



BSI Standards Publication

Intelligent transport systems (ITS) — Network based precise positioning infrastructure for land transportation

Part 1: General information and use case definitions

National foreword

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**Intelligent transport systems
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**Part 1:
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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	2
4 Document overview and structure	3
5 General information	3
5.1 Purpose of this document.....	3
5.2 Overview of NETPPI-LT.....	3
6 Use case overview and definitions	6
6.1 General.....	6
6.2 Use case overview.....	6
6.2.1 Basic principles for use cases.....	6
6.2.2 Use case clusters.....	7
6.3 Use case definitions.....	8
6.3.1 UC cluster 1 — Safe driving.....	8
6.3.2 UC cluster 2 — Intersection approach and clearance.....	11
6.3.3 UC cluster 3 — Public transportation safety.....	12
Bibliography	14

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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

A list of all parts in the ISO 22086 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.

Introduction

This document provides the framework guidelines to identify lane-level positioning technologies with the land transportation service requirements and related standards required to deploy, manage, and operate network-based precise positioning infrastructure for land transportation. The purpose of the system is to generate and transmit the GNSS correction and integrity information to land transportation users including drivers, pedestrians, riders, etc. in order to enable them to perform lane-level positioning with low-cost GNSS receivers on nomadic devices at a high confidence level. The system design following the requirements of ITS and automotive services that are closely related to traffic safety and traffic efficiency is defined.

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Intelligent transport systems (ITS) — Network based precise positioning infrastructure for land transportation —

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1 Scope

This document provides the framework guidelines on technologies related to the network-based precise positioning infrastructure for land transportation (NETPPI-LT) that allows land transportation users or objects carrying nomadic devices, equipped with low-cost global navigation satellite systems (GNSS) receivers and wireless communication transceivers, to perform lane-level positioning and integrity monitoring. These technologies will unlock enhanced intelligent transport systems (ITS) services and applications and will increase traffic operation/management efficiencies and traffic safety by reducing economic and social costs from traffic jams, traffic accidents, and environmental pollution.

The framework described in this document includes:

- reference architecture for the NETPPI-LT enabling lane-level positioning and integrity monitoring on personal ITS devices;
- guidelines for providing a real-time lane-level positioning service based on GNSS with the aid of the NETPPI-LT;
- guidelines to facilitate the practical implementation of the NETPPI-LT for engineers including related use cases.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1.1

reference station

implementation of a NETPPI-LT subsystem which captures signals/data from visible GNSS satellites and monitoring information (pressure, temperature, humidity, image, etc.) at a known position with clear sky view and no radio interferences, and includes wired or wireless links to send the collected data to the control station