

Steering the implementation of automated road transport - comparing scenarios of regulatory measures and their effects on urban areas and the transport system.

Kay Gade, Dr. Julia Schuppan
DLR Institute of Transport Research



Knowledge for Tomorrow



Automated Road Transport Forum for the North Sea Region



Overall Objectives

- **Raise awareness** among public stakeholders
- Develop **policy recommendations** that enable local and regional authorities to take advantage of the opportunities of automated road transport
- **Support sustainable transport** and territorial development goals as well as **improve quality of life** in communities



Partners



Autonomous driving may have different effects and offers ...

chances



Sustainable urban transport system



risks



- We see a high potential and need to design a sustainable transport system.
- Need to develop not only technical solutions, but solutions that correspond to societal goals and sustainable urban development.



Visions of autonomous transport systems & current AVs



Visions of autonomous transport systems & current AVs



What do urban **future scenarios of autonomous mobility** for a **sustainable transport system** look like and what are the **design potentials** from the perspective of **societal actors**?




Key steps to our study



(1) Definition of a sustainable transport system



(2) Identification of relevant societal actors



(3) Identification of design potentials



(4) Application of participatory explorative scenario techniques




Key steps to our study



(1) Definition of a sustainable transport system



(2) Identification of relevant societal actors



(3) Identification of design potentials

Efficiency & Effectiveness

Accessibility, Inclusion and Integration

Quality of Life & Sustainability

Administrations, politicians, mobility providers, logistics, local initiatives, research, NGO



literature study & stakeholder workshop



Study design

Literature based participatory explorative scenario technique

02/2020



User
behaviour

Mobility &
travel
behaviour

Network
efficiency

Public health
& safety

Land use &
parking

Regulation &
costs

- The road space is reallocated in favour of public transport, cycling & walking.
- A municipal traffic management system is implemented to coordinate & optimize the route choice of all autonomous vehicles with regard to the overall system.

- **6 impact areas** relevant for AV in urban areas & transport systems

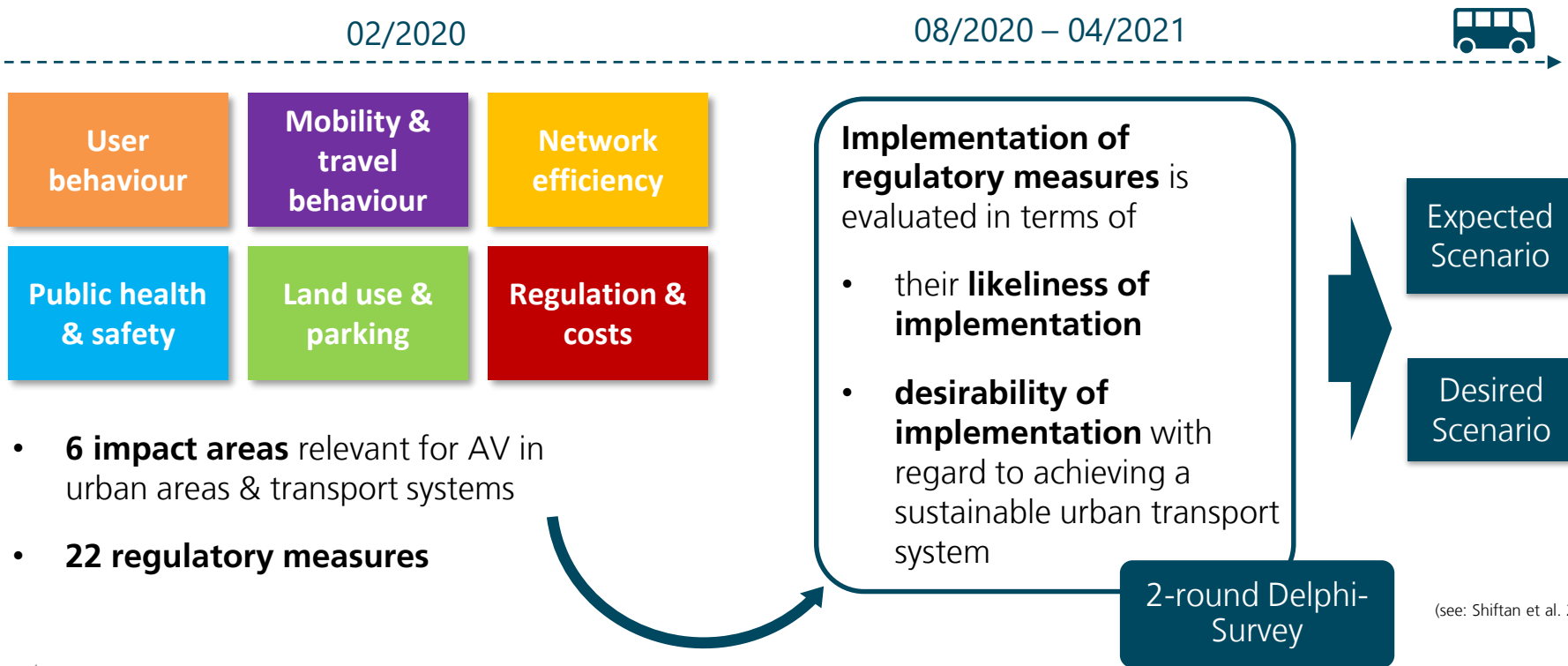
- Parking in city centres is only available against a fee.

