ISO 24014-1:2021 (E)

Public transport — Interoperable fare management system — Part 1: Architecture

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Abbreviated terms

5 Requirements

6 System environment for IFMS

6.1 General
6.2 Mobility platforms

7 Conceptual framework for IFMS

7.1 General
7.2 Description of IFM roles and external roles
7.3 Basic framework of the generic IFM functional model

8 Use case description for the IFM functional model

8.1 Description of IFM-roles and external roles
8.2 Define set of rules
8.2.1 General
8.2.2 Define set of rules for Customer accounts
8.2.3 Define set of rules for media
8.2.4 Define set of rules for ID services
8.2.5 Define set of rules for payment services
8.3 Certification
8.3.1 General
8.3.2 Certification of organizations
8.3.3 Certification of components
8.3.4 Certification of media
8.3.5 Certification of ID services
8.3.6 Certification of payment services
8.3.7 Certification of application specifications and templates
8.3.8 Certification of product specifications and templates
8.4 Interaction with external objects
8.4.1 General
8.4.2 Interaction with external media
8.4.2.1 Evaluate specifications of external media
8.4.2.2 Align with the set of rules for external media
8.4.2.3 Maintenance of the set of rules for external media
8.4.3 Interaction with external applications
8.4.3.1 Evaluate specifications of the external application
8.4.3.2 Align with the set of rules for the external application
8.4.4 Interaction with external ID services
8.4.4.1 Evaluate specifications of the external ID service
8.4.4.2 Align with the set of rules for the external ID service
8.4.5 Interaction with external payment services

8.4.5.1 Evaluate specifications of the external payment service
8.4.5.2 Align with the set of rules for the external payment service
8.5 Registration
8.5.1 General
8.5.2 Registration of organizations
8.5.3 Registration of components
8.5.4 Registration of ID services
8.5.5 Registration of customer accounts
8.5.5.1 General
8.5.5.2 Customer applies for a personalized account
8.5.5.3 Customer applies for a pseudonymous account
8.5.5.4 Activating the customer account
8.5.6 Registration of payment services
8.5.7 Registration of media
8.5.8 Registration of customer media
8.5.9 Registration of application templates
8.5.10 Registration of applications
8.5.11 Registration of product templates
8.5.12 Registration of products
8.6 Managing ID services
8.6.1 General
8.6.2 Enrolment and update of Customer ID data via an application form
8.6.3 Enrolment and update of Customer ID data via an external ID service
8.6.4 Update of Customer ID data via an online account
8.6.5 Re-use of incumbent Customer ID data
8.6.6 Management and maintenance of Customer ID data
8.6.7 Providing the ID service to IFMS internal and external organizations
8.7 Management of customer accounts
8.7.1 General
8.7.2 Secure login to customer online accounts
8.7.3 Connect/disconnect customer media to/from the customer online account
8.7.4 Transfer of products between connected customer media
8.7.5 Connect system generated account with a customer account
8.7.6 Termination of customer accounts
8.7.6.1 General
8.7.6.2 Regular termination of customer accounts
8.7.6.3 Forced termination of customer accounts
8.8 Management of customer media
8.8.1 General
8.8.2 Provisioning of media
8.8.2.1 General
8.8.2.2 Provisioning of IFMS-owned media
8.8.2.3 Provisioning of customer-owned media
8.8.3 Termination of customer media
8.8.3.1 General
8.8.3.2 Regular termination of customer media
8.8.3.3 Forced termination of customer media
8.9 Management of applications
8.9.1 General
8.9.2 Dissemination of application templates
8.9.3 Acquisition of applications
8.9.4 Termination of application templates
8.9.4.1 General
8.9.4.2 Regular termination of application templates
8.9.4.3 Forced termination of application templates
8.9.5 Termination of applications
8.9.5.1 Regular termination of applications
8.9.5.2 Forced termination of applications
8.10 Management of products
8.10.1 Dissemination of product templates
8.10.2 Termination of product templates
8.10.2.1 General
8.10.2.2 Regular termination of product templates
8.10.2.3 Forced termination of product templates

