# SLOVENSKI STANDARD
# kSIST-TP FprCEN/TR 18362:2026

**01-junij-2026**

**Smernice za razvoj programskih vmesnikov API za multimodalni potniški promet na podlagi Transmodela**

Guidelines for building multimodal travel purchase APIs based on Transmodel

Richtlinien zum Aufbau multimodaler Reisebezahl-APIs basierend auf Transmodel



**Ta slovenski standard je istoveten z:** **FprCEN/TR 18362**



**ICS:**

| | | |
|---|---|---|
| 35.240.60 | Uporabniške rešitve IT v prometu | IT applications in transport |

**kSIST-TP FprCEN/TR 18362:2026** **en,fr,de**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER REPORT

**FINAL DRAFT**
**FprCEN/TR 18362**

April 2026

ICS

English Version

# Guidelines for building multimodal travel purchase APIs based on Transmodel

Richtlinien zum Aufbau multimodaler Reisebezahl-APIs basierend auf Transmodel

This draft Technical Report is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 278.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a Technical Report. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a Technical Report.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**



Ref. No. FprCEN/TR 18362:2026 E

# Contents

Page

## European foreword

This document (FprCEN/TR 18362:2026) has been prepared by Technical Committee CEN/TC 278 “ITS for Public Transport”, the secretariat of which is held by NEN.

This document is currently submitted to the Vote on TR.

This document has been prepared in response to a formal request addressed to CEN by the European Commission. The request led to the opening of the CoRoM (Coordination & standardisation for Rail & Mobility) project for which this document is one of the main deliverables.

The CoRoM project aims to provide support to the work to be carried out by the European Standardisation Organisations (ESOs) for the coordination and standardisation of purchase (including basic after-sale) interfaces (also called Booking APIs) for multimodal travel (including long-distance rail).

# Introduction

For the past decade or so, Mobility-as-a-Service (MaaS) has been developed and implemented in Europe, mostly in an urban and peri-urban context. The original idea behind such a concept is very simple: allow travellers to go seamlessly from A to B using one single digital interface and based on their personal preferences. To roll-out this concept, the travellers' journey was divided into four main stages: plan, purchase (with or without a reservation), pay, and travel. These stages are not necessarily linear nor unique, and most certainly encompass other operational stages for mobility providers.

The planning stage can itself be split into searching through passenger information and planning based on the desired travel characteristics (e.g., date and time, number of passengers, etc.). This fundamental activity has been the main focus of the development of Transmodel-based data exchange formats such as the Network and Timetable Exchange (NeTEx) (CEN/TS 1664 series) for planned information and the Service Interface for Real time Information (SIRI) (CEN/EN & TS 15531 series) for real-time information. It also led to the development of the Transmodel-based API specification for trip planning with the Open API for distributed journey planning (CEN/TS 17118 series).

The purchase stage is one for which further standardisation is needed to support the development of MaaS solutions. Ideally, it would lead to a common API specification that facilitates the integration of different types of transport modes into one seamless application, including long-distance travel. It would then be a standard supporting the European Commission effort to open the distribution of tickets across Europe, especially the upcoming Multimodal Digital Mobility Services (MDMS) regulation. To support this standardisation work, a review of existing state-of-the-art existing APIs has been published by another CEN project team under the name of "Public transport - Distribution APIs for MaaS" (CEN/TR 00278582:2022). The current document takes into consideration the above-mentioned CEN/TR but is more focused on the inclusion of a deeper analysis, providing guidelines for formulating distribution standards in better alignment with Transmodel in order to facilitate the purchase for travellers (including other modes). The goal is to define principles to make existing travel purchase APIs compatible. It is also based on the latest revision of both Transmodel and NeTEx, which are key to understanding parts of the present document.



Attention is drawn to the fact that authors of this document have chosen to use the word "purchase" rather than "booking". As further explained later in the document, the term "booking" bears several different meanings in colloquial use, which can generate misunderstanding.

