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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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Contents

Page

European foreword 4
Introduction 5
1 Scope 6
2 Normative references 6
3 Terms, definitions and abbreviated terms 6
3.1 Terms and definitions 6
3.2 Symbols and abbreviated terms 8
4 Common basic principles 10
4.1 Intelligent Transport System in CEN TC 226 10
4.2 ITS interactions 10
4.3 Operational Design Domain 11
4.4 Road infrastructure capabilities 12
4.5 Sustainability principles 12
4.6 Deployment scenario 14
4.7 Hybrid environment 15
4.8 Functional safety/redundancy principles 15
5 Functional distribution and interactions 16
5.1 Introduction 16
5.2 Road infrastructure – Vehicles: autonomous interactions for improved road safety 17
5.3 Road infrastructure – automated vehicles cooperative interactions 20
5.4 Road infrastructure – automated vehicles model-based interactions 22
5.5 Road infrastructure – automated vehicles interactions fusion 23
6 Operational interactions 28
6.1 General 28
6.2 System interoperability 28
6.3 System performances 28
6.4 System functional safety 29
6.5 System scalability 30
7 Applications and use cases under investigation 30
7.1 Overview 30
7.2 Accurate, complete digital map as a digital mean for automated vehicle navigation 30
7.3 Dynamic navigation for automated vehicles 31
7.4 Contextual dedicated corridor management 32
7.5 Automated parking management and vehicle valet 32
7.6 Road infrastructure support for VRU safety 33
7.7 Road infrastructure support for platoon management 33
7.8 Vehicles distribution 34
7.9 Intersection crossing assistance. 35
7.10 Approaching a tolling barrier 36
7.11 Collision avoidance consecutive to the traffic code violation 36
7.12 Vehicle interception 37
7.13 Public road lighting control 37
7.14 Energy distribution for automated vehicles 37
7.15 Probe vehicles data collection 38
7.16 Integration of C-ITS in public warning systems 38
7.17 Various POI 38
7.18 On demand automated vehicles 39
8 Summary of deployment scenarios priorities 39
8.1 General 39
8.2 A few guiding rules for the filling of the priority inquiry 39
8.3 Analysis of the inquiry results 42
8.4 Synthesis of the deployment scenarios priorities result 43

9 Long-term evolution 45
10 Economic & organizational potential impacts 46
10.1 General 46
10.2 Roles and responsibilities 46
10.3 Organizational impacts 46
10.4 Economic impacts 49
11 Projected standardization approaches for identified priority applications 50
11.1 General 50
11.2 Contextual, dedicated corridor management 50
11.3 Road infrastructure support for VRUs safety 50
11.4 Parking management 51
11.5 Vehicles' distribution 51
11.6 Approaching a tolling barrier 51
11.7 Accurate digital map 52
11.8 Dynamic navigation 52
11.9 Intersection crossing assist 52
11.10 Platooning 53
Bibliography 54

European foreword

This document (CEN/TR 17828:2022) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

This document provides a pre-standardization study for the road infrastructure – automated vehicle interactions which will be used by WG12 as a reference framework for the development of other pre-standardization studies.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

Introduction

A shared general vision between the main stakeholders which are involved in the development and deployment of automated vehicles is that their complexity requires a constant effort to converge toward safe, interoperable solutions.

This complexity is related to the considered mobility environment, in terms of road topography, traffic and weather conditions, human behaviour, vehicle diversity, etc.

This led these main stakeholders to think that it is necessary, in a certain number of situations, to provide some forms of cooperation between the roadside infrastructure (road equipment) and automated vehicles.

Such necessity is reinforced through the fact that the deployment of automated vehicles will be progressive, leading to a heterogeneous mix of different levels of automated vehicles from not automated in-service vehicles (SAE level 0) to fully automated vehicles (SAE levels 4 &5).

This cooperation will require different forms of interactions between the road equipment and the embedded ADAS of automated vehicles. These interactions should be reliable and secure in such a way to be fault tolerant during the fulfilment of the main functions of the automated vehicle. This latest constraint means that system redundancy will be a key element ensuring the required functional safety of the system.

1 Scope

This document provides the current road equipment suppliers' visions and their associated short term and medium-term priority deployment scenarios. Potential functional/operational standardization issues enabling a safe interaction of road equipment/infrastructure with automated vehicles in a consistent and interoperable way are identified. This is paving the way for a deeper analysis of standardization actions which are necessary for the deployment of priority short-time applications and use cases.

This deeper analysis will be done at the level of each priority application/use case by identifying existing standards to be used, standards gaps/overlaps and new standards to be developed to support this deployment.

The release 1 is focusing on short-term (2022 to 2027) and medium-term deployment. Further releases will update this initial vision according to short term deployment reality.

The objectives of this document are to:

— Support the TC 226 and its WG12 work through the development of a common vision of the roles and responsibilities of a modern, smart road infrastructure in the context of the automated vehicle deployment from SAE level 1 to SAE level 5. The roles and responsibilities of the road infrastructure are related to its level of intelligence provided by functions and data being managed at its level.

— Promote the road equipment suppliers' and partners' visions associated to their short-term and medium- term priorities to European SDOs and the European Union with the goal of having available relevant, consistent standards sets enabling the identified priority deployment scenarios.

NOTE Road equipment/infrastructure includes the physical reality as its digital representation (digital twin). Both need to present a real time consistency.

2 Normative references

There are no normative references in this document.