

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

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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

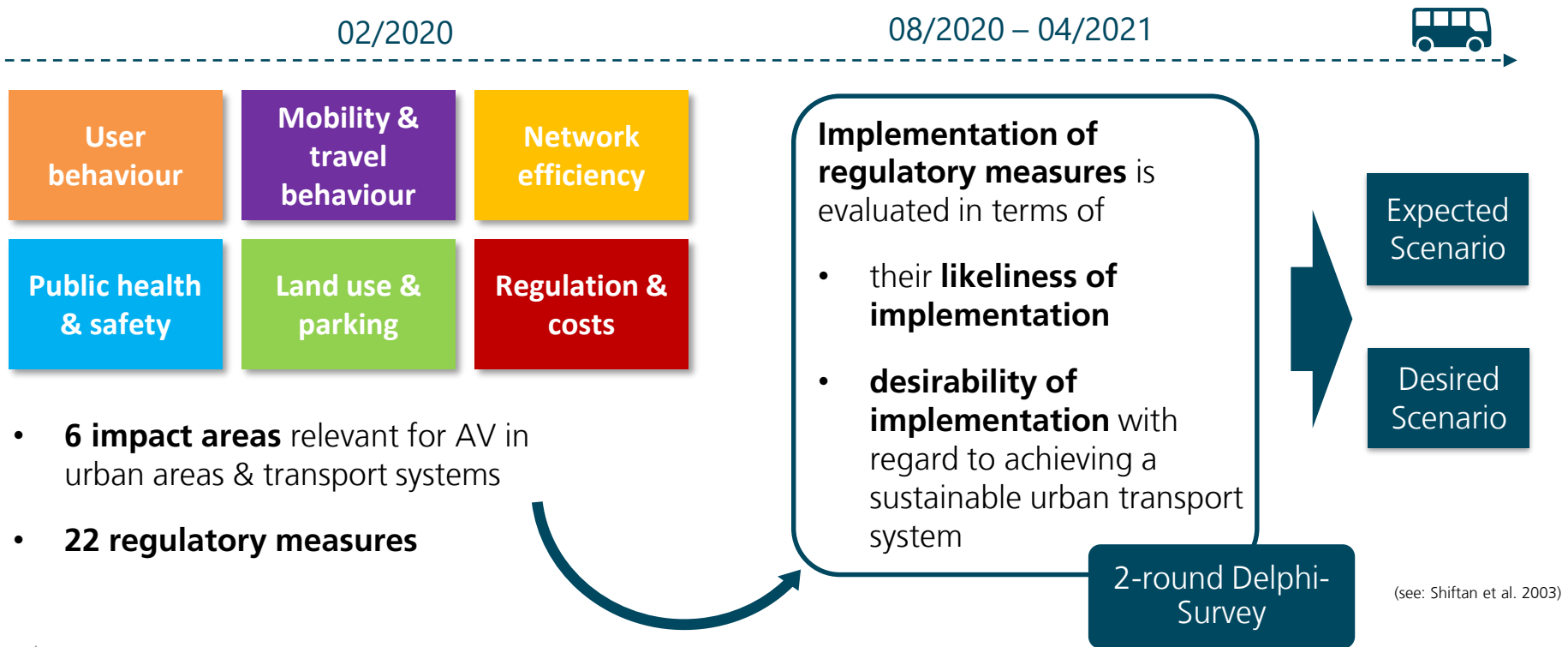
- Parking in city centres is only available against a fee.

- **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

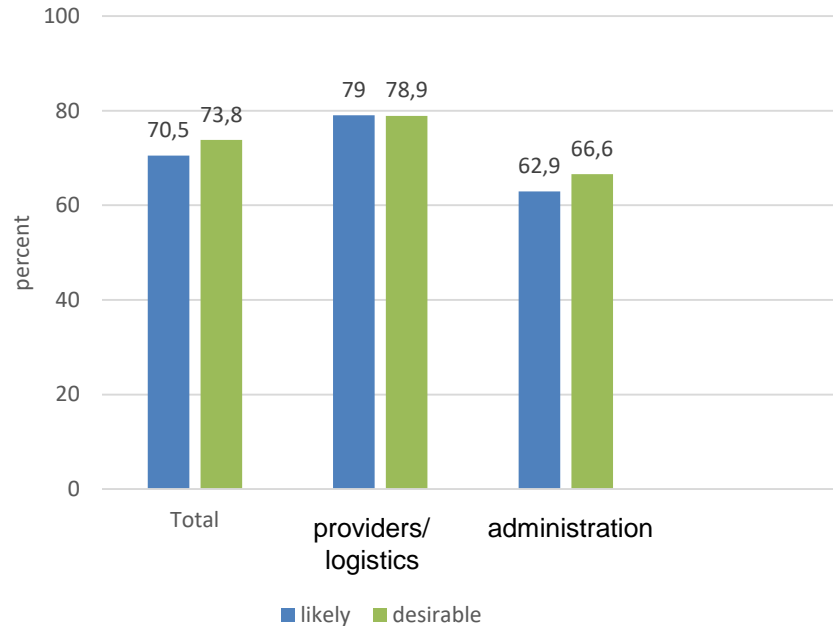
Expected Scenario

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**

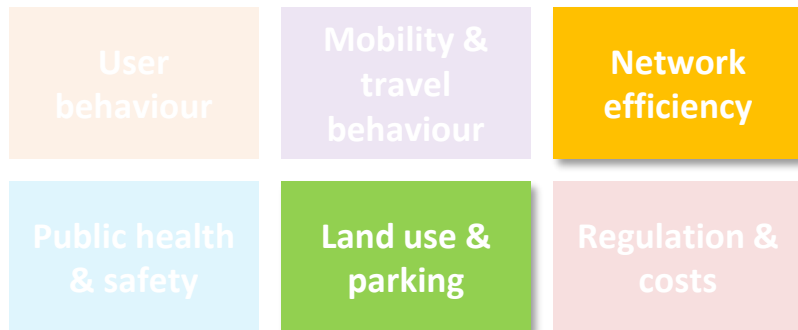
than participants from providers/logistics



Results for the expected and desired scenarios

Expected Scenario

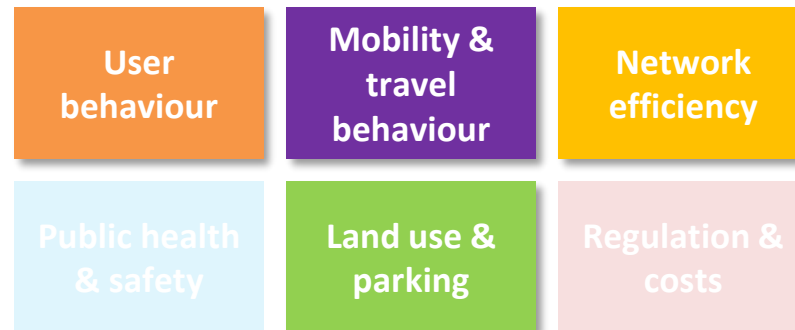
Evaluation of the **likeliness** of implementation of regulatory measures



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!

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