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Intelligent transport systems (ITS) — Nomadic device service platform for micro mobility —

Part 3: Data structure and data exchange procedures

Systèmes de transport intelligents (ITS) — Plate-forme de services via appareils nomades pour la micro-mobilité —

Partie 3: Structure des données et procédures d'échange de données

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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 22085 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

Micro mobility can be defined as a small or compact-sized electric vehicle. Normally, it is designed to be used as a first-mile and last-mile service connecting public transit routes or to provide personal mobility with one or two passengers for a short-distance trip.

The nomadic device service platform aims to accommodate the specific needs of integrated mobility services for either urban or rural areas. The service platform focuses on the use of data exchange interface standards between micro mobility and nomadic devices to enable the development of cloud-based ITS using wireless networks.

This document fosters the introduction of nomadic devices in the public transport and automotive world. It specifies the data structure and data exchange procedure based on Data eXchange Messages (DXMs) at the application level regarding pre-trip, post-trip and while driving, in order to identify connectivity among a user's personal ITS station (P-ITS-S, for example nomadic devices), vehicle-ITS-station gateway (V-ITS-S) and central ITS station (C-ITS-S).

This document covers subjects related to mobility services using micro mobility, including micro mobility sharing, parcel delivery and first-mile and last-mile connections in urban areas. This DXM implementation describes how such mobility services based on micro mobility are provided using a P-ITS-S.

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Intelligent transport systems (ITS) — Nomadic device service platform for micro mobility —

Part 3:
Data structure and data exchange procedures

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1 Scope

This document specifies the data structure and data exchange procedure related to micro mobility service applications utilizing a P-ITS-S (i.e. nomadic devices), including car sharing, parcel delivery and first-mile and last-mile connections. In addition, this document delivers related requirements for the development and operation of the service platform between nomadic devices and micro mobility with intelligent transport systems (ITS) technologies.

This document defines a data structure and data exchange procedure based on the datasets and messages which are defined in ISO 22085-2.

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 21217, *Intelligent transport systems — Station and communication architecture*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 21217 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
central ITS station
C-ITS-S
ITS station assuming a central role

3.1.2
personal ITS station
P-ITS-S
implementation of an ITS station as a personal ITS subsystem (e.g. nomadic device or mobile device) which provides communication connectivity via a wireless communication network (3G, 4G, and 5G), mobile wireless broadband (WIMAX, HC-SDMA, etc.), WiFi and short-range links, such as Bluetooth, Zigbee, etc. to connect portable devices to the motor vehicle communications system network

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