- **22 regulatory measures**



Study design

Literature based participatory explorative scenario technique



Study design

Literature based participatory explorative scenario technique

02/2020

08/2020 – 04/2021



- ART-Forum partner cities: Aalborg, Bergen, Bremen, Groningen, Mechelen, West Yorkshire
- Participants: 69 (Delphi1), 61 (Delphi2)
- Professions: **provider/logistics**, research, NGO, **municipalities**

Implementation of regulatory measures is evaluated in terms of

- their **likeliness of implementation**
- **desirability of implementation** with regard to achieving a sustainable urban transport system

2-round Delphi-Survey

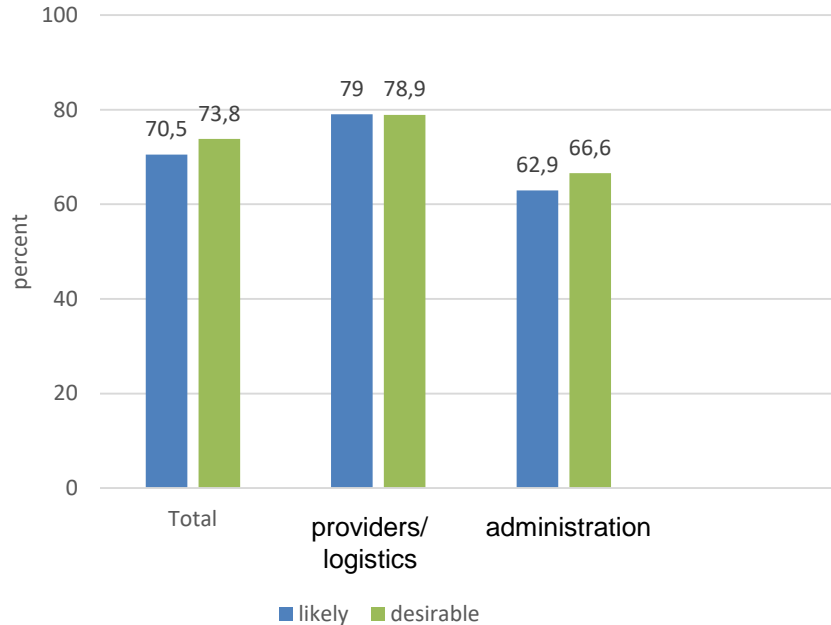
Expected Scenario

Desired Scenario

(see: Shifan et al. 2003)

Assessment of full automation (level 5) of urban mobility and transport system

Comparison of municipal administrations and provider/logistics, Delphi 2



Participants with administrative profession estimate the full automation of urban mobility and transport system

