
**Public transport — Interoperable fare
management system —**

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

Transport public — Système de gestion tarifaire interopérable —

*Partie 3: Concepts complémentaires à la Partie 1 pour médias
multiapplications*



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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.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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.

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This first edition is a partial revision of ISO 24014-1:2007.

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

- Part 1: *Architecture*¹⁾
- Part 2: *Business practices* [Technical Report]²⁾
- Part 3: *Complementary concepts to Part 1 for multi-application media* [Technical Report]

1) International Standard under development.

2) Technical Report under development.

Introduction

This Technical Report explains the functions to be identified by Public Transport stakeholders to set up Interoperable Fare Management. From that functional view, there was no need to distinguish the implementation as a stand-alone application from the implementation in a multi-application environment.

Since the publication of ISO 24014-1, multi-application contactless devices have become available such as multi-application smart cards, USB-keys and mobile phones. They are able to host Public Transport Applications in embedded or additional Secure Elements.

This Technical Report addresses the introduction of multi-application media into the transit ecosystem from the organizational and functional perspectives with the objective to provide a basis for transit to leverage its large customer base.

Only the use of standardized processes can put Public Transport in a position to benefit from such a multi-application environment

- to diminish investment and operational costs with the use of Media issued by a third party,
- to increase the convenience and interoperability for the customer and therefore the ridership, and
- to make the same service available with multiple solution providers without developing specific middleware.

This Technical Report therefore acknowledges technical requirements that refer to existing ISO and non-ISO open standards to favour the convergence of transit Fare Management Systems.

Document outline

The technical points to be harmonized for regional implementations that need to find possibilities of commercial interoperability are described:

- Common model of the multi functional architecture of the media ([Clause 6](#)).
- Requirements for a common management process of the Application Templates in multi-application media and in the IFM Systems themselves ([Clause 7](#)).

The complements to the functional model of Part 1 and to Part 2 when independent Fare Management Systems decide together to use multi-application media to develop interoperability are described:

- Insertion of the IFM functional model in a multi-application environment, and new roles that are not included in Part 1 but are necessary for the management of the Media and of the Applications (see [Clause 8](#)).
- Use cases and processes (see [Clause 9](#)).

These conclusions may be used to make different IFM Systems interoperable

- When each of them independently issues its Application Template for use in multi-application media.
- When they use a common complementary Application Template for a progressive integration.

Public transport — Interoperable fare management system —

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

1 Scope

This Technical Report describes how to implement Interoperable Fare Management (IFM) Applications in a multi-application environment, and the additional roles and use cases that appear.

Multi-application media open new possibilities for separate secure IFM Applications to be loaded and operated separately on the same Media.

This enables a customer oriented commercial interoperability with the possibility for the customer to use the same Media in different Fare Management Systems independently of the fare policies and specific local systems and without the need for any common commercial policies.

2 Normative references

The following referenced documents are indispensable for the application 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/IEC 7816 (all parts), *Identification cards — Integrated circuit cards*

ISO/IEC 14443-1, *Identification cards — Contactless integrated circuit cards — Proximity cards — Part 1: Physical characteristics*

ISO/IEC 14443-2, *Identification cards — Contactless integrated circuit cards — Proximity cards — Part 2: Radio frequency power and signal interface*

ISO/IEC 14443-3, *Identification cards — Contactless integrated circuit cards — Proximity cards — Part 3: Initialization and anticollision*

ISO/IEC 14443-4, *Identification cards — Contactless integrated circuit cards — Proximity cards — Part 4: Transmission protocol*

ISO/IEC 18092, *Information technology — Telecommunications and information exchange between systems — Near Field Communication — Interface and Protocol (NFCIP-1)*

ISO 24014-1:2007, *Public transport — Interoperable fare management system — Part 1: Architecture*

ISO/TR 24014-2, *Public transport — Interoperable fare management system — Part 2: Business practices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24014-1, ISO/TR 24014-2 and the following apply.