

Title (max. 100 characters):

Challenges in assessing user attitudes toward self-driving cars for engagement in connected mobility research

Abstract (250 – max. 500 words):

Background and objectives

New forms of electronic or automated mobility can be regarded as a socio-technical change that requires a **broader user perspective**, as developments in this area will directly influence society's mobility behavior. This is also acknowledged by the European R&I partnership for Connected, Cooperative and Automated Mobility (CCAM), which aims at establishing a user-centered and inclusive mobility system, increasing road safety while reducing congestion and environmental footprint (CCAM SRIA 2021:65). However, the **roles and influences of users in such CCAM-research processes** is said to be determined by **type and degree of participation** (e.g. idea provider, informant, co-creator), **prior knowledge, attitudes and capabilities** (Sopjani et al. 2018; Füller et al. 2017 cited in Beck et al., 2021:29). Thus, the purpose of this work is **to examine how to determine users' prior knowledge, skills, and attitudes toward automated mobility and self-driving cars** so that, based on this, a **high involvement intensity and long-term effect** of external actor engagement can be achieved in CCAM-research.

We explore this issue in the ongoing collaborative Austrian technology research project “Bike2CAV”, which deals with the development and validation of data-intensive methods for cyclist collision avoidance through vehicle-to-x communication” (www.bike2cav.at; funded by the Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation & Technology; FFG; 2021-2023). The project process is supported by open innovation methods and its organization encompasses partners along the intelligent traffic management system chain plus a traffic safety association and a digital mobility service provider steering a large cyclist-community.

Methods

We used an empirical mixed-methods approach, beginning with a quantitative survey that explored users' needs for data-based alerts (n=892; 2-4/2021), followed by two qualitative user focus groups that developed ideas, and an expert user workshop that evaluated and prioritized three design ideas for the modes of the warning signals e.g. auditiv, haptic or visual (n=43; 5-10/2021). It was part of the survey issued among the city-cyclist community to identify and assess the *attitudes towards self-driving cars, done with the scale for Affinity for Technology Interaction* (Franke et al. 2018). Additionally, we asked for estimation of *individual cycling behavior* (high/low risk). In addition, willingness to participate in an OIS project was queried and interested study participants were invited and selected based on their individual ATI scores, safety perception towards automated mobility and biking skills. Experts and innovation managers from cycling devices were chosen according to their competences in the field of traffic psychology, traffic law and cycling safety devices which the project team lacks.

Interim Results

The respondents' predominant affinity for technology has served as an ideal starting point for focus groups with lead users, who can be divided into those with a low and increased propensity to take risks. Through such a rigorous selection process of external stakeholder, we achieved a balanced and even distribution of user representation that influenced the further planned intensity and impact of the future research process, such as the integration of lead-users in testing and providing feedback to research prototypes in a real test environment.

Literature:

Beck, S. et al. (2020): The Open Innovation in Science research field: a collaborative conceptualisation approach, *Industry and Innovation*, <https://doi.org/10.1080/13662716.2020.1792274>

Füller, J., K. Hutter, J. Hautz, and K. Matzler. 2017. "The Role of Professionalism in Innovation Contest Communities." *Long Range Planning* 50 (2): 243–259. doi:10.1016/j.lrp.2015.12.017

Sopjani, L.; Janhager Stier, J.; Ritzén, S.; Hesselgren, M.; Georén, P. (2018). Involving users and user roles in the transition to sustainable mobility systems: The case of light electric vehicle sharing in Sweden, *Transportation Research Part D: Transport and Environment*, Volume 71, pp. 207-221. <https://doi.org/10.1016/j.trd.2018.12.011>.