

Task 29\*:  
**Electrified, Connected and Automated  
Vehicles**  
(Germany, Austria, US)

Gereon Meyer, VDI/VDE-IT, 17 October 2019  
[gereon.meyer@vdivde-it.de](mailto:gereon.meyer@vdivde-it.de)

*\*“free” task;*

- **Analyze the potential technological synergies** of electrification, connectivity and automation of road vehicles and derive research, development and standardization needs
- **Assess the impact of user / driver behavior** on the combination of electrification, connectivity and automation and conclude on needs for measures in awareness and legislation
- **Study the business and operational models** combining electrification and connectivity / automation of road vehicles and identify need for action by companies and/or governments
- **Share information about the results and future strategies for research and development programs**, best practices in business development and lessons learned from implementation measures and actions e.g. in legislation, or standardization

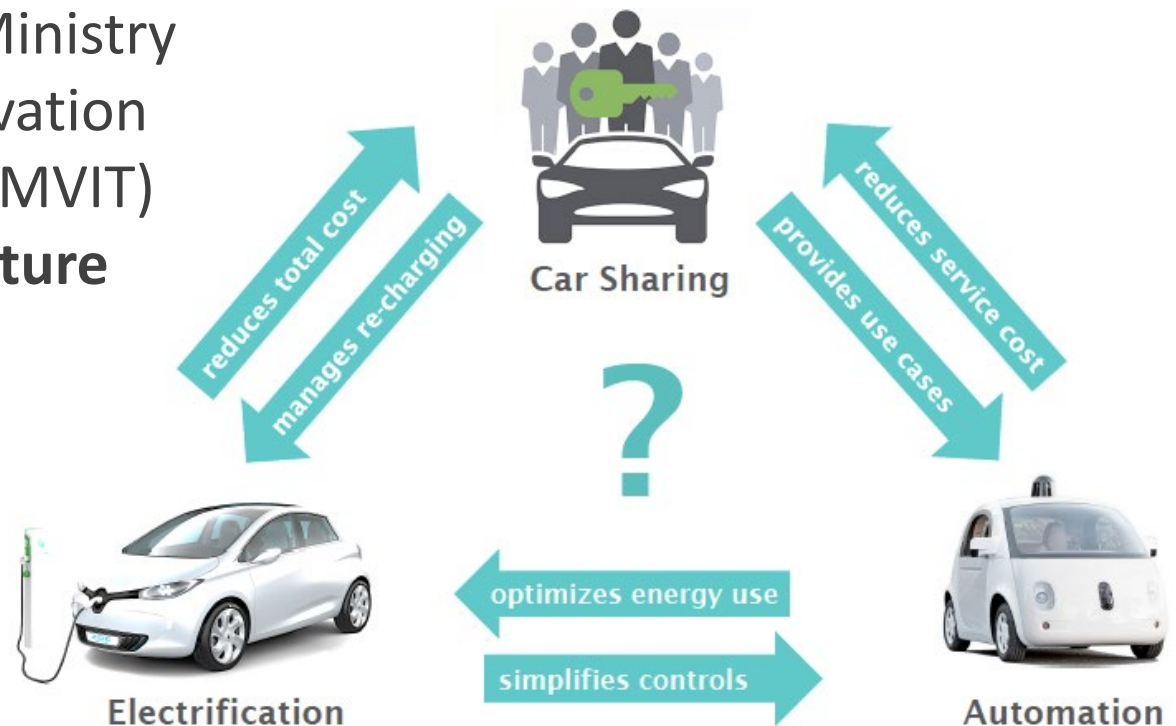
# Impacts on Roadmaps

- Strategic Research Agenda of the European Technology Platform on Smart Systems Integration (EPoSS)
- European Roadmap Electrification of Road Transport of the European Technology Platforms ERTRAC and EPoSS
- A3PS Roadmap Eco Mobility 2025+
- Strategic Transport Research and Innovation Agenda (STRIA) of the European Commission
- Strategic Research Agenda of the Joint Undertaking ECSEL (EU)



# Impacts on/of Funding Programs

- German Federal Ministry of Education and Research (BMBF)  
**Electronics for autonomous, electrical driving (ELEKTRONOM)**
- German Federal Ministry of Education and Research (BMBF)  
**Disruptive vehicle concepts for autonomous electric mobility (Auto-Dis)**
- Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT)  
**Mobility of the Future**



# Task 29 Workshop

## **Synergies of Automated Driving and Electric Mobility**

6 Dec 2018, Berlin (Germany)

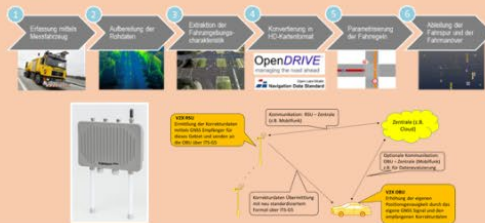
### **Objectives**

- Exchange information about roadmaps, strategies and public funding programmes covering synergies of automation and electrification
- Review approaches and results of research projects
- Discuss best practices and lessons learned.

