



BSI Standards Publication

Public transport — Network and Timetable Exchange (NeTex)

Part 3: Public transport fares exchange format

National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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CEN/TS 16614-3

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English Version

**Public transport - Network and Timetable Exchange
 (NeTEx) - Part 3: Public transport fares exchange format**

Transport Public - Echanges des informations
 planifiées (NeTEx) - Partie 3: Echange des informations
 tarifaires pour le transport public

Öffentlicher Verkehr - Netzwerk und Fahrplan
 Austausch (NeTEx) - Teil 3: Austauschformat für das
 Fahrgeld im öffentlichen Verkehr

This Technical Specification (CEN/TS) was approved by CEN on 2 March 2020 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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

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Contents

Page

European foreword	4
Introduction.....	5
1 Scope	5
1.1 General	6
1.2 Fares scope.....	6
1.3 Transport modes	7
1.4 Compatibility with existing standards and recommendations.....	7
2 Normative references	7
3 Terms and definitions.....	8
4 Symbols and abbreviations.....	27
5 Use Cases for Fare Exchange.....	28
5.1 Purpose	28
5.2 Business context	28
5.2.1 Fare planning process.....	28
5.3 Actors and use case types	33
5.3.1 Use Cases for Fare Policy.....	36
5.3.2 Use Cases for Organisation of Fare Policy Usage	36
5.4 Excluded Use Cases	37
5.5 Use Cases.....	37
5.5.1 Collection of Use Cases.....	37
6 Generic Physical Model and XSD mapping rules.....	64
7 Public Transport Fares – Conceptual and physical data model.....	64
7.1 Introduction	64
7.2 Conceptual Model overview	64
7.2.1 Functional Domains.....	64
7.2.2 Data Model Overview	66
7.2.3 Main Concepts.....	68
7.3 Fare Model dependencies.....	72
7.3.1 NeTEx Part 1 Use of Version Frames	74
7.3.2 Fare Frame	75
7.4 Reusable Fare Components.....	92
7.4.1 Fare Zone.....	92
7.4.2 Fare Facility	111
7.4.3 Vehicle Seating.....	114
7.5 Fare Structure	115
7.5.1 Fare Structure – Model dependencies.....	115
7.5.2 Common Fare Structure	116
7.5.3 Geographical Fare Structure.....	123
7.5.4 Time Fare Structure.....	132
7.5.5 Quality Fare Structure	140
7.5.6 Fare Structure Element	150
7.5.7 Distance Matrix Element.....	178
7.5.8 Validable & Controllable Elements	189
7.6 Access Rights Description.....	200

7.6.1	Access Right Parameters.....	200
7.6.2	Fare Product.....	338
7.7	Pricing.....	383
7.7.1	Fare Calculation Parameters.....	383
7.7.2	Fare Price.....	398
7.7.3	Fare Table.....	411
7.8	Sales Description.....	436
7.8.1	Fare Sales Distribution.....	436
7.8.2	Type of Travel Document.....	447
7.8.3	Sales Offer Package.....	451
8	Sales Transactions.....	477
8.1	Sales Transaction – Model dependencies.....	477
8.1.1	Sales Transaction Frame.....	478
8.1.2	Fare Contract.....	482
8.1.3	Customer Eligibility.....	498
8.1.4	Retail.....	502
8.1.5	Sales Transaction.....	508
8.1.6	Travel Specification.....	519
8.1.7	Customer Purchase Package.....	533
	Annex A (normative) Extensions to NeTEx Part1 & 2.....	551
	Annex B (informative) ERA – TAP TSI annexes B1, B2 and B3 mapping.....	552
B.1	Summary of mapping of B1 (NRT) fares.....	552
B.2	Summary of mapping of B2 (IRT) fares.....	552
B.3	Summary of mapping of B3 (Special) fares.....	553
	Annex C (informative) NeTEx Passenger Information Query model.....	554
C.1	PiRequest.....	554
C.1.1	PI Request dependencies.....	554
C.1.2	Pi Request.....	556
	Annex D (informative) How to go from a trip (from NeTEx Part1&2) to a fare ?.....	594
D.1	Passenger Trip.....	594
D.1.1	Passenger Trip Model.....	594
D.1.2	Passenger Fare Offer Model.....	603
	Annex E (informative) Proposed model for Parking Tariff.....	608
E.1	Parking Tariff.....	608
E.1.1	Parking Tariff – Conceptual MODEL.....	608
	Annex F (informative) Changes in Version 1.1.....	615
F.1	Introduction.....	615
F.2	General changes.....	615
F.3	List of changes.....	615
	Bibliography.....	621

European foreword

This document (CEN/TS 16614-3:2020) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

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This document supersedes CEN/TS 16614-3:2016.

This document presents Part 3 of the European Technical Specification known as “NeTEx”. NeTEx provides a framework for specifying communications and data exchange protocols for organisations wishing to exchange scheduled Information relating to public transport operations.

This Technical Specification is made up of three parts defining a single European Standard series, which provides a complete exchange format for public transport networks timetable description and fare information.

