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Smart community infrastructures — Guidance on smart transportation with the use of digitally processed payment (d-payment)

Infrastructures urbaines intelligentes — Recommandations pour le transport intelligent utilisant les paiements numériques

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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).

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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 268, *Sustainable cities and communities*, Subcommittee SC 1, *Smart community infrastructures*.

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

Each day a huge number of city residents and visitors use transportation services by paying fares for every ride in and between cities. Fast ticket processing for these customers is required in order to avoid congestion in ticket offices and at ticket vending machines. In some transportation services, operators do not sell tickets but request that customers pay the exact fare as no change is given. Payment of transportation fares is normally in local currencies, including hard currencies. International travellers have to pay their travel costs in such currencies after having exchanged money in advance. Credit cards are an option for payment but not all cards are accepted in some places, especially when paying small amounts.

Thus, easy procedures for the payment of precise amounts are indispensable in city life and business activities, including transportation rides. In transportation and its related or additional services, customers have to pay many kinds of fees besides transportation fares. They want to pay in their preferred ways, which can include a variety of options. Proper collection of fares or fees in an easy way assists the business of transportation and leads to sustainable local services for citizens, since the business is financially stabilized with reduced handling costs and the avoidance of fee receipt failure.

Digitally processed payment (d-payment) is a method of paying fees using a digital form of an existing and circulated currency, which works like common coins and paper bills. The sums of fares or fees collected in the services are extremely large, even though the amount paid by customers for each transaction is small. Therefore, the payment system requires high security, not necessarily just for the protection of customer payments but also to protect operators from, for example, theft by employees who directly handle and manage cash.

This document describes the concept of d-payment in transportation and its related or additional services, and its safe management and practical application thereof, which will be helpful to citizens and city visitors using such services and beneficial to the service operators.

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Smart community infrastructures — Guidance on smart transportation with the use of digitally processed payment (d-payment)

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1 Scope

This document provides guidance on how to organize and implement smart transportation by digitally processed payment (d-payment) in order to provide a safe, convenient payment method for citizens and city visitors in transportation and its related or additional services. This will additionally benefit operators managing fee receipt in transportation services and money transfer or transactions between these business operators and banks or settlement organizations.

Smart transportation by d-payment is not intended to eliminate cash payment from transportation services but is helpful in organizing inter-operator, city, regional and national common ticket networks and providing trading services independent of local currencies.

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
smart transportation by d-payment
transportation and its related or additional services in which payment is digitally processed

3.2
digitally processed payment
d-payment
currency forms operated, managed and controlled in mathematical algorithms like actual currencies having circulation and trading functions, which are cashable or exchangeable for hard currencies through transactions using digital wallets

3.3
d-payment wallet
digital account managed by using public-key cryptography

4 Concept of smart transportation by d-payment

4.1 General

Cash payment in transportation causes difficulties for both customers and operators. Operators have to be prepared to receive cash that is not easy to manage, since coins and paper bills are heavy and take up

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