Summary

The aim of the European Union's co-funded AutoNet2030 research project is to investigate the complementarity between onboard sensors and 5.9GHz 802.11p-based cooperative wireless communications, and demonstrate how these components can work optimally together in an advanced automated driving system. The term 2030 in the project title refers to the 2020-2030 expected deployment time horizon, when cooperative wireless communications should be available in the majority of vehicles. The AutoNet2030 project team is a consortium of nine research organizations, including: ARMINES (France), BASELABS (Germany), BroadBit (Slovakia), Fiat Research Center (Italy), EPFL (Switzerland), Hitachi Europe (UK), ICCS (Greece), Technical University of Dresden (Germany) and Volvo Technology Corp. (Sweden).

AutoNet2030 intends to demonstrate how the combination of cooperative wireless communications and onboard sensors will make lane-keeping, maneuvering negotiations and interaction between automated/manually driven vehicles more efficient and reliable. The prototyped cooperative automated driving system will be fully integrated into test vehicles and demonstrated on a test track. Using results from drive-testing measurements, the effect of scaling-up to dense traffic scenarios will be investigated through computer simulations. The project aims at actively contributing to the ongoing standardization of cooperative vehicular communications at the European Telecommunications Standards Institute's Intelligent Transportation Systems (ETSI ITS) unit. The project consortium goal is to contribute to the development and demonstration of fail-safe, yet cost-effective automated driving technology.

This deliverable *D2.1 Cooperative Automated Driving Use Cases and Requirements* represents the final output of Work *Package 2 Use cases and system requirements,* and it also corresponds to the milestone MS1 of the project. The report contains the validated list of automated driving control use cases and requirements, upon which the further system design and implementation work will be based. These requirements reflect the criteria that the maneuvering control design work must follow to meet the targeted benefits of cooperative automated driving technology.

Chapter 1 presents an introduction of concepts at the basis of AutoNet2030. The general methodology followed to define and describe the use cases is presented in chapter 2. Chapter 3 contains the use case definition and the storyboard and scenarios describing at high level a demonstrative context for AutoNet2030. Chapter 4 presents the functional use cases with more details, considering a specific event flow and needs for every single use case. In this chapter two main groups are defined: ego-vehicle centric and Local cooperative area centric use cases. Chapter 5 contains the collection and mapping of system-level requirements, in four main functional blocks. Chapter 6 presents the analysis of component-level requirements collected. Chapter 7 contains all the fundamental terms and definitions for AutoNet2030.