- Part 1 is the description of the public transport network topology exchange format. It also contains use cases shared with part 2, and modelling rules and the description of a framework shared by all parts.
- Part 2 is the description of the scheduled timetables exchange format.
- Part 3 is the description of the fare information exchange format.

Part 1 is fully standalone, and part 2 and 3 rely on part 1.

The XML schema can be downloaded from <http://netex-cen.eu>, along with available guidance on its use, example XML files, and case studies of national and local deployments.

This document is highly technical, and a special care has been taken to keep the text readable. In particular a set of formatting conventions is followed that enhances the usual CEN writing rules in order to distinguish references to elements of the formal models within text:

- Transmodel terms and NeTEx conceptual model elements are in capital letters (JOURNEY PATTERN for example).
- NeTEx physical model names are in bold italic font and use camelcase style with no spaces (***JourneyPattern*** for example).
- NeTEx physical model attribute types are in italic style and use camelcase style with no spaces (*TypeOfEntity* for example).

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Introduction

Public transport services rely increasingly on information systems to ensure reliable, efficient operation and widely accessible, accurate passenger information. These systems are used for a range of specific purposes: setting schedules and timetables; managing vehicle fleets; publicising fares, issuing tickets and receipts; providing real-time information on service running, and so on.

The first two parts of the European Technical Specification NeTEx specify a Network and Timetable Exchange for Public Transport. It is intended to be used to exchange data relating to scheduled public transport between the systems of PT organisations. It can also be seen as complementary to the SIRI (Service Interface for Real-time Information) standard, as SIRI needs a prior exchange of reference data from NeTEx's scope to provide the necessary context for the subsequent exchange of a real-time data.

This document (NeTEx – Part 3) specifies exchanges of Public Transport fares between systems and organisations. It is a complement to Part 1 and Part 2 in the sense that it uses a subset of concepts defined there.

Well-defined, open interfaces have a crucial role in improving the economic and technical viability of Public Transport Information Systems of all kinds. Using standardised interfaces, systems can be implemented as discrete pluggable modules that can be chosen from a wide variety of suppliers in a competitive market, rather than as monolithic proprietary systems from a single supplier. Interfaces also allow the systematic automated testing of each functional module, vital for managing the complexity of increasing large and dynamic systems. Furthermore, individual functional modules can be replaced or evolved, without unexpected breakages of obscurely dependent function.

This standard will improve a number of features of public transport information and service management: Interoperability – the standard will facilitate interoperability between information processing systems of the transport operators by: (i) introducing common architectures for message exchange; (ii) introducing a modular set of compatible information services, (iii) using common data models and schemas for the messages exchanged for each service; and (iv) introducing a consistent approach to data management.

Technical advantages include the following: a modular reusing of a common communication layer shared with SIRI for all the various technical services enables cost-effective implementations, and makes the standard readily extensible in future.

1 Scope

1.1 General

NeTEx is dedicated to the exchange of scheduled data (network, timetable and fare information). It is based on Transmodel V5.1 (EN 12986), IFOPT (EN 28701) and SIRI (CEN/TS 15531-4/5 and EN 15531-1/2/3¹) and supports the exchange of information of relevance for passenger information about public transport services and also for running Automated Vehicle Monitoring Systems (AVMS).

NOTE NeTEx is a refinement and an implementation of Transmodel and IFOPT; the definitions and explanations of these concepts are extracted directly from the respective standard and reused in NeTEx, sometimes with adaptations in order to fit the NeTEx context. Although the data exchanges targeted by NeTEx are predominantly oriented towards provisioning passenger information systems and AVMS with data from transit scheduling systems, it is not restricted to this purpose and NeTEx can also provide an effective solution to many other use cases for transport data exchange.

1.2 Fares scope

This Part 3 of NeTEx, is specifically concerned with the exchange of fare structures and fare data, using data models that relate to the underlying network and timetable models defined in Part 1 and Part 2 and the Fare Collection data model defined in Transmodel V5.1. See the use cases below for the overall scope of Part 3. In summary, it is concerned with data for the following purposes:

- (i) To describe the many various possible fare structures that arise in public transport (for example, flat fares, zonal fares, time dependent fares, distance-based fares, stage fares, pay as you go fares, season passes, etc. etc.).
- (ii) To describe the fare products that may be purchased having these fare structures and to describe the conditions that may attach to particular fares, for example if restricted to specific groups of users or subject to temporal restrictions. These conditions may be complex.
- (i) To allow actual price data to be exchanged. Note however that NeTEx does not itself specify pricing algorithms or how fares should be calculated. This is the concern of Fare Management Systems. It may be used may be used to exchange various parameters required for pricing calculations that are needed to explain or justify a fare.
- (iii) To include the attributes and the text descriptions necessary to present fares and their conditions of sale and use to the public.

NeTEx should be regarded as being 'upstream' of retail systems and allows fare data to be managed and integrated with journey planning and network data in public facing information systems. It is complementary to and distinct from the 'downstream' ticketing and retail systems that sell fares and of the control systems that validate their use. See 'Excluded Use Cases' below for further information on the boundaries of NeTEx with Fare Management Systems.

¹ Under preparation.