

## Designing future urban scenarios of autonomous mobility



### Mixed-method Scenario Design with Stakeholders

Stakeholders need a broad knowledge of mobility requirements and needs of the society to weigh opportunities and risks of automated road transport (ART).

Our study explored the question which regulatory measures should be taken to exploit the opportunities that ART can offer for sustainable urban

mobility. We applied a mixed methods approach by combining a stakeholder workshop with a two round Delphi expert-based survey and integrated our findings in future scenarios. An expected and a desired scenario was built regarding the likeliness and desirability of implementing regulatory measures to integrate ART in urban areas. Furthermore, we modelled measures to identify possible outcomes.

### Stakeholder Scenario Key Outcomes

Three qualitative indications were gained:

- (1) Respondents see more regulatory measures related to a sustainable transport system as desirable than they expect to be implemented.
- (2) Companies expect more regulatory measures than municipal respondents.
- (3) Focus of the expected scenario was on infrastructural measures, whereas in the desired scenario with regard to sustainability goals, behavioural change measures were also included.



Concluding, the definition of societal sustainable goals and the development of a future urban ART vision is necessary. These should be carried out between key stakeholders as part of an early societal dialogue on the future vision of ART. The measures should link individual requirements with the requirements of an urban sustainable transport system.



» Implementing ART needs sustainability goals, societal dialogue and regulations.

## Automation as a chance to redesign public space?

In a pure fleet of autonomously driving vehicles, the safety distance between vehicles could be reduced under the assumption that technology can react faster than humans. This leads to increased road capacity, so would it be possible to reduce road space and use the space differently?

Based on the city of Brunswick as an example for a larger city in Germany, the DLR Institute of Transport Research together with the DLR Institute of Transportation Systems evaluated the potential effects of such reallocation by reducing multi-lane roads by one lane. As a result, travel times at all times of the day, even in the peak hour, are on average lower compared to a scenario with manually controlled vehicles. This means that



the road network can be reduced without loss of time compared to the current situation. In our example, we reduced the road space on approx. 61 kilometres, which corresponds to about 200,000 m<sup>2</sup>, an area the size of about 30 football fields. The space saved could instead be allocated for public transportation and active modes such as walking or cycling, but also for more green areas within the city.

Sustainable development of urban areas is a long-term goal with principles of Sustainable Urban Mobility Plans (SUMP) and the Sustainable Development Goals (SDG) as guidelines. ART is a new technology that is expected to fundamentally change the mobility of people and goods, the transportation system, spatial development, and urban areas. The shown application of trans-disciplinary concepts including different stakeholders and science and mixed-method-approaches

combining co-design participatory methods and scenario modelling can support future decisions to navigate the chances, new technology offers. They can build a bases to make long-term strategic plans for innovative mobility and build the basis for their acceptance through transparent processes. In our study the used approaches have proven fruitful and their application is further recommended to support continuous learning.

### Contact

To get in touch with ART-Forum, please visit our website

[www.art-forum.eu](http://www.art-forum.eu)



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