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Irish Standard
I.S. EN ISO 24014-1:2015

Public transport - Interoperable fare management system - Part 1: Architecture (ISO 24014-1:2015)

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National Foreword

I.S. EN ISO 24014-1:2015 is the adopted Irish version of the European Document EN ISO 24014-1:2015, Public transport - Interoperable fare management system - Part 1: Architecture (ISO 24014-1:2015)

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 24014-1

November 2015

ICS 03.220.01; 35.240.60

Supersedes EN ISO 24014-1:2007

English Version

Public transport - Interoperable fare management system - Part 1: Architecture (ISO 24014-1:2015)

Transport public - Système de gestion tarifaire interopérable - Partie 1: Architecture (ISO 24014-1:2015)

Öffentlicher Verkehr - Interoperables Fahrgeldmanagement System - Teil 1: Architektur (ISO 24014-1:2015)

This European Standard was approved by CEN on 10 July 2015.

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Ref. No. EN ISO 24014-1:2015 E

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Foreword

This document (EN ISO 24014-1:2015) has been prepared by Technical Committee ISO/TC 204 "Intelligent transport systems" in collaboration with Technical Committee CEN/TC 278 “Intelligent transport systems” the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 24014-1:2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

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I.S. EN ISO 24014-1:2015

INTERNATIONAL STANDARD

ISO 24014-1

Second edition
2015-10-15

Public transport — Interoperable fare management system —

Part 1: Architecture

Transport public — Système de gestion tarifaire interopérable —

Partie 1: Architecture

Reference number
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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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 document 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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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

ISO 24014-1 was prepared by European Committee for Standardization (CEN) Technical Committee CEN/TC 278 *Road transport and traffic telematics*, in collaboration with ISO/TC 204, *Intelligent transport systems*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 24014-1:2007), which has been technically revised.

ISO 24014 consists of the following parts, under the general title *Public transport — Interoperable fare management system*:

— *Part 1: Architecture*

— *Part 2: Business practices*

— *Part 3: Complementary concepts to Part 1 for multi-application media*

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Introduction

Fare management (FM) encompasses all the processes designed to manage the distribution and use of fare products in a public transport environment.

Fare management is called interoperable (IFM) when it enables the customer to use a portable electronic medium (e.g. a contact/contactless smart card) with compatible equipment (e.g. at stops, with retail systems, at platform entry points, or on board vehicles). IFM concepts can also be applied to fare management systems not using electronic media.

Potential benefits for the customer include reductions in queuing, special and combined fares, one medium for multiple applications, loyalty programmes, and seamless journeys.

Interoperability of fare management systems also provides benefits to operators and the other parties involved. However, it requires an overall system architecture that defines the system functionalities, the actors involved and their roles, the relationships, and the interfaces between them.

Interoperability also requires the definition of a security scheme to protect privacy, integrity, and confidentiality between the actors to ensure fair and secure data flow within the IFM system (IFMS). The overall architecture is the subject of this part of ISO 24014 which recognizes the need for legal and commercial agreements between members of an IFM, but does not specify their form. The Technical Specifications of the component parts and, particularly, the standards for customer media (e.g. smart cards) are not included.

Note that there is not one single IFM. Individual operators, consortia of operators, public authorities, and private companies can manage and/or participate in IFMSs. An IFM can span country boundaries and can be combined with other IFMSs. Implementations of IFMSs require security and registration functionalities. This part of ISO 24014 allows for the distribution of these functions to enable the coordination/convergence of existing IFMSs to work together.

This part of ISO 24014 intends to provide three main benefits.

a) It provides a framework for an interoperable fare management implementation with minimum complexity.

b) It aims to shorten the time and lower the cost of IFM procurement as both suppliers and purchasers understand what is being purchased. Procurement against an open standard reduces cost as it avoids the need for expensive bespoke system development and provides for second sourcing.

c) It aims to simplify interoperability between IFMSs to the benefit of all stakeholders.

The work has benefited from the architecture work done in Electronic Fee Collection (CEN/TC 278/WG 1) and other domains including the following:

— ISO/TS 14904, *Road transport and traffic telematics — Electronic fee collection (EFC) — Interface specification for clearing between operators*;

— ISO/TS 17573, *Electronic fee collection — Systems architecture for vehicle-related tolling*;

— existing international data security standards.

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Public transport — Interoperable fare management system —

Part 1: Architecture

1 Scope

This part of ISO 24014 provides the basis for the development of multi-operator/multi-service Interoperable public surface (including subways) transport Fare Management Systems (IFMSs) on a national and international level.

This part of ISO 24014 is applicable to bodies in public transport and related services which agree that their systems need to interoperate.

While this part of ISO 24014 does not imply that existing interoperable fare management systems need to be changed, it applies so far as it is practically possible to extensions of these.

This part of ISO 24014 covers the definition of a conceptual framework which is independent of organisational and physical implementation. Any reference within this part of ISO 24014 to organisational or physical implementation is purely informative.

The objective of this part of ISO 24014 is to define a reference functional architecture for IFMSs and to identify the requirements that are relevant to ensure interoperability between several actors in the context of the use of electronic tickets.

The IFMS includes all the functions involved in the fare management process such as

— management of application,

— management of products,

— security management, and

— certification, registration, and identification.

This part of ISO 24014 defines the following main elements:

— identification of the different set of functions in relation to the overall fare management system;

— a generic model of IFMS describing the logical and functional architecture and the interfaces within the system and with other IFMSs;

— use cases describing the interactions and data flows between the different set of functions;

— security requirements.

This part of ISO 24014 excludes consideration of the following:

— the physical medium and its management;

— the technical aspects of the interface between the medium and the medium access device;

— the data exchanges between the medium and the medium access device;

NOTE The data exchanges between the Medium and the Medium Access Device are proposed by other standardization committees.

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— the financial aspects of fare management systems (e.g. customer payments, method of payment, settlement, apportionment, reconciliation).

2 Terms and definitions

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

2.1
action list
list of items related to IFM applications or *products* (2.24) downloaded to *medium access devices* (2.18) (MADs) processed by the MAD if and when a specific IFM application or product referenced in the list is encountered by that MAD

2.2
actor
person, an *organisation* (2.19), or another (sub)system playing a coherent set of functions when interacting with the IFM system within a particular *use case* (2.30)

2.3
application rules
application owner requirements

2.4
application specification
specification of functions, data elements, and security scheme according to the *application rules* (2.3)

2.5
application template
executable technical pattern of the *application specification* (2.4)

2.6
application
implemented and initialised *application template* (2.5)

Note 1 to entry: The application is identified by a unique identifier.

Note 2 to entry: The application houses *products* (2.24) and other optional customer information (customer details, customer preferences).

Note 3 to entry: The application can be fully installed on a customer media or distributed on the customer media and the IFM back offices.

2.7
commercial rules
rules defining the settlement and commission within the IFMS

2.8
component
any piece of hardware and/or software that performs one or more functions in the IFMS

2.9
component provider
anyone who wants to bring a *component* (2.8) to the IFMS

2.10
IFM functional model
model to define functions of *IFM-roles* (2.12) and how they interact

2.11
IFM policies
commercial, technical, security, and privacy objectives of IFM

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