# Task 29 Workshop

- Austrian Research and Innovation Programmes and Strategies  
*Walter Mauritsch, AustriaTech (on behalf of BMVIT)*
- German Research and Innovation Programmes and Strategies  
*Cornelius Schuberth, VDI/VDE-IT (on behalf of BMBF)*
- Presentations of Selected Research Projects  
*Alp.Lab (A), Jost Bernasch, Virtual Vehicle*  
*Digibus Austria (A), Karl Rehrl, Salzburg Research*  
*Via-Autonom (A), Philippe Nitsche, AIT*  
*KLEE (D), Daniel Göhring, Freie Universität Berlin*  
*UniCarAgil (D), Hans Christian Reuss, FKFS / U Stuttgart*
- Perspective from the Industry  
*Kerstin Mayr, Bosch Deputy Chair eNOVA Strategy Board*
- Perspective from Silicon Valley  
*Sven Beiker, Silicon Valley Mobility, USA*
- Perspective from the EU: Lighthouse Mobility.E of ECSEL JU  
*Gereon Meyer, VDI/VDE-IT*
- Discussion on Best Practices and Lessons Learned

## Digital infrastructure & connectivity

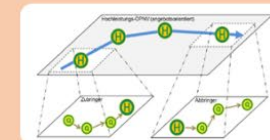


Digibus<sup>®</sup>  
Austria



Source: Salzburg Research / wildbild

## Automated mobility system & passenger interaction



Source: Schnieder et al., 2016

## Driving scenarios & interaction with (vulnerable) road users



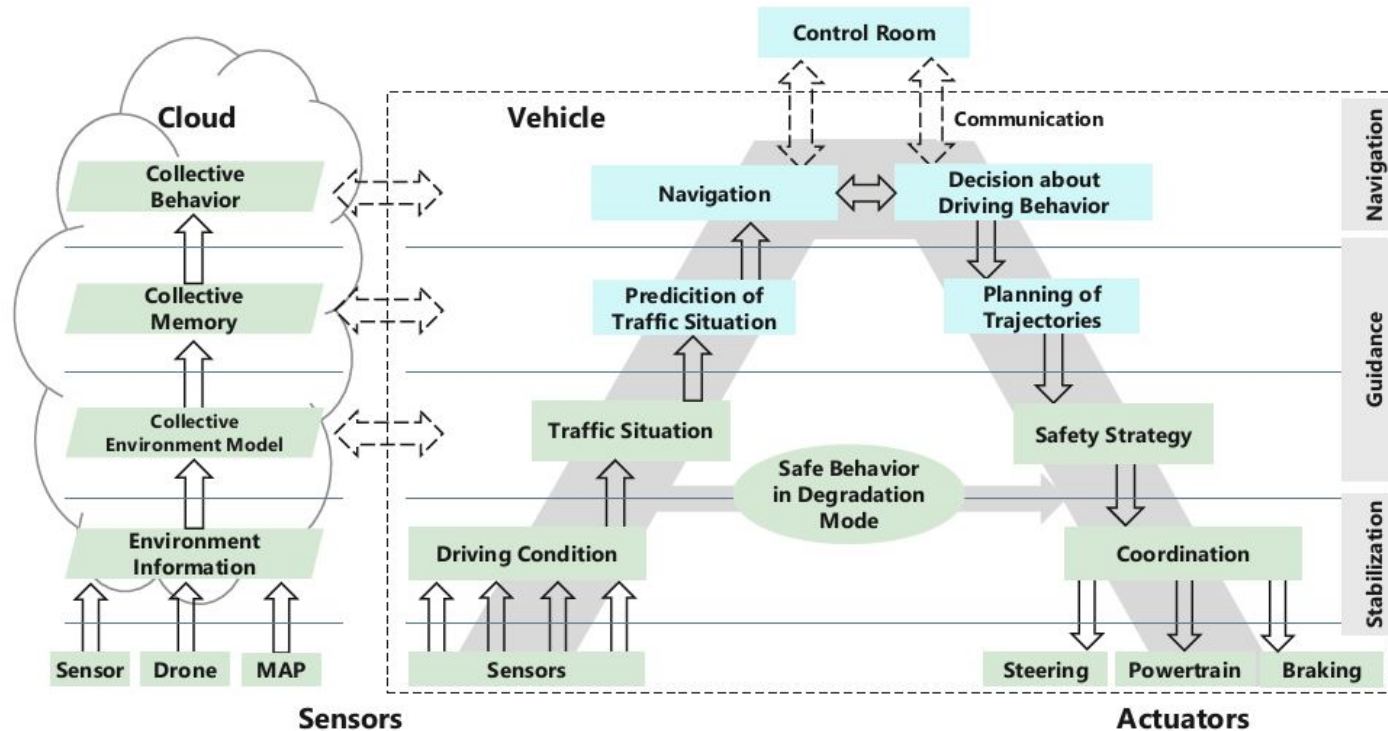
## Reference model for planning, deployment & operation of automated shuttles