8.10.3 Management of action lists
8.10.4 Acquisition of products
8.10.5 Modification of product parameters
8.10.6 Termination of products
8.10.6.1 General
8.10.6.2 Regular termination of products
8.10.6.3 Forced termination of products
8.10.7 Use and inspection of products
8.10.8 Collection of data
8.10.9 Forwarding data
8.10.10 Generation and distribution of clearing reports
8.11 Security management
8.11.1 General
8.11.2 Monitoring of IFM processes and IFM data life cycle
8.11.3 Management of IFM security keys
8.11.4 Management of security lists
8.11.4.1 Provision of security lists
8.11.4.2 Updating security list data
8.11.4.3 Add or remove a component to/from a security list
8.11.4.4 Add or remove a customer medium to/from a security list
8.11.4.5 Add or remove an application template to/from a security list
8.11.4.6 Add or remove an application to/from a security list
8.11.4.7 Add or remove a product template to/from a security list
8.11.4.8 Add or remove a product to/from a security list
8.12 Customer Service management (optional)

9 System interface identification

10 Identification

10.1 General
10.2 Numbering scheme
10.3 Prerequisites
10.3.1 There is one Registrar within the IFMS.
10.3.2 All objects, e.g. templates and components, have an owner who is one of the actors in the IFMS.
10.3.3 The identification of the application and product shall be as short and compact as possible due to the minimization of the transaction time between the customer medium and the MAD.

11 Security in IFMSs

11.1 General
11.2 Protection of the interests of the public
11.3 Assets to be protected
11.4 General IFM security requirements

Annex A (informative) Mobility Platform – German example

A.1 Conceptual framework for mobility platforms
A.2 Description of MP roles
A.2.1 Customer
A.2.1.1 General
A.2.1.2 Booker
A.2.1.3 Payer
A.2.1.4 Mobility Service User
A.2.2 Mediator
A.2.3 Information Service Manager
A.2.4 Trip Information Provider
A.2.5 Customer Contract Partner
A.2.6 Product Owner
A.2.7 Service Provider
A.2.8 Payment Provider
A.3 Basic framework of the generic mobility platform functional model

Annex B (informative) Pay-As-You-Go (PAYG) roles and relationships in an IFMS

B.1 Introduction

B.2 Conventional retail ticketing
B.3 PAYG with a transport smartcard issuer
B.4 PAYG with a bankcard issuer

Annex C (informative) Mobility ID service example

C.1 Introduction
C.2 Definitions relevant for this example
C.3 Role model
C.4 Example of the implementation and operation of a mobility ID service
C.4.1 Core processes of the mobility ID service
C.4.2 Implementation
C.4.2.1 Definition, implementation and maintenance of the IFMS internal mobility ID service
C.4.2.2 Life cycle of the cooperation with external Identity Providers
C.4.2.3 Identity management and identity provisioning
C.4.2.4 Life cycle of the cooperation with external mobility partners

Annex D (informative) Examples of IFMS implementations

D.1 Interoperability in Paris (France) and its suburban region
D.1.1 General
D.1.2 Partners and functions
D.1.2.1 Ile de France Mobilités
D.1.2.2 Other partners (RATP, SNCF, and OPTILE)
D.1.2.2.1 General
D.1.2.2.2 Application Retailers
D.1.2.2.3 Product Retailers
D.1.2.2.4 Product Owners
D.1.2.2.5 Service Providers
D.1.2.2.6 Collection and Forwardings
D.1.2.2.7 Security Managers
D.2 Interoperability in Japan
D.2.1 Supplementary explanation of the basic framework for Japanese example
D.2.2 Interoperability in Japan in accordance with this document
D.2.2.1 General
D.2.2.2 Functions of the existing IFMSs
D.2.2.2.1 IC Card Interoperability Committee
D.2.2.2.2 Other functions of existing IFMSs

Annex E (informative) Media centric management and back-office centric management

E.1 General

Page count: 81