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Intelligent transport systems — Public transport requirements for the use of payment applications for fare media

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National foreword

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TECHNICAL REPORT

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Intelligent transport systems — Public transport requirements for the use of payment applications for fare media

Systèmes intelligents de transport — Exigences pour les transports publics relatives à l'utilisation d'applications de paiement pour les moyens de perception du prix du voyage

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Foreword

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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. www.iso.org/directives

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The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

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Introduction

For several years, payment institutions have started to roll out worldwide contactless payment cards. These cards support a contactless interface in addition to a contact interface or magstripe.

Where made available by Payment Application Issuers, these cards might be used by the Public transport industry for accessing the transport networks for specific use cases and customer groups. To facilitate payment application usage, the Public transport industry will benefit from data storage within the payment application, but this data storage capability is not a compulsory prerequisite as some Public transport Operators (PTOs) will start accepting payment application without such data storage facilities.

This Technical Report describes the current state of the art in a fast changing subject domain. It should not be used as the primary basis for system procurements. It describes PTO requirements for the ways that payment cards, or more specifically, payment applications (see Notice below), can be used by the PTOs to serve specific customer needs. The PTO requirements expressed in this Technical Report aim at being applicable to all payment application scheme/brand specifications for, and only for, the listed use cases in this Technical Report. For the use cases primarily based on the contactless interface, this Technical Report describes the functions needed by the Public transport industry and provides requirements from PTOs to the payment industry. Note that not all PTO requirements are currently available and some will require further discussion between the payment industry and PTOs, possibly leading to further developments in the availability and use of payment application functions. This Technical Report will be updated according to ISO procedures to reflect the evolution of PTO requirements and the corresponding level of functionality afforded by the payment industry. It assumes that any available data storage space will allow the storage of limited information only but may not be able to host fare products as they are defined today for ticketing applications (e.g. it might not be sensible to store a season ticket in a record that might be overwritten).

This Technical Report has been designed to provide ticketing and payment system designers who wish to accept payment applications with a clear definition of what usage options are available from these payment applications. It describes the functional interface to the payment application, with the aim of facilitating the design and procurement of fare collection systems.

Annexes A and B also provide:

— a checklist of commercial issues that need to be addressed by Public transport (PT), usually under a contract with a bank providing merchant acquiring services;

— options for providing interoperability between fare payment schemes that use bank issued payment applications, including proposals for any concomitant changes to those payment applications and payment application scheme rules.

NOTICE: The term "Payment application" used in this Technical Report refers to both an application resident either in a conventional payment card or an application loaded into a multi-application customer media (as described in ISO/TR 24014-3[3]).

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Intelligent transport systems — Public transport requirements for the use of payment applications for fare media

1 Scope

This Technical Report defines the requirements from public transport for payment application owners to specify their application to make payment application media accepted as a tool to access the public transport networks by means of either media centric or back-office centric fare management systems, for non-local and non-frequent users as well as regular users.

This Technical Report defines both technical and non-technical requirements needed.

Four main items have been identified:

— Discrepancies between the existing payment application scheme rules and PTOs expectations.

— Definition of a short lifecycle storage area (scratchpad) which may support Check-In/Check-Out access and inspection processes.

— Definition of a long life cycle storage area (product area) to store a transport and other products within the payment application.

— Condition for use in a multi-application context, when different payment and transport applications are implemented in the same medium.

This Technical Report describes the requirements for:

— Level of Security and associated trust model;

— Conditions for the use of the specific storage area and the overwriting of products or data.

This Technical Report does not describe commercial issues which have to be defined for an implementation and may differ from place to place, e.g.:

— From Media Owner to Customer;

— From Media Owner to Application Owners;

— From Payment Application owner to customer;

— From Payment Application Owner to Public transport;

— From Public transport to Customer.

The first cases addressed by this Technical Report are EMV contactless applications and those variants (not strictly EMV) with application storage. All other payment applications (e.g. contactless magstripe emulation) will be addressed potentially in a future version of this Technical Report.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

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2.1
acquirer (or acquiring bank)
payment institution having a contract with the merchant for handling the remittance and settlement of transit fares charged to customers using the transport network

Note 1 to entry: Merchant in this Technical Report is Public Transport Operator (PTO).

Note 2 to entry: The acquirer may accept payments using payment applications from one or more payment application issuers, and/or for one or more payment application schemes/brands.

2.2
cardholder
holder of the payment application

Note 1 to entry: The cardholder has a contract with the issuer of its payment application. The media hosting the payment application may not necessarily be a "card".

2.3
certification
certification applicable to payment application, payment media and payment terminals, as required by the banking industry stakeholders, e.g. EMVCo, payment schemes

2.4
card-not-present transaction
CNP transaction
payment transaction where neither the card nor its holder are present at the point of sale

EXAMPLE Orders by telephone, fax or the Internet.