Precise positioning of a self-driving shuttle  
*Karl Rehrl, Salzburg Research, Digibus Austria*



## FUNCTIONAL ARCHITECTURE



Interplay of perception and powertrain architectures  
*Hans-Christian Reuss, FKFS / University Stuttgart*



In summary, there are several synergies between automation and electrification



**Technology** – similar control architectures (which, BTW, also exist for ICE vehicles); especially research vehicles benefit from “limitless” electrical power supply



**Timeline** – automation and electrification happen roughly with the same schedule of the “mobility revolution” with both still facing challenges in technology, regulation, market



**Strategy** – vehicle manufacturers capitalize on the situation that both, automation and electrification, are seen as innovative technologies and both combined amplify a corporation’s message

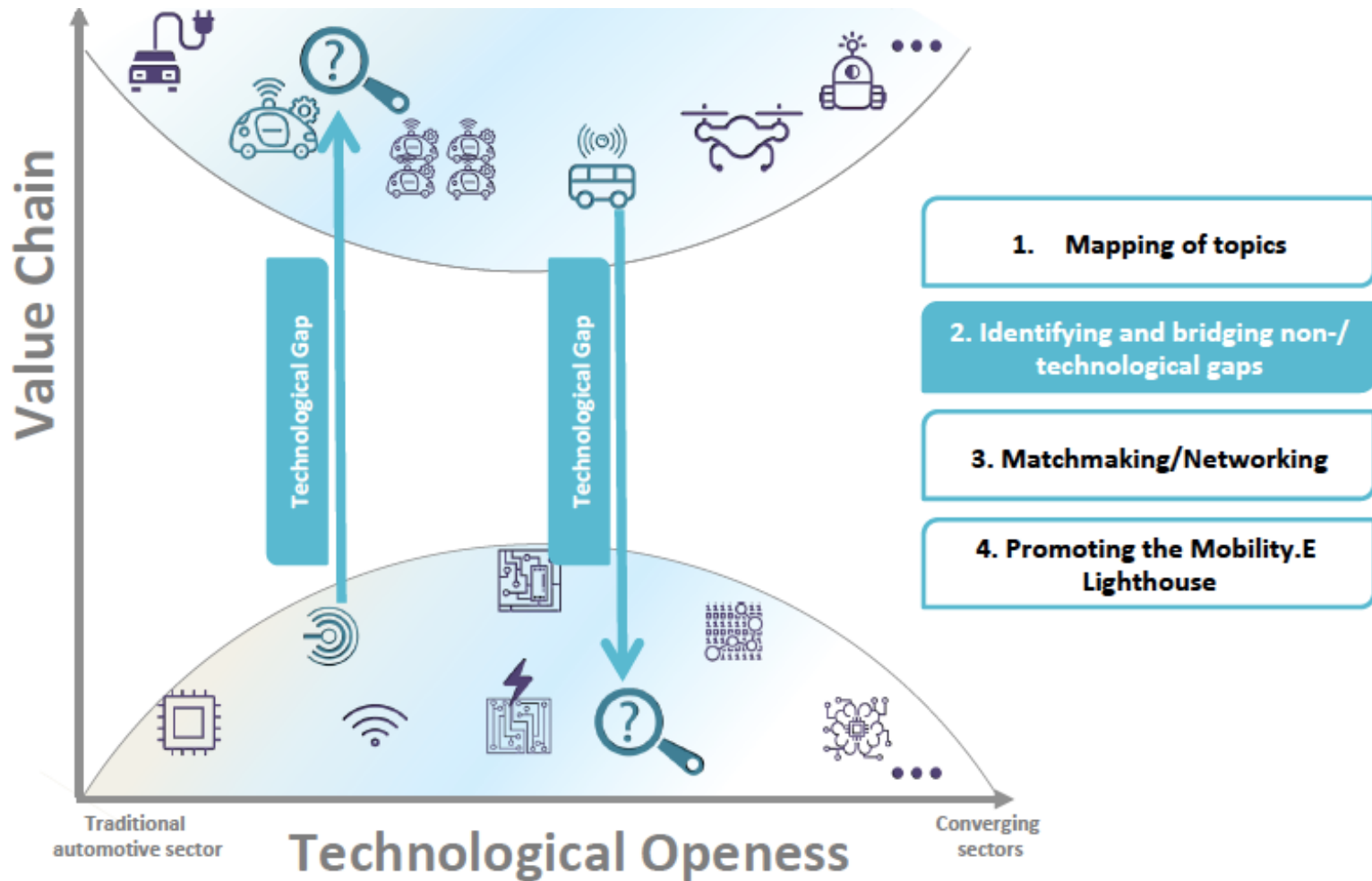


