INTERNATIONAL STANDARD

ISO 19414

First edition
2020-01

Intelligent transport systems — Service architecture of probe vehicle systems

Systèmes intelligents de transport — Architecture de services des systèmes de véhicules traceurs

Reference number
ISO 19414:2020(E)

© ISO 2020



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Abbreviated terms **1**
5 Service framework of probe vehicle systems **2**
5.1 Basic concept of probe data 2
5.2 Concept of service architecture 2
5.3 Probe vehicle factors 3
5.3.1 General 3
5.3.2 Quality assurance 3
5.3.3 Privacy 4
5.3.4 Standards 4
5.3.5 Metadata 4
5.3.6 Storage and access 4
5.3.7 Data ownership and IPR 4
6 Definition of service domains using service architecture **4**
6.1 General 4
6.2 Reference target areas 5
6.2.1 Traffic management measures estimation and traveller information applications 5
6.2.2 Safety applications 6
6.2.3 Freight operations applications 6
6.2.4 Freeway-based dynamic speed harmonization application 7
6.2.5 Non-signal related environmental applications 7
6.2.6 Road and infrastructure deterioration diagnosis applications 8
6.2.7 Road weather management applications 8
Bibliography **11**

© ISO 2020 – All rights reserved

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*.

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.

© ISO 2020 – All rights reserved

Introduction

More and more attention has been paid to safety, comfort, mitigation of impacts on the environment, and energy efficiency in transport systems. The use of probe data (specified in ISO 22837) is considered to be a key factor of a solution for the above issues.

This document defines a service architecture of probe vehicle systems (PVS). PVS functionalities can be implemented in an ITS station unit specified in ISO 21217 applying applicable protocols specified in other standards. Examples of applicable protocols are the local dynamic map specified in ISO 18750 and generic ITS station facilities layer services specified in ISO/TS 17429. The service architecture classifies ITS services which using PVS. This classification defines service domains for cooperation between PVS.

This document does not prescribe a physical communication medium for transmitting data/information to or from vehicles. This document is intended to be independent of any particular communication medium and to be compatible with any medium that is selected by system developers.

This document focuses on services that can be developed using public sector probe data that are generated by vehicles. The private sector can offer additional applications that require sign-in and identification; however, this document focuses on public sector applications that can be developed using anonymous probe data (specified in ISO 24100).

This document is an extension towards more general and global applicability of FHWA-JPO-13-091.

© ISO 2020 – All rights reserved

Intelligent transport systems — Service architecture of probe vehicle systems

1 Scope

This document specifies a service architecture that defines the framework and domain for classification of probe vehicle systems (PVS), which are systems that collect probe data from private vehicles and that process the probe data statistically towards useful information that finally can be provided to end users.

This document focuses on services that can be developed using public sector probe data that are generated by vehicles. It specifies the following items related to PVS:

— service framework of probe vehicle systems;

— definition of service domain of PVS.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes 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
personally identifiable information
information that can be used in a given context to identify, contact, or locate a single person, or to identify an individual in context

4 Abbreviated terms

DSRC	dedicated short range communications
IPR	intellectual property rights
PII	personally identifiable information
PVS	probe vehicle system
V2I	vehicle-to-infrastructure (communications)
V2V	vehicle-to-vehicle (communications)
Wi-Fi	wireless fidelity

© ISO 2020 – All rights reserved