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Editorial: Mobile network technologies for advanced CCAM services

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Editorial on the Research Topic
Mobile network technologies for advanced CCAM services

Cooperative, Connected and Automated Mobility (CCAM) holds a vast potential to reshape the way people and goods travel and move around the world. In CCAM scenarios, vehicles are well integrated in the transport system, taking advantage of its infrastructures and services. Fully automated driving could double existing road capacity by smoothing traffic flow, shifting freight transportation to off-peak hours, while smart traffic management can further increase efficiency and reduce congestion. The advantages in terms of traffic safety and user comfort are also clear, with high economic and societal benefits.

Mobile communication networks (5G and beyond) are a key enabler for CCAM applications, providing the advanced technologies needed to fulfill V2X requirements and pave the way towards connected and automated driving. This way, vehicles are able to communicate with each other and nearly everything around them, helping provide 360° non-line-of-sight awareness and improved predictability for enhanced road safety and autonomous driving. These technologies play a key role in the support of CCAM services, presenting essential features, such as low-latency communications, high bandwidth and service continuity, which are particularly important in safety-critical traffic situations.

Several automated mobility use cases are potential candidates to benefit from these advanced mobile networks technologies, such as cooperative overtake, highway lane merging, HD map updates, car and truck platooning, valet parking, urban environment driving, road user detection, vehicle remote control, see through application and media and entertainment services.

This Research Topic features four articles highlighting recent advances of the state of the art in mobile network technologies for CCAM. A review paper by Sharath and Mehran focus on the performance metrics for autonomous driving systems equipped with wireless communications modules. Then, there are two papers addressing the communications

challenges for specific CCAM use cases. The paper by den Ouden et al., targets the remote driving application and the appropriate mobile network (4G and 5G) architecture to provide such service. The paper by Cimoli et al. addresses CACC and GLOSA scenarios and the associated challenges involving hybrid ITS-G5 and LTE communications ecosystems. Finally, Hosseini et al. develop a more generic framework to provide CCAM service continuity under cross-border scenarios with inter-PLMN handover and 5G MEC federation features.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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