

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

Transport and Climate Change Week

Transport and Climate Change Week

Digital mobility, new business models and innovative planning 24 – 28 September 2018



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Beyond Mobility as a Service - The Age of Data in Urban Mobility

Dr. Christian Mettke, Melissa Cruz Transport and Climate Change Week 2018



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The "Age of Data" in Transport has the potential to transform mobility as we know...

For the better



For the worse



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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





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Artificial Intelligence is the new electricity. (Andrew Ng)

Hype!?







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Al enables performance improvement of any given task



So far, AI is **not yet widespread** in the transport sector, but is **gaining momentum.**

Mostly "narrow Al" applications are being used to perform specific tasks.

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

Currently, approximately **500 COMPANIES** are working with Al in transport and **OVER 52 billion USD** have been invested in since 2010.



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Reality





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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!





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Worldwide, 1.3 Million road deaths and up to 50 Million people injured per year





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10-25% of urban areas are taken by road transportation infrastructure





Insufficient public transport provision



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What do we want to achieve today?





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Excite your curiosity



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Understanding basic fundamental technologies



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Guiding Questions

- I. 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?



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Our agenda



Fundamentals and Technologies 10.30 -12.30 Applications and Business Models 14.00-15.30 Towards Sustainability: Government Actions 16.00-17.30



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Our guests



ThirdSpaceAuto

Blockchain Lab

POLIS D

Door2Door



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Thank you! email: <u>christian.mettke@giz.de</u>

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web: changingtransport.org



JOEDATOR

"Oh, come on!"

Additional



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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 responds 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 divulgating 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)



Precision of geo-location technologies





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Benefits&Challenges of AVs - Regulatory Options



https://www.itf-oecd.org/sites/default/files/docs/cooperative-mobility-systems-automated-driving-roundtable-summary.pdf



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