- less **likely**
- less **desirable**

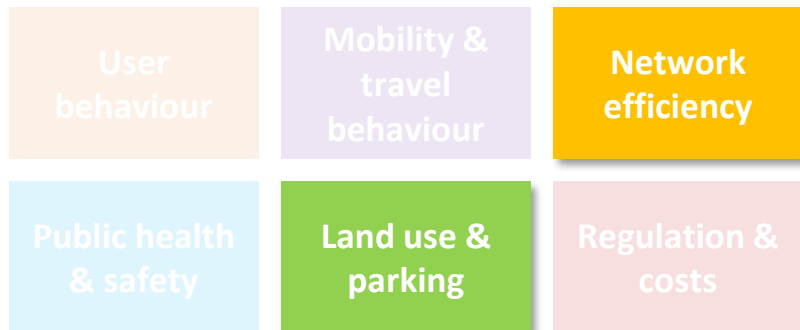
than participants from providers/logistics



Results for the expected and desired scenarios

Expected Scenario

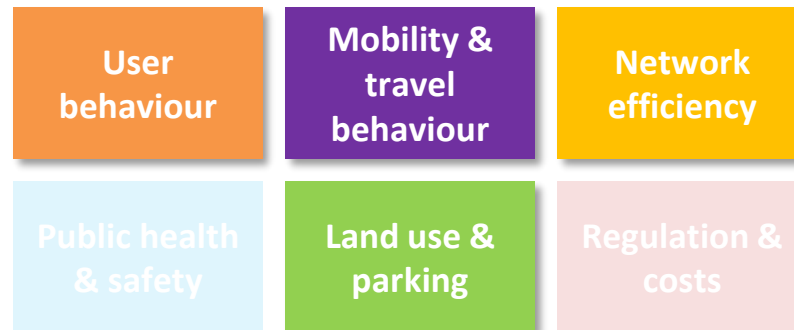
Evaluation of the **likeliness** of implementation of regulatory measures



3 regulatory measures

Desired Scenario

Evaluation of the **desirability** of implementation regulatory measures with regard to SUMP principles



9 regulatory measures



Results for the expected and desired scenarios

Expected Scenario

Evaluation of the **likeliness** of implementation of regulatory measures

User behaviour	Mobility & travel behaviour	Network efficiency
Public health & safety	Land use & parking	Regulation & costs

Desired Scenario

Evaluation of the **desirability** of implementation regulatory measures with regard to SUMP principles

User behaviour	Mobility & travel behaviour	Network efficiency
Public health & safety	Land use & parking	Regulation & costs

administrations

2 regulatory measures 7

provider/logistics

6 regulatory measures 9



Summing up I Designing future urban scenarios of autonomous mobility

Differences between **expected & desired scenarios**

- In general, more regulatory measures are described as **desired** regarding a sustainable transport system than are **expected** to be implemented.

Differences between **participants' profession**

- provider/logistics expect more regulatory measures than municipalities

Differences in **focus of measures**

- expected scenario: focus on infrastructure
- desired scenario : focus on behaviour and infrastructure



Concluding I Designing future urban scenarios of autonomous mobility

Differences between **expected & desired scenarios**

- Need to define societal goals and develop a future vision of a transportation system with autonomous and connected driving.

Differences between **participants' profession**

- Need for early societal dialogue on the future vision of autonomous driving.

Differences in **focus of measures**

- Need to link individual requirements with the requirements of a transport system that is compatible with cities.



What's next? - Development of a City Readiness Index

Sustainable urban autonomous mobility – how ready is your city?

- What are the relevant fields of action for cities against this background, how can they be evaluated and summarised in the form of an index?
- Development within the ART Forum project together with the project partners and external stakeholders



Thank you for your attention – and get in touch!

DLR Institute of Transport Research
Kay Gade
Research Associate

Kay.Gade@DLR.de
www.DLR.de/vf

DLR Institute of Transport Research
Dr. Julia Schuppan
Research Associate

Julia.Schuppan@DLR.de
www.DLR.de/vf



Further information on DLR projects
www.verkehrsforschung.dlr.de



Knowledge for Tomorrow

