Addressing Equity, Accessibility, Inclusivity and Acceptance in the Development of new Architectures for Automated Vehicles in UNICARagil



Challenges regarding Equity, Accessibility, Inclusivity in public and private vehicles

- Today's vehicles mostly designed for the majority of the adult population
- People may not be able or allowed to use a car on their own for various reasons
 Children, elderly and disabled people
- For private automated vehicles, requirements need do be defined [1]
- For pubic transport in Europe, there is a directive for vehicles with a capacity of 8 occupants ore more [2]
 - Smaller vehicles (taxi, small shuttles) are not included

→ Until 2022, full accessibility for local public passenger transport in Germany is to be achieved [3]

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Equity, Accessibility, Inclusivity and Acceptance

 The main project focus is the technological approach on modular architectures for agile, automated vehicles [4]

- However, these topics are addressed in the different use cases developed in the project
 - Acceptance and trust on automated vehicles
 - Equity, accessibility, inclusivity in private and public transport

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Acceptance and trust on automated vehicles



Behavior of automated vehicles needs to be predictable to other traffic participants and occupants of the vehicle

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• Supplementing the public transport system

• 6 – 8 persons

• Moves and behaves like a rail vehicle

auto SHUTTLE

Acceptance and trust by exterior and interior HMI
Inclusive, equitably and accessible

SHUTTLE

Acceptance and trust by exterior HMIAccessibility for all people

• Pick up and delivery service

- Automated handover
- Dense storage system

auto CARGO

CARGO

0

Acceptance and trust by exterior and interior HMI

Taxi-service
Order, open, interact with CE device
Cooperative and agile ...

auto TAXI

TAXI

- Private "Butler / Nanny" Carrying out private
- trips to school, sports ...
- Private and individual
 Accessible, inclusive and trustworthy

Inclusive, equitable and accessible for all family members

ELF

Summary



auto SHUTTLE

- acceptance and trust by exterior and interior HMI
- Inclusive, equitably and accessible



auto TAXI

 acceptance and trust by exterior and interior HMI

> Be ready for an equitable and trustworthy future mobility!



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auto CARGO

- acceptance and trust
 by exterior HMI
- accessibility for all people



auto ELF

- Inclusive
- equitably
- accessible for all family members

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UNICAR*agi*/ halftime event

March 24 2020, Munich Germany

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References

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Schräder, T., Stolte, T., Jatzkowski, J., Graubohm, R., & Maurer, M.
 30th IEEE Intelligent Vehicles Symposium, 2019
 An Approach for a Requirement Analysis for an Autonomous Family Vehicle

- [2] Directive 2001/85/EC of the European Parliament and of the Council of 20 November 2001 relating to special provisions for vehicles used for the carriage of passengers comprising more than eight seats in addition to the driver's seat, and amending Directives 70/156/EEC and 97/27/EC Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32001L0085&from=de
- [3] German Federal Ministry of Justice and Consumer Protection Personenbebörderungsgesetzt (PBefG) §8(3) Retrieved from <u>https://www.gesetze-im-internet.de/pbefg/__8.html#</u>
- [4] Woopen, T., Lampe, B., Böddeker, T., Eckstein, L. et. al.
 27th Aachen Colloquium, 2018
 UNICARagil Disruptive Modular Architectures for Agile, Automated Vehicle Concepts
- [5] Lagstrom, T., & Lundgren, V. M. (2015). AVIP-Autonomous vehicles interaction with pedestrians, Chalmers University of Technology. Retrieved from http://www.tekniskdesign.se/download/AVIP_MasterThesis_Lagstrom_MalmstenLundgren.pdf