



Modelling Emerging Transport Solutions for Urban Mobility

State of research on emerging mobility solutions

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Prof. Dr. Constantinos Antoniou Chair of Transportation Systems Engineering Technical University of Munich

c.antoniou@tum.de



Background and motivation

Overall approach

Shared mobility towards MaaS

We were promised





... but still









Source: Nacto, https://nacto.org/shared-micromobility-2019/

Motivation

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□ Shared mobility services were abruptly introduced

□ No prior planning, no understanding and evaluation

Open questions include:

- Spatio-temporal demand patterns for the different services
- Factors impacting demand
- Factors attracting users from other modes of transport to shared services
- Interaction between the different shared services (incl. "internal" competition)
- Shared services' impact on the VKT
- Identification of policies required for efficient and effective urban operations
- Modelling of shared mobility requires agent-based approaches (based on the literature)



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H2020 MOMENTUM - Needs & objectives



- □ Many cities continue to use the traditional strategic four-step modelling approach
- □ (Especially) small & medium sized cities do not have the resources to develop new models
- □ Need for an intermediate modelling approach, which can be integrated into the existing models



https://h2020-momentum.eu



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- H2020 project, topic LC-MG-1-3-2018 Harnessing and understanding the impacts of changes in urban mobility on policy making by city-led innovation for sustainable urban mobility'
- □ Start: 1st May 2019 | Duration: 36 months | Budget: 2.9 M€
- Consortium: EMT Madrid (Coordinator) + 3 cities (Thessaloniki, Leuven, Regensburg) + 2 providers of technology solutions for transport planning (Nommon, Aimsun) + 1 transport consultancy (TML) + 3 research institutions (CERTH, TU Munich, Deusto) + POLIS + UITP



Intermediate modelling approach

Red colour shaded boxes indicate the existing components in the traditional four-step transport modelling approach

BS:Bike-SharingCS:Car-SharingRS:Ride-Sharing

Narayanan, S., Salanova Grau, J. M., Frederix, R., Tympakianaki, A., & Antoniou, C. (2021). Modelling of shared mobility services - An approach in between traditional strategic models and agent-based models. In 24th Euro Working Group on Transportation Meeting, 8 Sep. 2021.



MOMENTUM GitHub repository



Some of the individual model codes are being made available in a GitHub repository

Framework application: Tests in Madrid, Leuven, Regensburg and Thessaloniki, as part of EU H2020 project MOMENTUM



https://github.com/h2020-momentum/MOMENTUM



https://h2020-momentum.eu



Background and motivation

Overall approach

RIDESHARE

EQUEST RIDI

Shared mobility towards MaaS

NARAYANAN, S., & ANTONIOU, C. (2021). SHARED MOBILITY SERVICES TOWARDS MOBILITY AS A SERVICE (MAAS): WHAT, WHO AND WHEN?. UNDER REVIEW.

Methodology and data

Household survey collected by the Madrid regional government between February 2018 and June 2018

□ 85,064 individuals from 58,490 households

Reduced sample of 25,463 individuals from 20,916 households (based on the traffic zones where shared systems are available)

□ Shared mobility services: <1%

Bike-sharing supply data from Nommon



Common characteristics



Probable demand segments – A focus towards MaaS



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https://www.mos.ed.tum.de/en/tse/home/ c.antoniou@tum.de