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**Intelligent transport systems —  
Guided transportation service  
planning data exchange**



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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.

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 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

The purpose of this document is to facilitate the planning of railway operations between organizations in the transportation sector (communication between interested parties).

The aim is to provide a common format for necessary railway data exchange between interested parties in the industry during the conceptual, strategic and tactical phases of railway service planning.

Examples of roles of interested parties are:

- railway authorities;
- public transport authorities;
- train operators;
- infrastructure managers;
- rolling stock companies;
- suppliers to the railway sector (rolling stock, signalling systems, etc.);
- consultants.

These roles can be fulfilled by separate entities or by different units within one integrated entity or company.

This document covers various planning aspects, including the following:

- a) **Conceptual planning:** Years in advance of construction of the new or improved infrastructure.
- b) **Strategic planning:** Usually for new timetable concepts, new rolling stock or improved infrastructure, more than 15 months before implementation of new annual timetable, including:
  - tendering process for passenger train operators (calculating tenders);
  - feasibility studies for commercial train operators (freight and passengers);
  - temporary infrastructure capacity restrictions.
- c) **Tactical planning:** Usually for producing a new timetable, typically for construction of the annual timetable, including:
  - train path and capacity requests (train operators);
  - train path and capacity allocation (infrastructure managers).

During planning there is a continuous need for exchange of (machine readable) information between different stakeholders.

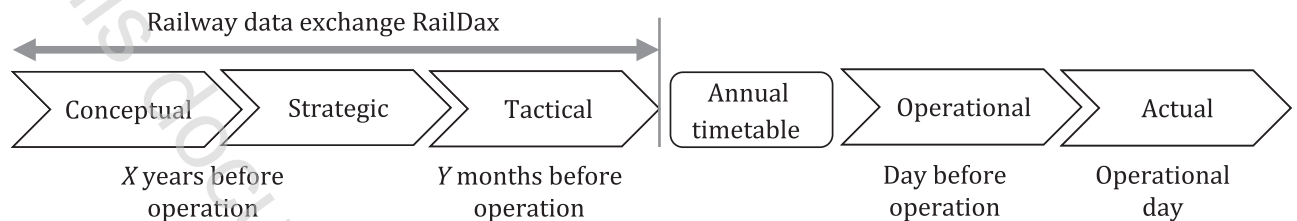
These stakeholders use different applications for their internal processes (runtime calculations, rostering, temporary capacity restrictions, etc). Within large organizations there can also be different applications in use, where effective exchange of information is essential.

A common (standardized) format for exchanging information between different applications will reduce time-consuming manual work and will improve accuracy. Railway Data Exchange (RailDax) is a format standard for exchanging railway data between applications.

The RailDax format is intended to be used by railway and transportation authorities, infrastructure managers and train operators during long-term planning, tendering processes, commercial evaluations and the yearly capacity allocation processes leading to the annual timetable.

RailDax has been developed in parallel with the data exchange language railML 2.5 (Railway Modelling Language 2.5), which is managed by railML.org.<sup>1)</sup>

Figure 1 illustrates the use of RailDax for conceptual, strategic and tactical planning of railway services and operations, leading to an annual timetable. Other exchange formats will be more suited for the exchange of network and timetable data for public (customers') travel planning and ticketing solutions.



**Figure 1 — RailDax as a railway data exchange format for conceptual, strategic and tactical planning**

RailDax is not intended as a data exchange format for applications serving the following purposes:

- 1) asset development and maintenance applications for infrastructure and rolling stock;
- 2) public travel plan and fare management.

The interface between RailDax and purpose 2) will typically be the annual timetable.

Train operators can be legally obliged to publish in other formats, for example in Europe, the Network Timetable Exchange (NeTEx) for public travel plan and fare management, and Telematics Applications for Passenger services (TAP) and Technical Specifications for Interoperability (TSI) for slot ordering at national access points. The relationship between RailDax and these specifications is explained in [Annex A](#).

When launching the RailDax project it was deemed necessary to base the format on a mature (proven in use) data exchange language and to cover the RailDax use cases. Based on a study, railML 2.x was chosen. For the same reason, RailDax is developed as a pair to railML version 2.5. The development of possible future revisions of RailDax may be considered to pair with later railML versions or other formats.

1) railML® and the logos of railML.org are copyrighted by railML.org e.V., as they are registered at the European Union Intellectual Property Office as a trademark with the number 12576492. This trademark is provided for reasons of public interest or public safety. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO.





# Intelligent transport systems — Guided transportation service planning data exchange

## 1 Scope

This document specifies an open, XML-based data format which enables an efficient and unambiguous exchange of static information concerning the operational functionality of the infrastructure, rolling stock and timetable of a track-bound transportation system. The main objective is to enable heterogeneous railway applications to communicate with each other.

The purpose of the data format is to facilitate common (integrated) planning of track-bound operations between organizations in the transportation sector.

Railway Data Exchange (RailDax) serves as a data exchange format between applications used for railway service planning: connecting information about infrastructure, rolling stock and timetable basics which are necessary for capacity management and timetable planning.

This document describes infrastructure and rolling stock from an operational perspective. To achieve this, the infrastructure and rolling stock is described with a clearly defined meaning from an operational perspective.

RailDax will typically be used by railway authorities, train operators, infrastructure managers and suppliers to the railway industry for communication between applications serving the use cases listed in [Clause 7](#) in this document.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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/TS 14812, *Intelligent transport systems — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TS 14812 and the following apply.

ISO and IEC maintain terminology databases for use in standardization 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

#### **RailDax file**

railway data exchange file

Note 1 to entry: The RailDax file is constructed according to the principles of this document.