Attention is also drawn to the fact that this document has been written before the European Commission has released a working draft of the upcoming MDMS regulation. Terms used in the latter might not match some used in the present document.

This document details:

— The context of the CoRoM project and its methodology,

— The data information flow and steps required for purchasing any multimodal travel (including basic after-sale processes), from the perspective of travellers,

— The identification of the relevant concepts and data structure from Transmodel (EN 12896 series) to represent the above-mentioned data flow and steps,

— An identification and study of existing APIs that are used in multimodal travel for reservation and purchasing, which mostly include OSDM, TOMP-API, BoB, Entur API, FerryGateway, and (EU) 454/2011 (TAP TSI),

— The identification of concepts and data structures that should be added to Transmodel to cover the scope of the studied APIs,

— The guidelines for a multimodal travel purchase API specification based on Transmodel concepts.

The latter two parts of this document will inform the revision of Transmodel Parts 5 and 6 (EN 12896-5 and EN 12896-6) and NeTEx Part 3 (TS 16614-3).

# 1 Scope

This document covers:

- Provision of a catalogue of fares
- Request for specific fare offers (including specific search criteria),
- Selection of one or several formal offers by the customer (pre-purchase),
- Initiation of the purchase,
- Commitment to buy,
- Reservation of a place on a specific journey,
- Reception of evidence of the purchase,
- Management after purchase (basic after-sale actions),
- All interactions that can be related to a persistent identity.

These functions can be seen as the minimum required for the data flow of reservation from the travellers' perspective.

Though some of the studied APIs have functions beyond just reservation and involving other parties, the following activities are not in scope of this document nor the CoRoM project:

- Creation and distribution of the travel document,
- Travel planning,
- Payment interfaces with banking information systems,
- Validation of purchased access rights during travel,
- Control of purchased access rights during travel



# 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 terminology databases for use in standardisation at the following addresses:

- ISO Online browsing platform: available at https://www.iso.org/obp/
- IEC Electropedia: available at https://www.electropedia.org/

**3.1**
**booking**
placing of a reservation to use a specific transport service, but not necessarily entailing a purchase of a ticket

[SOURCE: EN 12896-5]

**3.2**
**consumption**
using up of access rights by a transport customer as a result of travel

[SOURCE: EN 12896-5]

**3.3**
**customer purchase package**
purchase of a SALES OFFER PACKAGE by a TRANSPORT CUSTOMER, giving access rights corresponding to those of one or several FARE PRODUCTs materialised as one or several TRAVEL DOCUMENTs

[SOURCE: EN 12896-5]

**3.4**
**end-to-end trip**
TRIP from an origin to a final destination.

**3.5**
**fare**
from the customer's perspective, amount that a customer has to pay for a journey or for acquiring a specific fare product

[SOURCE: EN 12896-5]



**3.6**
**fare product**
immaterial marketable element (access rights, discount rights, etc.), specific to a CHARGING MOMENT

[SOURCE: EN 12896-5]



**3.7**
**individual traveller**
individual travelling person

[SOURCE: EN 12896-10]

**3.8**
**inspection**
control, i.e., checking of a passenger's entitlement to consume access rights, involving identification of the traveller and/or the travel rights

[SOURCE: EN 12896-5]

**3.9**
**parameter assignment**
access right parameter assignment: the assignment of a fare parameter (referring to geography, time, quality or usage) to an element of a fare system (access right, validated access, control mean, etc.)