2.5
EMV Contactless Application
payment schemed defined applications relying on EMV technology

Note 1 to entry: As opposed to a payment scheme application relying on magstripe emulation.

Note 2 to entry: This is the type of payment application.

2.6
issuer
payment application issuer
payment institution having a contract with the cardholder and issuing the payment application on a contactless media

Note 1 to entry: The issuer issues payment applications such as credit or debit cards and guarantees payment for properly authorized transactions using the payment application.

2.7
merchant
entity having the necessary terminal equipment for handling payment transaction at validation points

Note 1 to entry: In this Technial Report, merchants are Public Transport Operators (PTOs).

2.8
payment application
application resident either in a conventional payment card or an application loaded into a multi-application customer media

Note 1 to entry: As described in ISO/TR 24014-3.[3]

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2.9
payment interoperability
acceptance of payment application at the merchant point of sales whatever the payment application issuer is and whatever the merchant acquirer is

Note 1 to entry: Payment interoperability is ensured by rules and certification process enforced at each payment application scheme level and by EMVCo.

2.10
payment application scheme
payment brands that establish industry operating regulations for acquirers and issuers to facilitate coordination with merchants and cardholders

Note 1 to entry: Payment application schemes can have international scope (VISA, MasterCard, JCB Intl) or a domestic one (ZKA, GIE Carte Bancaire).

2.11
public transport
general statement about the transit industry

2.12
public transport operator
local specific implementation, independently of any difference between the roles of authorities, operators or retailers in fare management systems as defined in ISO 24014-1

2.13
transit data storage
standard logical data storage within the payment application available for transit ticketing operations, even if this storage is open to other merchants

Note 1 to entry: Transit data storage can take two implementation forms that determine their life cycle: included in the payment transaction log; separate, and available for non-payment needs.

Note 2 to entry: In the context of this Technical Report, the word transit data area (TDA) designates such a dedicated storage.

2.14
ticketing interoperability
technical interoperability provided by the usage of the same format for writing transit data in the payment application

Note 1 to entry: In the context of this Technical Report, ticketing interoperability is considered an optional requirement.

2.15
validation
transaction made with payment transaction equipment for confirming the validity of a payment transaction product or for enabling access to the transport network by realizing a payment transaction

2.16
zero value (payment) transaction
offline transaction at the reader for a null amount

EXAMPLE Null amount, e.g. £0.00 or 0€ or 0USD.

Note 1 to entry: This transaction may not be possible on all cards now.

3 Symbols and abbreviated terms

For the purposes of this Technical Report, the following symbols and abbreviations apply:

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3.1 CNP

Card-not-present

3.2 HHT

Hand-held Terminal (used for revenue inspection)

3.3 PAN

Primary Account Number

3.4 PT

Public Transport

3.5 PTO

Public Transport Operator

3.6 TDA

Transit Data Area

3.7 TR

Technical Report

3.8 ZVT

Zero Value Transaction

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4 Objectives and general requirements for the PTO

PTOs motivations for using the payment applications as a fare media can serve different **objectives**:

— [Obj.1] To offer a solution for local transit product storage:

  — Using payment application as a fare media can, in some cases, remove the need (and cost) for PTO to distribute ticketing application and/or customer media.

— [Obj.2] To replace cash as a fare payment at the gate

  — Using payment application as a fare media can replace cash payment at the gate or at bus/tram entry by electronic payment.

— [Obj.3] To provide a seamless and universal way of providing access to the transport network for infrequent users

  — Using payment application as a fare media can offer PTOs a complement to their existing ticketing application covering the needs of frequent customers, which by nature don't hold their ticketing application,

— [Obj.4] To enable a third party application used for customer authentication in the fare management system

  — Using payment application as a fare media can allow customer authentication via their payment application in post payment fare management system and avoid the issuance of transport media for registered customers.

The corresponding use cases are described in (Clause 5):

The Public transport requirements that make them possible address the following elements:

— Requirements for payment applications used in transport ticketing (Clause 6)

— Application security in payment applications (Clause 8)

— Customer media requirements (Clause 9)

— Test and certification of payment applications (Clause 10)

— Customer data privacy (Clause 11)

These PT requirements are also completed by explanations about how payment applications can be used and what fare policy can be implemented according to the use cases and validation access rules applicable in a transport network (Clause 7).

Beyond the scope of this Technical Report, a first level of analysis is also given for guidance in annexes about:

— business rules checklist for using payment applications (Annex A);

— options for providing national and international ticketing interoperability (Annex B).

NOTE Where interoperability is achieved by means of the basic contactless payment application without transit data storage, there is no need for any ticketing data to be interoperable.

5 Use cases

Payment applications can be used in a number of ways for transport ticketing, as determined by the PTO and subject to suitable agreement in the merchant acquiring contracts.

The generic ways are defined in the following use cases which can eventually be complemented by national interoperable fare management applications.

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