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Intelligent transport systems — Performance testing for connectivity and safety functions of automated driving buses in public transport —

Part 3: Service framework and use cases

Systèmes de transport intelligents — Essais de performance pour les fonctions de connectivité et de sécurité des bus à conduite automatisée dans les transports publics —

Partie 3: Cadre de service et cas d'usage

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Foreword

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This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

A list of all parts in the ISO 21734 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Automated vehicle technology has been developing rapidly in recent years as one of the measures for reducing automobile accidents caused by human errors and for promoting the automobile industry. The automated driving bus (ADB) is a new type of public transport mode embedded with automated vehicle technologies. The progress of development and deployment of ADBs has accelerated in recent years, exceeding that of automated passenger vehicles.

From the connectivity perspective, to ensure its effectiveness as a public transport mode, ADBs need to connect with:

— traffic signal networks both for vehicles and pedestrians;

— the monitoring and control centre for bus operation; and

— other relevant infrastructure.

In terms of safety, the ADB needs to:

— be embedded with automated vehicle functions to connect with the wireless signal control system; and

— be ready to respond to unexpected situations involving other road users such as pedestrians and bicyclists.

With secured connectivity and safety, ADBs can provide stable services.

Along with stable service provision, an ADB deviates its operational measures from conventional ones. This document describes basic components for providing transport services and service framework based on ADB. It also explains use-cases of ADB services, including structure of service components, operational route management, fare payment, emergency response, and provision of operational information along with service procedures for each service use-case.

Furthermore, public transport authorities need technical reference points to measure the service performance of ADB for enhancing public safety on roads.

This document provides the basis for the development of performance testing for connectivity and safety functions of ADB on a national and international level. It is intended to benefit public transport operators, relevant governing authorities and industrial stakeholders.

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Intelligent transport systems — Performance testing for connectivity and safety functions of automated driving buses in public transport —

Part 3:
Service framework and use cases

1 Scope

This document specifies the general service framework and components for operating automated driving buses (ADBs) in public transport networks. It includes:

a) a description of the ADB service components which consist of ADBs, the monitoring and control (MC) centre, Internet of Things (IoT) infrastructure, the smart bus stations and the passengers.

b) a description of the use cases for the ADB service operation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21734-1, *Intelligent transport systems — Performance testing for connectivity and safety functions of automated driving buses in public transport — Part 1: General framework*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21734-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms and definitions

3.1.1
automated driving bus
ADB
bus designed for public transport and embedded with automated driving functions based on SAE level 4 or higher

Note 1 to entry: definitions of autonomous vehicle can be found in the SAE document SAE J3016.

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