[SOURCE: EN12896-5]

**3.10**
**price**
value of fare or tariff

[SOURCE: EN 12896-5]

**3.11**
**query**
function consisting in a request for and a delivery of information

[SOURCE: EN 12896]

**3.12**
**regional trip**
TRIP limited to a region

**3.13**
**ticket**
unitary travel document allowing a single ride

**3.14**
**transport customer**
specific person or organisation involved in a fare process

Note 1 to entry: There can be a FARE CONTRACT between the TRANSPORT CUSTOMER and the OPERATOR or the AUTHORITY ruling the consumption of services

[SOURCE: EN12896-5]



**3.15**
**travel document**
particular physical evidence to be held by a passenger, (ticket, card, etc.) allowing the determination of the right to travel or to consume joint services

Note 1 to entry: May comprise just a token associated with an online account, or some form of representation of the access rights

[SOURCE: EN 12896-5]

**3.16**
**travel guarantee**
promise that a travel service will be provided to a certain quality level and that a TRAVEL REDRESS will be offered if the guarantee is not met

**3.17**
**travel package**
aggregated information selected from any SALES OFFER PACKAGE (satisfying the trip requirements of the TRANSPORT CUSTOMER) presented to the TRANSPORT CUSTOMER and enriched by specific information (i) as to the travel guarantee, (ii) as to the organisation providing the travel guarantee

Note 1 to entry: The new proposed Transmodel TRAVEL PACKAGE element is described in §8.2.2

**3.18**
**travel party**
group composed of at least two (02) INDIVIDUAL TRAVELLERs

**3.19**
**travel redress**
remedy or compensation that will be offered for failing to meet a TRAVEL GUARANTEE

**3.20**
**trip**
part of a TRIP PATTERN describing the movement of a passenger from one PLACE of any sort to another

Note 1 to entry: A TRIP can consist of one or more consecutive LEGs having some common characteristics

[SOURCE: EN 12896-6]

**3.21**
**trip planning**
delivery of information related to a request for trip proposals

**3.22**
**validation**
verification that an access right is valid, has been or is being consumed, and that this consumption is allowed, achieved by checking the validity of the passenger's travel rights and comparing them to the parameters collected by the previous inspections and/or inspection context



## 4 Abbreviations



| | |
|---|---|
| API | Application Programming Interface |
| BoB | Biljettdistribution och Biljettvisering |
| CEN | European Committee for Standardisation |
| CoRoM | Coordination & standardisation for Rail & Mobility |
| DG MOVE | Directorate-General for Mobility and Transport |
| ERA | European Union Agency for Railways |
| EU | European Union |
| GDS | Global Distribution System |
| GIS | Geographical Information System |
| GPS | Global Positioning System |
| HTTP | Hypertext Transfer Protocol |
| IATA | International Air Transport Association |
| IFM | Interoperable Fare Management |
| IFOPT | Identification of Fixed Objects in Public Transport |
| ISO | International Standards Organisation |
| IS | Information System |
| IT | Information Technology |

| | |
|---|---|
| MaaS | Mobility-as-a-Service |
| MDMS | Multimodal Digital Mobility Services |
| NeTEx | Network and Timetable Exchange |
| PT | Public Transport |
| OJP | Open API for Distributed Journey Planning |
| OpRa | Operating Raw Data and statistics exchange |
| OSDM | Open Sales and Distribution Model |
| SIRI | Service Interface for Real-time Information |
| TAP TSI | Telematics application for passengers |
| TM | Transmodel |
| TOMP | Transport Operators – MaaS Providers |
| TR | Technical Report |
| UIC | International Union of Railways |
| UML | Unified Modelling Language |
| URI | Uniform Resource Identifier |
| URL | Universal Resource Locator |



# 5 Context

## 5.1 Purchase and reservation as the enabler of cross-European travel



In 2021, President of the European Commission Ursula von der Leyen sent a Letter of Intent to David Sassoli, the President of the European Parliament, and Prime Minister Janez Janša, as the Presidency of the Council, in which she detailed the actions the Commission intends to take in the following year by means of legislation and other initiatives. Amongst them, within the pillar named “A Europe fit for the digital age”, was the mention of a “legislative proposal on multimodal digital mobility services”, which refer mostly to route-planners and ticket vendors that help to compare travel options.

The main objective of such a legislative proposal was to serve travellers of the European Union in their long-distance travels and to ease the integration of public transport and rail services to achieve seamless multimodal passenger transport, delivering the EU “Green Deal”.

