetti and Ana Bastos

**169** Evaluation of an intervention for the reduction of stress and aggression while driving Maria Papadakaki, Nikolaos Stamou, Stefanos Bessas and Chliaoutakis Joannes

153 Evaluation of balance and mobility of officers in the PTW police unit (DI.AS.) Of the Greek police force, in the beginning and at the end of their shift

Stamatios Kontogiannis and Nikoleta Krousouloudi

179 Transport mode ON: How to set a discrete choice survey to predict commuters' mode preferences Eleni Chalkia, George Yiannis, Evangelos Bekiaris

14:00-15:00 Lunch Break

#### 15:00-16:30

Session VI(A) - Research and Technological Innovation Session **Room: OLYMPIA I** Session Chairman: K. Kepaptsoglou **Rapporteur: Y. Tyrinopoulos** 

Presentations will be given by the sponsors of the congress and the scientific managers of the research infrastructure project EN.I.R.I.S.S.T.

Session VI(B) - Resilience & Security **Room: OLYMPIA IV** Session Chairman: J. Salanova **Rapporteur: I. Benekos** 

123 How Cooperative Intelligent Transport Systems can contribute to a resilient transport infrastructure? Charis Chalkiadakis and Eleni Vlahogianni

16 Investigation of the impact of subway strikes and weather conditions on bus running times Katerina Kolliou, Christina Iliopoulou, Christina Milioti and Konstantinos Kepaptsoglou

**182** Comprehensive framework on asset management of transportation networks and resilience planning Afroditi Anagnostopoulou, Aggelos Aggelakakis, Maria Boile and Arjan Hijdra

85 Comprehensive risk management framework for transit port infrastructure Attila Akac, Afroditi Anagnostopoulou and Maria Boile

131 Port environmental sustainability: Best practice identification in Europe and the value of knowledge and experiencesharing

Eleftherios Sdoukopoulos, Nikolaos Anastasiadis, Alkiviadis Tromaras and Maria Boile

Session VI(C) – Smart Cities & Urban Mobility **Room: OLYMPIA III** Session Chairman: P. Kopelias Rapporteur: M. Morfoulaki







#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH **TRANSPORT 4.0: The Smart Evolution**

Day 2: Friday 25/10/2019

148 Development of a methodology for the integrated assessment of urban parking conditions using geographic information systems

Anastasia Nikolaidou, Eleni Verani, Georgios Georgiadis, Alexandros Sdoukopoulos, Ioannis Politis and Panagiotis Papaioannou

53 Cruising for Parking Space in Cities: Algorithms and Evidence using smartphone sensing Vaia Drosou, Emmanouil Barmpounakis and Eleni Vlahogianni

73 Investigating the efficiency of dockless bike sharing system (DBSS) in medium sized cities. The case of Rethymno, Greece

Efthimios Bakogiannis, Maria Siti, Stefanos Tsigdinos, Avgi Vassi and Alexandros Nikitas

79 Human Factors in designing for users in accidents & The advantages of UX design in Smart Cities – A Roadside Assistance Mobile Application (RAC) case study Evangelia Vaggeli Margariti

118 MaaS for tourists? Modelling user preferences in 2 European cities Ioannis Tsouros, Amalia Polydoropoulou, Athena Tsirimpa and Ioanna Pagoni

16:30-17:30

**Plenary Closing Ceremony Room: OLYMPIA I** Session Chairman: G. Yannis **Rapporteur: K. Kepaptsoglou** 

- 1. Matthew Karlaftis Award Best PhD student paper
- 2. Dimitrios Tsampoulas Award Best Graduate or Master Degree student paper
- 3. Young Researcher Best Publication on Road Safety Award



ΕΝΩΣΗ ΑΣΦΑΛΙΣΤΙΚΩΝ ΕΤΑΙΡΙΩΝ ΕΛΛΑΔΟΣ

**SALFO** AND ASSOCIATES SA

## **GOLDEN SPONSORS**

Marathon Data Systems





POLINDE



ΙΝΣΤΙΤΟΥΤΟ ΒΙΩΣΙΜΗΣ ΚΙΝΗΤΙΚΟΤΗΤΑΣ και ΔΙΚΤΥΩΝ ΜΕΤΑΦΟΡΩΝ HELLENIC INSTITUTE OF TRANSPORT







#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution



## Η τεχνολογία φίλτρων καυσίμων των αεροσκαφών για το diesel του αυτοκινήτου σας.

Γνωρίζετε πως το αυτοκίνητό σας μοιράζεται την ίδια τεχνολογία με ένα αεροσκάφος; Είναι η τεχνολογία φίλτρων καυσίμων των αεροσκαφών που πρώτη εφάρμοσε η ΕΚΟ στο **Diesel Avia Double Filtered**. Χάρη στα νέας γενιάς βελτιωτικά πρόσθετα προσφέρει εξαιρετικές καθαριστικές ιδιότητες και αυξημένο αριθμό κετανίων και σας εξασφαλίζει καθαρότερο κινητήρα και μεγαλύτερη οικονομία.



www.eko.gr | 🚮



ΙΝΣΤΙΤΟΥΤΟ ΒΙΩΣΙΜΗΣ ΚΙΝΗΤΙΚΟΤΗΤΑΣ και ΔικτγΩΝ ΜεταφορΩΝ Hellenic institute of transport





