

## IEA Expert Meeting

# Modelling disruptions in mobility

Thursday, 14 June 2018

IEA Headquarters, Salle Saturne  
31-35 rue de la Fédération, Paris 75015

The International Energy Agency (IEA) is undertaking a new project on the future of road transport and the implications of automation, connectivity, electrification, and sharing (ACES). The project will explore the potential trajectories, interactions, and impacts of these transformations, and provide policy insights to steer developments that advance energy, climate, air quality, and other socioeconomic objectives. The key output of the project will be a policy insights publication in early 2019, as well as enhancing the modelling capabilities of the [IEA Mobility Model](#).

The IEA is convening an expert workshop in June to solicit strategic and expert input to the upcoming analysis. On the second day following the main workshop, a select group of experts will present and discuss relevant research and engage in critical discussions on how to model elements of these transformations. The modelling meeting will be split into four sessions:

1. **Surveys:** Surveys (including stated preference and transport activity surveys), together with analogies to existing transport patterns (such as chauffeured rides) can inform our understanding of how behavioural patterns may adapt and evolve with new mobility services and technologies.
2. **Microsimulations:** Detailed activity-based and network models can help to examine changes in city-level traffic patterns resulting from system-level policy and technological change. Such simulations can provide insight into how disruptions might vary regionally, how they might evolve over time, and what policies might be well-suited to meet a variety of policy objectives in different urban settings.
3. **Cost comparisons:** Comparisons of per-km costs of passenger and freight mobility services using various combinations of technologies can inform the pace and extent of technology or service adoption. For instance, capital and operating costs -- including vehicle purchase, fuelling / charging, insurance, and maintenance and servicing (including cleaning of fleets) -- and even hedonic costs of driving versus engaging in other activities) can be compared between privately owned vs. fleet operated ICEs, PHEVs, and BEVs. Sensitivity and 'what-if' analyses can be used to explore assumptions of the impacts of cost reductions (e.g. in automated vehicle software and hardware) and policy impacts (e.g. of occupancy-based or congestion charging).
4. **Modelling energy and emissions impacts:** Adapting the IEA Mobility Model to explore some of the impacts of mobility disruptions will require building upon insights from the modelling frameworks outlined above. It will further require adoption certain assumptions and simplifications. In this final section, we will discuss how the insights from external researchers' modelling efforts can be used to inform the IEA's modelling.

Each session will begin with short scene-setting presentations, followed by a moderated roundtable discussion. To facilitate a candid and productive discussion, the workshop will be held under the Chatham House Rule.

Attendance is by invitation only.

Please contact [Kate.Palmer@iea.org](mailto:Kate.Palmer@iea.org) if you have any questions.

Workshop webpage: <http://www.iea.org/workshops/automation-connectivity-electrification-and-sharing-aces-transforming-road.html>

## Workshop Agenda

8:45	Registration and coffee (please bring a government-issued photo ID)
9:15	<p><b>Welcome and workshop objectives</b></p> <p><b>IEA – Brief introduction to the Mobility Model (MoMo)</b></p> <p><b>Anticipated changes</b> to incorporate the impacts of vehicle sharing and automation</p> <ul style="list-style-type: none"> <li>• Activity demand-based projections (passenger-kilometres and tonne-kilometres)</li> <li>• Uptake of ride-hailing, ride-sharing, and other mobility services (including MaaS)</li> <li>• Uptake of highly automated vehicles (private and fleet owned)</li> <li>• Modal shift impacts</li> </ul>
10:00	<p><b>Session 1: Surveys</b></p> <p><b>Presentations</b> – Clément Dupont-Roc (Nissan-Renault), Sebastian Hörl (ETH Zurich)</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>• To what extent can we infer from patterns and behavioural responses of users of ride-hailing services future use patterns?</li> <li>• How informative are surveys that have been conducted to date of behaviour and attitudes in other global regions? How is usage likely to adapt as technologies and offers evolve?</li> <li>• To what extent will shared and/or autonomous vehicle usage patterns depend on urban form, including the availability of mass transit?</li> </ul>
11:00	Coffee break
11:15	<p><b>Session 2: Microsimulations</b></p> <p><b>Presentations</b> – Luis Martinez (ITF), Panagiotis Angeloudis (Imperial College London)</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>• What insights on the impact of urban form and public transit availability can be gained by comparing microsimulations in different cities?</li> <li>• How can microsimulation results be generalised into global modelling?</li> </ul>
12:15	Lunch
13:15	<p><b>Session 3: Cost comparisons</b></p> <p><b>Presentations</b> – Zia Wadud (Leeds), Lew Fulton (UC Davis), Nikolas Soulopoulos (BNEF)</p> <p><b>Discussion</b></p> <ul style="list-style-type: none"> <li>• How do different combinations of business cases with technology powertrain platforms compare on a levelised cost basis (e.g. per kilometre driven)?</li> <li>• What key sensitivity parameters (e.g. frequency of usage, density of customer demand, charging times and costs, hedonic value of not having to drive) might vary under reasonable assumptions or in different policy or geographic contexts? What are the impacts of these parameters?</li> <li>• What considerations are not well captured by these cost comparisons, but are nevertheless likely to determine adoption of vehicle sharing, autonomous vehicles, and electrification?</li> </ul>
14:15	Coffee break
14:30	<p><b>Session 4: Modelling energy and emissions impacts</b></p> <p><b>Presentations</b> – Zia Wadud (Leeds), Jeff Gonder (NREL), Robert Spicer (BP)</p> <p><b>Discussion</b> – How can the modelling inputs, methods and results of surveys, cost comparisons, microsimulations, and other global modelling exercises be used to inform the IEA effort to incorporate uptake of automated, connected, shared, and electric mobility trends into its scenarios?</p>
16:00	<b>Closing remarks</b>