Considering that the provision of EU-wide multimodal travel information to support the development of route planners is already addressed in the Delegated Regulation (EU) 2017/1926 amended by the Delegated Regulation (EU) 2024/490 of 29 November 2023, it is logical that the facilitation of purchase, reservation and payment of mobility services would be covered by the MDMS legislative proposal. In a sense, it can be considered that “purchase and reservation” is the next piece required to enable cross-European travel for all.

Also considering that sustainable long-distance travel has a high impact on the Green Deal; and that MDMS services in the urban and peri-urban areas lead to a stronger integration of several modes of transport, a better integration of rail services with public transport can be considered as a necessary next step to enable cross-European travel for all. Additionally, implementations have to comply with GDPR framework.

The CoRoM project addresses both “purchase & reservation” and a better integration of rail services with public transport. It builds on pre-existing work as follows:

— The Fares and Timetable, Use-Cases description and mapping for PT and Rail, co-authored by experts of the CEN and UIC [11],

— CEN/TR 00278582:2022, Public transport – Distribution APIs for MaaS [10].

Finally, considering that the provision of EU-wide multimodal travel information is mandated variously in NeTEx CEN/TS 16614, SIRI CEN/TS 15531 and Transmodel EN 12896, in none of which there is a reference exchange protocol for “purchase & reservation”, it seems quite natural that the results of the CoRoM project would lead to a guidelines for API specification that facilitates multimodal travel purchase based on Transmodel.

## 5.2 Laying the foundation for future automated redress handling and independent trip-repair agencies

In learnings from multimodal travel experience, one of the hurdles encountered when trying to achieve and promote long-distance travel using combinations of rail services and other public transport is to solve the problem of broken connections due to delays and cancellations. It is not acceptable that a potential traveller be stranded half-way.

Today the passenger often has to take action to initiate and get trip repair or obtain other redress for a failure by the service provider. Instead, there should be an automated redress process, and the responsibility of initiating trip repair should be moved from the traveller to the carrier.

The redress process should be such that travellers should not have to delve into a complicated legal process to be reimbursed when their passenger rights are violated.



Instead, it would be better if the traveller could, at least as a second option after the carrier has failed to provide a solution, contact an EU-backed 24/7 reachable trip-repair / redress agency that is not linked to the carrier. The agency should judge the situation and provide the necessary trip-repair or redress without any charge to the traveller. The cost of such redresses could intermittently be covered by funds based on bank guarantees from the carriers and finally be settled in processes with the carrier without involving the traveller directly.



Such a handling should be based on real-time information as to the disruption (such as a cancellation or severe delay) and an electronic ticket that describes all necessary details such as who is travelling (i.e., a passenger or a group of passengers, their luggage and their passenger vehicles), comfort class, rebooking flexibility, accommodation and ancillary products, as well as travel guarantees and travel redress conditions. The API should thus support the exchange of all information needed to support an automated handling of travel redress, including any identifiers needed to link purchased tickets to real-time information from the carriers.

## 5.3 Learning from other industries opening their purchase & reservation systems

The airline industry and air travel, under the umbrella of International Air Transport Association (IATA), is currently going through a major transformation. IATA recognised that today´s customers’ expectations are shaped by the digital experience they have of interacting with modern technology companies in other sectors and that modernisation is necessary.

Their goal was to develop a framework that would support providing the customer with a straightforward shopping cart experience, having a wide set of choices, towards a single ticket with seamless transfer and disruption protection also when the customer travels on multiple airlines.

A new framework for partnerships based on Offers and Orders has thus been developed. From a business perspective, it relies on a Retailer-Supplier model; similarly to the retailing industry, partners engage in a direct, bilateral relationship

The basis is to use direct API workflows between Retailers and Suppliers, as opposed to yesterday's complex, legacy flows using legacy technology (e.g., EDIFACT) and involving multiple third-party systems.

