

Special Session/Workshop V

MOMENTUM - Modelling Emerging Transport Solutions for Urban Mobility

Abstract

In the era of sustainable urban mobility, new trends such as vehicle sharing, demand responsive transport and Connected Autonomous Vehicles (CAV's) as well as the need of bundling the mobility services (Mobility as a Service-MaaS) are increasingly gaining ground. Although the new mobility landscape is highly promising for the achievement of a more sustainable and resilient mobility system, urban mobility should be managed by the cities in a way that reconciles the various conflicting interests to maximize the benefits of the different mobility solutions.

This special session is organized by the H2020 MOMENTUM project. MOMENTUM is a city-led effort that aims to develop a set of new data analysis methods, transport models and planning support tools able to capture the impact of new transport options on urban mobility, in order to support cities in the task of designing the right policy mix to exploit the full potential of emerging mobility solutions.

Aim of the Special Session/Workshop

The acceleration of technology evolution is changing urban mobility, enabling a shift towards a more sustainable mobility. ICTs are facilitating new mobility options such as vehicle sharing and demand responsive transport, the emergence of Mobility as a Service (MaaS), and the rapid development of Connected and Autonomous Vehicles (CAVs).

The new mobility landscape is highly promising for the achievement of a more sustainable and resilient mobility system. However, the impacts of the new mobility schemes need to be evaluated in order to identify and manage possible negative effects, like the shift from public transport to less sustainable modes or the possible exclusion of vulnerable users, to harness their full potential. Urban mobility should be managed by the cities in a way that reconciles the various conflicting interests and maximize the benefits of the different mobility solutions.

In this context, ICTs are opening exciting opportunities. A variety of sensors are being deployed in the so-called smart cities to measure traffic volumes and speeds, position of public transport vehicles, etc. In parallel, the digital traces left by personal geolocated devices such as mobile phones allow the reconstruction of mobility patterns for large segments of the population. This creates new challenges for transport modelling and forecasting, rising the questions of whether or not current transport modelling approaches and decision support tools are able to capture the impact of the new mobility forms on changes of the mobility patterns. Thus, new evidence-based modelling approaches are developed. Innovative decision support tools that allow policy-makers to evaluate efficiently the emerging transport policies are required.

The incorporation of the knowledge acquired by the new transport modelling into the policy cycle is expected to provide useful insights on how to achieve a credible integration of quantitative, evidence-based approaches into participatory planning processes. Thus, the exploitation of the opportunities of the new mobility patterns and transport solutions will help European cities face the challenges associated to the new and increasingly complex urban mobility landscape.

Topics of interest

- Data analysis techniques for mobility patterns extraction from heterogenous data sources
- Data driven transport models for shared mobility simulation
- New modelling paradigms for capturing shared mobility
- Planning and decision support tools for managing new mobility options.

Organizers

Main Organizer: Dr. Jose Maria Salanova Grau - Hellenic Institute of Transport- Centre for Research and Technology Hellas, Thessaloniki Greece- jose@certh.gr

Dr. Josep Maria Salanova Grau is a researcher at CERTH/HIT and holds a Civil engineering diploma and PhD in transport modelling from the Polytechnic University of Catalonia in Barcelona and a MSc in civil and transportation engineering from the Aristotle University of Thessaloniki, Greece. He is leading the “Data analysis and modelling” laboratory and he has participated in various EU research projects in the field of transport, as well as in numerous national and EU transport studies. His scientific interests concern research and developments in transport and mostly in algorithm and model development, mobility, intermodal transport and logistics as well as Data Science and Big Data at the transport domain.

Associated project(s)

MOMENTUM project (2019-2022, <https://h2020-momentum.eu/>) receives funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 815069.

Target audience

The special session will attract the interest of research and industry, since mobility data analysis and exploitation methods will be discussed, and transport models, planning and decision support tools that are able to capture the impact of new transport options and ICT-driven behavioral changes on urban mobility will be presented. The outputs of the session will also be a valuable input for the support of public authorities in the task of designing the right policy mix, to exploit the full potential of emerging mobility solutions.

Structure of the workshop

Workshop V - Modelling Emerging Transport Solutions for Urban Mobility (MOMENTUM)

09:00-11:00

Room: Bridges

Organizer: Dr. Jose Maria Salanova Grau, Hellenic Institute of Transport/ Centre for Research and Technology Hellas (CERTH), jose@certh.gr

Co-organizers: Evaripidis Magkos, Research Associate, Hellenic Institute of Transport/ Centre for Research and Technology Hellas (CERTH)
Maria Konstantinidou, Research Associate, Hellenic Institute of Transport/ Centre for Research and Technology Hellas (CERTH)

Zisis Maleas, Research Associate, Hellenic Institute of Transport/ Centre for Research and Technology Hellas (CERTH)	
09:00-09:20	Modelling of on-demand bus systems - Miquel Estrada (UPC – BarcelonaTech, Spain)
09:20-09:40	Analysing share mobility use patterns from heterogeneous big data sources - Ignacio Martin (Nommon Solutions and Technologies S.L, Madrid, Spain)
09:40-10:00	Adoption and usage patterns of station-based electric car-sharing: a case study in Regensburg - Antonio Masegosa (DeustoTech, Faculty of Engineering, University of Deusto, Spain)
10:00-10:20	Factors influencing the car users to shift to bike-sharing: A case study on Alexandroupolis, Greece - Narayanan Santhanakrishnan (Technical University of Munich-TUM, Germany)
10:20-10:40	Development of software tools for the decision-making in planning of smart mobility services in urban environments - Zisis Maleas (CERTH-HIT, Thessaloniki Greece)
10:40-11:00	Modeling of Innovative mobility services in Thessaloniki - Athina Tympakianaki (Aimsun, Spain)

Invited speakers/regular presentations

- Miquel Estrada (UPC – BarcelonaTech, Spain): “Modelling of on-demand bus systems”
- Ignacio Martin (Nommon Solutions and Technologies S.L, Madrid, Spain): “Analysing share mobility use patterns from heterogeneous big data sources”
- Antonio Masegosa (DeustoTech, Faculty of Engineering, University of Deusto, Spain): “Adoption and usage patterns of station-based electric car-sharing: a case study in Regensburg”
- Narayanan Santhanakrishnan (Technical University of Munich-TUM, Germany): “Factors influencing the car users to shift to bike-sharing: A case study on Alexandroupolis, Greece”
- Zisis Maleas (CERTH-HIT, Thessaloniki Greece): “Development of software tools for the decision-making in planning of smart mobility services in urban environments”
- Athina Tympakianaki (Aimsun, Spain): “Modeling of Innovative mobility services in Thessaloniki”