5G for cooperative, connected and automated mobility (CCAM)

It covers the applicability of 5G connectivity to ""Cooperative, Connected and Automated Mobility"" (CCAM) V2X use cases, taking a broad service approach, including and reaching beyond the safety/efficiency use cases of C-ITS. It aims to qualify and quantify from a business perspective the added value of cellular connectivity compared to pure meshed connectivity or to purely disconnected scenarios, and to enable a wide range of services to connected vehicles in support of innovative business models enabled by 5G connectivity (e.g. new mobility scenario, car as cellular relay node). It takes forward cellular connectivity for vehicles, targeting use cases which are difficult or impossible to realise from a technical or business viewpoint with existing technology and requiring improved performance of typical parameters such as low latency, reliability, security, location, throughput, security.

Validation of 5G in a broad CCAM context is realised through **cross border** trials along 5G corridors covering significant portions of roads and including the core technological innovation expected from 5G, such as (but not limited to) New Radio, new frequency bands[[3,5 Ghz band is the target option for V2N applications, though other bands may be considered]], C-RAN, Mobile Edge Computing, network virtualisation, new network architecture, cross domains data flows. Specific requirements of 5G technologies for connected, cooperative and automated driving will be determined. Results of the pilots are used to define options for deployment, taking into account the evolution from earlier cellular technology (e.g. LTE-V2X), and possible co-existence with other technologies (e.g IEEE 802.11p). Cost/complexity assessment of the various technology deployment options is in scope and identifies who has to invest and who will benefit commercially.

The Commission considers that proposals requesting a contribution from the EU of between EUR 12,5 and 25 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

The challenge is to qualify 5G as a core connectivity infrastructure to address vehicle-to-everything (V2X), both from a technological and from a business perspective, for the higher automation levels (4, 5) defined by the automotive industry (SAE) and for new mobility services. Demonstrating the benefits of 5G connectivity should support innovative business models as ""revenue generators"", opening the door to private investments and to a broader digitisation of the automotive sector. It supports the realisation of the strategic objective of having all major transport paths covered by 5G connectivity in 2025[[Communication of the Commission ""A 5G Action plan for Europe"", COM(2016) 588]] through cross-border trials along roads planned for CCAM deployment (""5G corridors""[[Corridors as referred to in the ""Letter of Intent"" signed by 27 EU Member States, see https://ec.europa.eu/digital-single-market/en/cooperative-connected-and-automated-mobility-europe]]).

- Validation of 5G technologies and architecture in an ""extended CCAM"" context, including validation of innovative business models and applicable standards.

- Validated cost/benefit analysis of **cross border** 5G deployment enabling CCAM along 5G corridors potentially including several operator's domains.

- Availability of deployment scenarios and strategies with broad base industry and administration consensus.

- Identification of spectrum and standardisation gaps with impact at the level of standardisation (taking into account related developments at 3G PP RAN Level) and spectrum allocation bodies. Participation of key European industrial partners of both the ICT and the automotive sectors and with high standardisation impact is desired.

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