

Special Session

AI Assisted Technologies for Connected and Automated Mobility (CAM)

Organizing Projects	5G-ROUTES (https://www.5g-routes.eu/) ICT4CART (https://ict4cart.eu/) 5GCroCo (https://5gcroco.eu)
Structure	2 h, 1 Keynote speaker, 5 papers
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Background and Motivation

The European Commission's goal is to make the mobility of people and goods in the EU safer, cleaner, more efficient, more accessible, and more user-friendly. The 5G networks are expected to contribute to the realization of this ambitious vision through innovative *Connected and Automated Mobility* (CAM) applications. However, connected vehicles and especially connected autonomous driving vehicles bring a whole new ecosystem with demanding requirements such as high throughput and latency below 1 ms. Furthermore, CAM applications need to seamlessly function throughout all terrains (including dense cities, remote rural areas and maritime paths) and when crossing borders. The delivery of CAM services should be independent of the mode of transport too and regardless of whether passengers or cargo are involved. Network slicing (for providing differentiated service), distributed Multi-access Edge Computing (MEC for enabling innovative services by bringing the network capacity and intelligence to the edge) together with the potential of AI (powered by the vast amounts of network data and context-aware data generated by vehicle sensors and roadside units) are the key enablers for realizing the CAM vision. In this call we seek contributions that can support the workloads and satisfy the real-time service requirements of the connected and autonomous driving vehicles through holistic, AI-assisted MEC, network slicing, vehicular positioning and spectrum use solutions.

Topics of Interest

This special session aims at bringing together scientists and practitioners to discuss the opportunities, challenges and design of data driven solutions for CAM services with focus on, but not limited to:

- *Cross-domain zero-touch management and orchestration (MANO)*
- *AI-assisted distributed Multi-access Edge Computing (MEC) for V2X applications*
- *AI-based 5G network slicing and optimization for CAM services*

- *AI-based positioning enhancements for V2X positioning*
- *E2E network slicing for vehicular services*
- *Multi-operator, multi-vendor, multi-domain interaction across borders*
- *Innovative spectrum usage for 5G CAM services*
- *Machine learning – from deep learning and (deep) reinforcement learning to federated learning—for V2X communications and networking*
- *Satellite communication for CAM service provision in cross-border setting*
- *Innovations in MANO platforms*
- *Test-bed platforms for 5G CAM services*
- *New business models and use cases for V2X*
- *Enhanced CAM HW components (i.e., OBUs, RSUs)*
- *AI enabled distributed Environment Perception Models*