The idea is to provide the customer (air) transportation products and related services across Retailer and one or multiple Suppliers based on the following workflow:

a) A Retailer requests offers from Suppliers

b) Suppliers provide priced offers to the Retailer

c) The Retailer, incorporating Suppliers' content, provides priced offers to the customer.

Accordingly, the Retailer is responsible for both the Customer and Supplier relationships, and all partners gain control of their offer. IATA believes that once implemented at scale, this framework will take travelling on multiple airlines and intermodal partners to the next level, addressing the challenges outlined above.

Within the ferry industry the *FerryGateway* initiative has brought forward an open source and free to use worldwide standard for communication between ferry operators and agent reservation systems. It provides a standardised set of messages that enables reservations, amendments and cancellations of ferry trips including all products and services on board. It is stateless, SOAP-based and is defined using XML-schemas.

Learnings from the above in our context are:

— There should be a direct and simple way for Retailers and Suppliers to exchange offer details, including their travel guarantees and travel conditions.

— There should be enough room for Retailers to bear the responsibility of direct relationships with both Customers and Suppliers.

— All relevant stakeholders should have access to the full set of applicable products and fares available.



## 5.4 The definition of "booking" or lack thereof

Transmodel (EN 12896) has defined "booking" in its part 5 as the placing of a reservation to use a specific transport service — but not necessarily entailing a purchase of a ticket.

However, the term 'booking' is mostly avoided in this document as it is used differently across the stakeholders of the CoRoM project in different contexts that vary according of their diverse backgrounds. For example, depending on the types of mobility services they work with and the local context they experience, different meanings for 'booking' include:

— A long-term reservation of some resource, A purchase of a train ride,

— A written agreement between two parties, with two deliverables, one on each side,

— A seat reservation,

— The intended consumption of a trip,

— An act of reserving accommodation, a ticket, etc. in advance,

— An agreement that has been written down ('hit the books'),

— The entire process of reserving or securing a service, resource, or accommodation for a particular date or time.

The term "booking" is sometimes used as a noun, in other cases is related to the process of booking.

**TSI Telematics** uses the term "reservation" as an authorisation to assess as a service and "booking" rather as synonymous with "selling".

**In MMTIS** "booking" is used in the context of information provided by a fare query (i.e., by the delivery) and related to

— WHEN to book (purchase window, validity periods),

— WHAT choice of parameters is possible (space-related parameters: e.g., routing restrictions, zonal sequence or time-related parameters: e.g., minimum stay).

In **TOMP,** 'booking' is used in v1.x. as a container term for offers. In TOMP v2.0, it will closely be related to Transmodel, and the term 'booking' will be replaced by terms related to the Transmodel SALES OFFER PACKAGE.

The **OSDM** specification says: "The booking represents the offers that have been selected and turned into a booking on request to the provider of the offers".

**For Transmodel**: "booking" is synonymous with "a process of **confirmed reservation** of an asset", an asset being an access right to a service, a service or specific equipment like a seat, a bike, etc. "Confirmed" has to be understood as: providing a record. Thus "booking" has to be understood as "**process of sales/purchase** excluding payment" (payment is a separate process).

If mentioned in this document, booking is understood as "purchase", which is also the admitted term of the Transmodel concept.



## 5.5 Methodology



An API (Application Programming Interface) is a set of rules and tools that allows different software applications to communicate and exchange information in a standardised way. It defines the methods and data formats that applications can use to request and exchange information.

Designing an effective and robust API — whether for web services, frameworks, libraries, or other applications — requires a structured approach entailing the following steps:

— Gather Use Cases and Functional Requirements

— Define the Data Model

— Design the API Interfaces

— Determine Resource Representations

— Assign Operations

— Implement Error Handling & Validation

— Document the API

— Test and Iterate

This document focuses on steps 1 (Gather Use Cases and Functional Requirements) and 2 (Define the Data Model).

Before drafting the guidelines for multimodal travel purchase APIs based on Transmodel, the CoRoM project team decided to analyse existing APIs. A detailed technical mapping table of the APIs queries has