9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution



www.hellastron.com



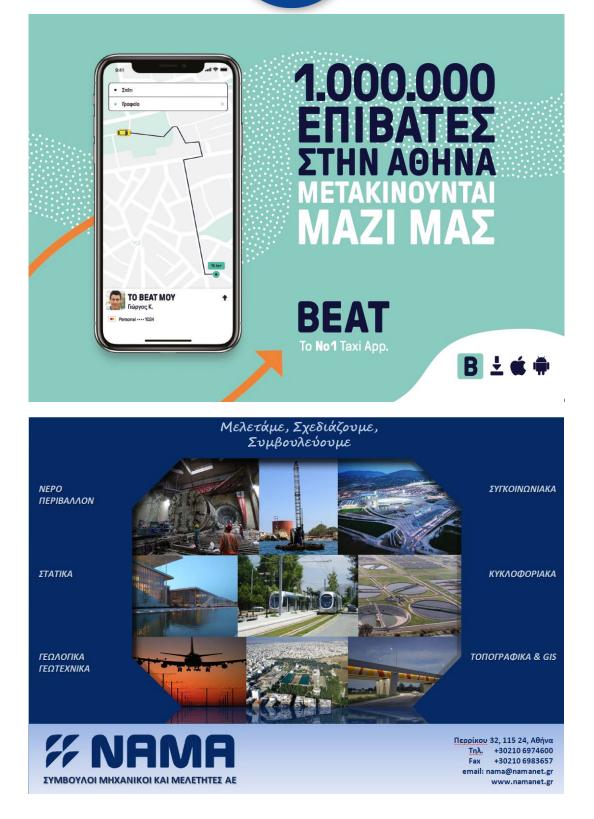


ΙΝΣΤΙΤΟΥΤΟ ΒΙΩΣΙΜΗΣ ΚΙΝΗΤΙΚΟΤΗΤΑΣ και ΔικτύΩν Μεταφορών Hellenic Institute of Transport





#### 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH TRANSPORT 4.0: The Smart Evolution





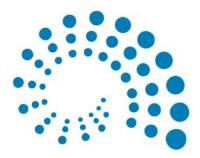
ΙΝΣΤΙΤΟΥΤΟ ΒΙΩΣΙΜΗΣ ΚΙΝΗΤΙΚΟΤΗΤΑΣ και ΔΙΚΤΥΩΝ ΜΕΤΑΦΟΡΩΝ Hellenic institute of transport





## 9<sup>th</sup> INTERNATIONAL CONGRESS on TRANSPORTATION RESEARCH

**TRANSPORT 4.0: The Smart Evolution** 



HELLENIC ASSOCIATION **OF INSURANCE** COMPANIES



#### **Collector for ArcGIS**

Η εφαρμογή Collector for ArxGIS αποτελεί μέρος του Geospatial Cloud της Esri με λειτουργικότητα προσανατολισμένη στην εύχρηστη συλλογή δεδομένων GIS στο πεδίο. Απευθύνεται στο προσωπικό που εργάζεται στο ύπαιθρο, καταγράφοντας δεδομέναμε την χρήση φορητών συσκειών, όπως smartphones και tablets, συνήθως αξοποιώντας τους ενσωματωμένους ή εξιατερικούς δέκτες εντοπισμού θέσης. Η καταγραφή μπορεί να πραγματοποιείται ανόμη και χωρίς σύνδεση στο διαδίκτου, με δωνατότητα συγχροικομού των δεδομένων πεδίου, με τα δεδομέναι που διατηρεί κεντρικά το σύστημα GIS.

Ð

#### Αντιπροσωπευτικές δυνατότητες της εφαρμογής Collector for ArcGIS

- μοσωπικου. ίαταγραφή δεδομένων στο πεδίο, συνοδευόμενων ιπό τεκμηριώσεις μέσω φωτογραφιών, βίντεο και



#### θέσης που προσφέρει κάθε φορητ την χαρτογράφηση των δεδομένων στο πεδία Συλλογή δεδομένων υψηλής ακρίβειας, όταν η φορητή συσκευή ετικοινωνεί με επαγγελματικ δέκτες καταγραφής θέσης σε επίπεδο εκατοστο

Λειτουργία με σύνδεση στο διαδίκτυο και άμεση ενημέρωση της κεντρικής βάσης δεδομένων GIS από το πεδίο. απο το πεοιο. Συλλογή δεδομένων χωρίς σύνδεση στο διαδίκτυο και συγχρονισμός κατά την αποκατάσταση της σύνδεσης.



#### Marathon Data Systems

website: www.marathondata.gr - email: marathon@marathondata.gr -  $\tau\eta\lambda$ : 210 6198866







ΙΝΣΤΙΤΟΥΤΟ ΒΙΩΣΙΜΗΣ ΚΙΝΗΤΙΚΟΤΗΤΑΣ και ΔΙΚΤΥΩΝ ΜΕΤΑΦΟΡΩΝ HELLENIC INSTITUTE OF TRANSPORT



9<sup>th</sup> International Congress on Transportation Research

## **ICTR 2019**

**Transport 4.0: The Smart Evolution** 24-25 October 2019, Athens, Greece

www.ictr.gr

#### Hellenic Institute of Transport (HIT)

6th Km Charilaou - Thermi Rd. PO Box 361 - 57001 Thermi, Thessaloniki - Greece Tel: (+30) 2310498263, Fax (+30) 2310498269, www.hit.certh.gr - hit@certh.gr

#### Hellenic Institute of Transportation Engineers (HITE)

Panormou Street 61 GR - 11524 Athens, Greece, Tel: (+30) 210 3640604, Fax (+30) 210 3609220, www.ses.gr - info@ses.gr