Position Paper on:

Users and societal acceptance and awareness

Summary

Increasing user's acceptance of Connected Automated Driving (CAD) will be achieved through building awareness on the societal and economic benefits of autonomous driving and building user's trust on the new technologies. It will be necessary to develop a strategy to enhance vehicle-human system interaction reducing complexity and providing users a face-to-face experience with CAD.

When assessing the impact of CAD, it will be needed a holistic approach that consider all users clusters regardless age, driving background and will also include people with disabilities. Low-skilled drivers as well as expert will be part of a long-term study that will include a series of tests. Such test should pursue the objective to make all drivers comfortable with CAD and collect information of their behavior before and after trying automated driving.

Besides, new mobility trends such as car-sharing and alternative mobility services will be considered when assessing and evaluating the impact of CAD.

Position

The thematic interest group has identified eight main challenges that it believes in need to be addressed from a users' perspective in the wake of connected automated driving.

User centric approach: A preliminary challenge consists in defining the users and their concerns. There should be a strong focus on the acceptance by individual (private) drivers as well as on institutional users (fleet owners, taxi companies, road authorities, etc.).

User awareness: Secondly, awareness is a key challenge to acceptance. User acceptance can only be investigated if much more information about automation developments is given to the public, and awareness campaigns should accompany the progressive deployment of automation functionalities.

User trust: When it is assumed that road users are fully aware of automated driving possibilities of today, the biggest challenge for automated driving is to be trusted. It is widely recognised that road safety and liability are key factors, and that automated cars will have to be much safer than regular ones; still, users may not accept of even reject road automation.

Data protection: Vehicle connectivity is the key enabler of advanced vehicle automation. Data will therefore be the key enabler of the connected automated driving. Connected automated driving will require vast amounts of data to be gathered and processed for the benefit of all. While the need to ensure access to data is paramount for ensuring the full deployment of connected automated driving, the protection of personal data is essential, as well as cybersecurity.

User interface: In terms of security, another challenge concerns the human interaction. Automated vehicles should be able to understand the intent of other road users, especially of vulnerable road users, and interact with them like human drivers do, and the behaviour of automated vehicles should be predictable (without connectivity) by other road users, at least in the transition period.

Ethics and liability: From an ethical perspective, an important challenge that has been addressed concerns the human complexity and driver's liability in case of road accidents. Since a human choice is based on a personal system of values that varies between individuals, it is crucial to establish how the automated system will decide on questions of life and death, e.g. choosing between putting drivers or pedestrians at risk. Whether the driver should be able to change the decision pro-

cess of the car on such ethical questions, and accident liability should be removed from drivers of conditionally automated cars who show typical and reasonable user behaviour is still controversial.

Expected benefit and impact

As car sharing systems and new transportation services are already affecting the way people live, work, travel, travel and travel, CAD will create a new traffic system, where humans and automated vehicles will share the traffic environment. New rules and new behaviours will emerge, and new mobility patterns will arise due to ART, contributing to a more sustainable transport system. Some of the benefits will be on:

Safety

Autonomous cars will reduce accidents caused mainly by human errors improving people's safety.

Travel efficiency

CAD will improve travel efficiency, reducing congestion and ensuring optimal driving behavior that will improve the quality of life of citizens. Road users will save a considerable amount of time during their daily commute, for example, the time they consume parking.

Improve transport of goods

Automated trucks platooning will also economically impact society by making the transportation of goods safer and faster.

Research needs

- Research on socio-economic benefits in terms of inclusiveness, more livable cities and user-centric activity-based mobility solutions
- Long-term studies on how automation supports mobility
- Research on how CAD can be integrated into new mobility trends such as car-sharing and other alternative mobility services.
- Research on how users' data can be protected and how the information collected on itineraries and driving behavior can be storage and responsibly used to improve users experience
- Research on sustainable AVs car manufacturing, waste management and battery technologies
- Research on how citizens and public authorities could influence the evolution of CAD, and what tools and process could enable maximum influence and stimulate public debate
- An inventory of ethical issues needs to be made, investigating how research plays a role on making the relation between legal aspects and ethics.
- Research on emerging new mobility patterns
- Research on how trust, acceptance and adoption of road automation develop over time and with more exposure and experience with automated systems
- Research on how far competition in the market, user choice and the related societal benefits can be boosted through open data policies and open data standards and platforms