

Key Challenges for Safe and Integrated Mobility

In the area of Safe & Integrated Mobility, co-funded research supports the development of technologies and services that meet customer and societal demands whilst fulfilling more and more challenging regulatory standards. The identified key challenges are:

Digitalisation – the next generation of safe, smart and connected vehicles

Digitalization and connectivity are certainly one of the dominating trends in the first quarter of the 21st century. It modifies the way we think about our future mobility and future mobility needs. Digitalization has altered various societal expectations on business and services. In the connected world customers are used to extensive customisation without accepting long manufacturing and delivery times. The young generation Y (i.e. born between 1980 and 1999) and the millennials (i.e. born after 2000) highly value their connectivity and ability to be always connected.

Future mobility solutions and vehicles will not only provide the connectivity for their users but embrace the opportunity of ever growing computing power, high speed connectivity, deep learning algorithms for artificial intelligence, fast processing and decentralised data handling. Through the fast-technological evolution in IT and semiconductor industries a complete new range of applications for smart and safe mobility will be possible. Further, new market entrants, used to the short innovation cycles start evaluating the business opportunities and mobility use cases. This will go hand in hand with the need for new skills (e.g. IT/ICT and artificial intelligence/deep learning). The key-challenge is:

How to maximise the impact of smart and safe mobility solutions, and stay ahead in the race for global competitiveness for digitalisation and connectivity of vehicles?

Enabling SAE level 4 automated vehicles

In the second and third decade of the 21st century, one of the most exciting and inspiring trends for the automotive industry is the evolution towards highly automated driving. Recent research shows promising results for further development. However, there are still huge technological gaps to be addressed, for example on the interplay between human perception and driving tasks and on the technology to develop robust and resilient automated vehicle functions. Specifically, between Level 3 and Level 4 automation huge technical and operational challenges remain. The central question is:

How to enable safe SAE level 4 automated driving at mass-production costs?

Future integrated mobility: vehicles, business models and solutions

New emerging business models for shared vehicles (e.g. car- or ride- sharing and car-pooling) and new mobility concepts for future urban and interurban mobility will change the way we see future integrated mobility. *Mobility as a Service* (MaaS) is seen as a logical step towards closing the gap between public and private transportation. This new situation/trend might change the requirements and user expectations for future vehicles entirely. The personalisation and customisation for the subscribed mobility service

however still pose a challenge. Future integrated mobility and its societal impact strongly depends on the customer acceptance of provided services and the vehicle provision (e.g. data for efficient traffic management). The key challenge is:

How to meet customer expectations for personalisation and customisation of shared mobility services and vehicles?