**Use cases** – electric drivetrains are inherently smooth and quiet, which benefits applications for people transportation with convenience, smoothness, space maximization being key



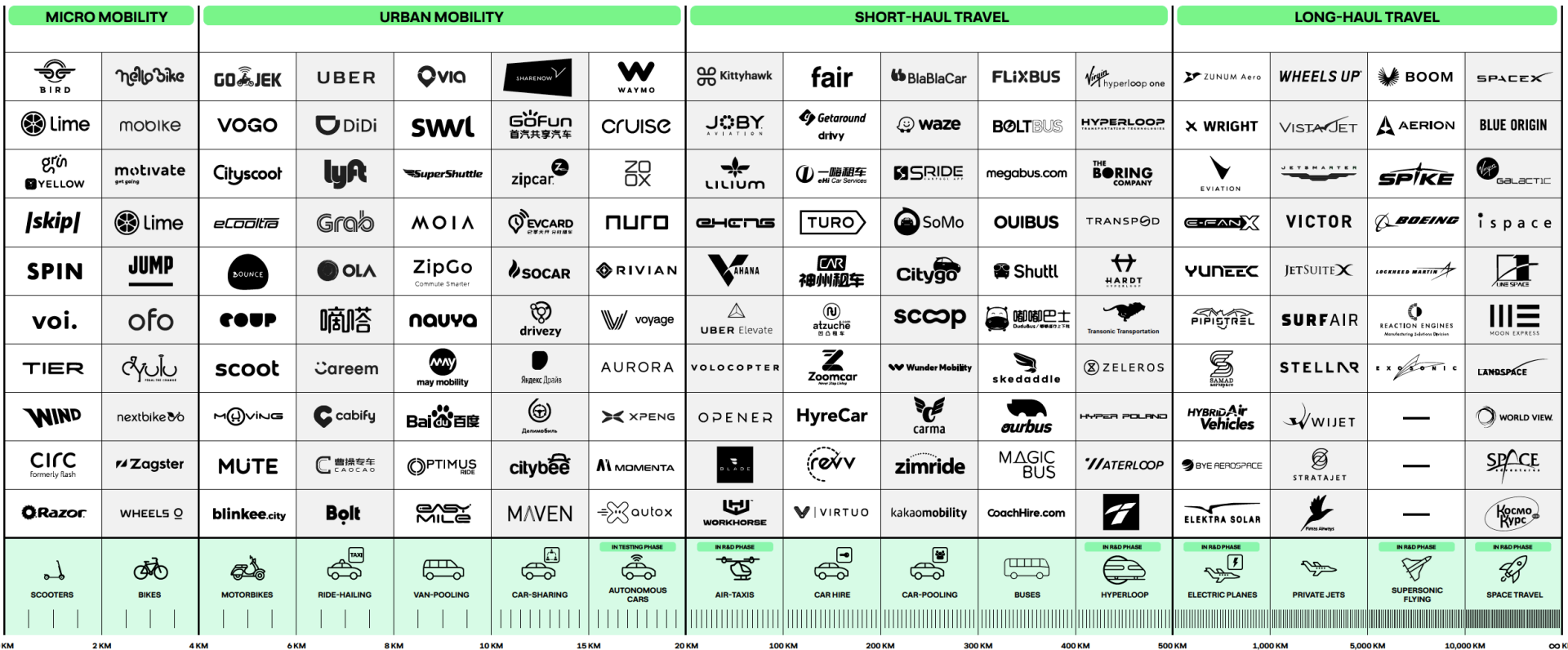
**Regulation** – as automated vehicles might be deployed in urban settings first, there will be more and more restrictions on vehicle access to inner-cities, from which electric vehicles might be exempt

Comprehensive picture from technology to applications  
*Sven Beiker, Silicon Valley Mobility*



Scouting for links between technology and application  
*COSMOS project*

# What's next ?



AVERAGE DISTANCE PER TRIP

travelandmobility.tech  
Source: Lufthansa Innovation Hub

- Characterize the new modes of transportation in terms of the synergies of electrification, connectivity and automation, derive research and development needs and public funding plans.