Transport and Climate Change Week

Digital mobility, new business models and innovative planning
24 – 28 September 2018
Beyond Mobility as a Service - The Age of Data in Urban Mobility

Dr. Christian Mettke, Melissa Cruz
Transport and Climate Change Week 2018
The “Age of Data” in Transport has the potential to transform mobility as we know...

For the better

For the worse
Why decarbonising the Transport Sector?

- Almost all (95%) of the world transportation energy comes from petroleum based fuels, largely gasoline and diesel
- Transport accounts for almost 60% of global oil use
- 2 Degree Target not reachable without the transport sector
- Need for increasing ambitions and speed up implementation of NDCs
Artificial Intelligence is the new electricity.
(Andrew Ng)

Hype!? Justified?
AI enables *performance improvement* of any given task.
So far, AI is **not yet widespread** in the transport sector, but is gaining momentum.

Mostly „**narrow AI“** applications are being used to perform specific tasks.

AI will unlock **new business models** and require the **cooperation** of a variety of stakeholders from different branches and Government to ensure sustainability of **AI transformation** in transport sector.

Currently, approximately **500 companies** are working with AI in transport and **over 52 billion USD** have been invested in since 2010.
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Reality
Road transport is a major contributor to air pollution and climate change. Transport contributes to 23% of energy-related CO2 emissions and is still growing!
Worldwide, 1.3 Million road deaths and up to 50 Million people injured per year
10-25% of urban areas are taken by road transportation infrastructure
Insufficient public transport provision
What do we want to achieve today?
Excite your curiosity
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Understanding basic fundamental technologies
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Learn about real-life applications
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Explore possible government actions
Guiding Questions

1. What are fundamental technologies that are changing the mobility sector in the near future?

2. In the context of the digital transformation of the mobility sector, what are new, emerging business ideas and models?

3. How can governments proactively engage with the digital transformation towards a more climate-friendly, sustainable transport sector?
Our agenda

1. Fundamentals and Technologies 10.30 - 12.30

2. Applications and Business Models 14.00 - 15.30

3. Towards Sustainability: Government Actions 16.00 - 17.30
Our guests

1. ThirdSpaceAuto
2. Blockchain Lab
3. POLIS
4. Door2Door
Thank you!
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“Oh, come on!”
Additional
AI Applications in Transport: End-Users

**Mobility as a Service (MaaS)**
- Flexible routing, booking, payment of single & multimodal trips
- Apps: shared mobility (i.e., B2C and P2P sharing), public transit, real-time info, hailing, multimodal aggregators

**Courier Network Services (CNS)**
- For-hire paid delivery services using online app
- Connect couriers using private vehicles, bicycles, scooters, etc., with light cargo

**Vehicle Connectivity & Smart Parking**
- Vehicle diagnostic info, remote access, and emergency services (e.g., roadside assistance or vehicle unlocking)
- Info on parking costs, availability through IoT

**Autonomous Vehicles**
- Input integration & info computation towards full automation
- Will most likely change travel patterns and need for vehicle usage tax
- Socio-economic implications on jobs (freight, taxi, PT)

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AI Applications in Transport: “Back-End”

**Predictive Automated planning**
- Sensors, machine learning to analyze current situation
- Predictive analytics to forecast and respond to demand
- Using anonymized mobile location data

**Traffic Management & Enforcement**
- IoT & machine learning used to automate traffic management & enforcement
- Will significantly improve traffic flow & enforcement
- Improved operational responses to hazards

**Automated Supply Chains**
- Advanced Algorithms for merchant & providers to optimize supply & delivery chain
- Automated order fulfillment
- Identification of most economic or fast delivery route

**Drones for Maint. & Road Safety, logistics**
- Automated inspection of: traffic, parking, road & bridge state of repair, accidents
- Improved accessibility of (critical) goods

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Data Privacy in Transport

**Privacy** is “the claim by individuals, groups or institutions to determine for themselves when, how and to what extent information about them is communicated to others, and the right to control information about oneself even after divulging it” Alan F. Westin. (Westin, 1967)

**Geo-spatial privacy** is “the ability of individuals to move in public space with the expectation that under normal circumstances their location will not be systematically and secretly monitored for later use” Geospatial Privacy and Risk Management Guide, Natural Resources, Canada. (Natural Resources Canada, 2010)

https://www.itf-oecd.org/sites/default/files/docs/15cpb_bigdata_0.pdf
Regulate data recording/sharing
Adjust policy frameworks (incl. non-and quasi regulatory approaches) for vehicle and safety standards, assurance and liability regime, taxation, privacy and cyber security, …
Define experimental use cases and spaces
R&D, consumer education, ethical considerations

Benefits & Challenges of AVs - Regulatory Options

Expected Benefits
- Reduced congestion
- Improved road safety
- Reduced emissions
- Increased mobility
- Increased efficiency

Challenges
- Increased car use
- Markets don’t control externalities
- Job Displacement
- Fiscal Regime Change
- Data/Cyber Security

Government actions

Icon-set

Arrows and characters

Digital, Energy and Transport

General