
**Geographic information — Transfer
Nodes**

Information géographique — Noeuds de transfert

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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).

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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 211, *Geographic information/Geomatics*.

Introduction

All over the world, the authorities are facing serious problems due to the steady rise in the traffic volume. This rise will sooner or later call for very dramatic measures; one first step might be to persuade or force car users to change modes partly or entirely. In order to help this process, the authorities will need a complete overview of where it is possible to change modes of transport.

Over the last few years, substantial work in this field has been carried out by CEN/TC 278 *Intelligent Transport Systems*. EN 28701 was published in 2012. This work is motivated by the fact that the public transport sector needs data on a number of objects and events in their transport networks in order to have them work efficiently. The work done by CEN/TC 278 has been one of the sources for the motivation and background material for the ISO 19147 work done by ISO/TC 211.

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Geographic information — Transfer Nodes

1 Scope

This International Standard specifies the data types and code lists associated with those types for the implementation of transfer nodes and their services in transport modelling and location based services.

This International Standard includes the following:

- defines transfer nodes in a multimodal way so that the definition is general and valid for all types of transport means and modes;
- links transfer nodes to a location;
- focuses on the attributes defining the transfer node in relation to nodes in mode-specific networks;
- defines the attributes of transfer nodes that are relevant for travel planning and modelling of interoperable transport systems by transport planners;
- defines a set of services and facilities that may be related to transfer nodes and a way to provide information on accessibility, deviations and restrictions related to these services and facilities.

This International Standard is applicable for transport infrastructure owners and operators when defining and/or describing their transport infrastructure and for transport-related Service Providers when providing information to travellers and others.

This International Standard is limited to the transport of persons and is also limited to the static getting-on and getting-off points. The main focus is on transfer nodes being part of public transport networks, that are located in road networks, but this International Standard is also applicable for transfer nodes in rail networks and in air and sea transport networks.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639, *Code for the representation of names of languages*

ISO 3166, *Codes for the representation of names of countries and their subdivisions*

ISO 19103:—¹⁾, *Geographic information — Conceptual schema language*

ISO 19107, *Geographic information — Spatial schema*

ISO 19108, *Geographic information — Temporal schema*

ISO 19133, *Geographic information — Location-based services — Tracking and navigation*

ISO 19134, *Geographic information — Location-based services — Multimodal routing and navigation*

ISO 19136, *Geographic information — Geography Markup Language (GML)*

ISO 19155, *Geographic information — Place Identifier (PI) architecture*

1) To be published. (Revision of ISO/TS 19103:2015)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 access point

location (3.8) where travellers can enter or exit a *transfer node* (3.18)

Note 1 to entry: An access point may not be a *stop point* (3.15). An access point may for example be the entrance to a railway station or the connection between a parking area and a railway station.

3.2 accessibility

ability to access and benefit from the functionality provided by a *service* (3.14) or a *facility* (3.5)

Note 1 to entry: Accessibility is often associated with disabilities. According to the concept of universal design, accessibility is, however, a matter that permanently or temporarily is relevant to all of us, e.g. people with heavy luggage, people with broken legs, people with small children, elderly people, etc.

3.3 accessibility information

information about *accessibility* (3.2) issues

Note 1 to entry: According to the concept of universal design, accessibility information should be addressed in a neutral way, i.e. not directed towards people with specific disabilities.

3.4 deviation

divergence from a plan or the normal situation

Note 1 to entry: These may be deviations with respect to the time schedule or the accomplishment of the transport or deviations with respect to the *services* (3.14) or facilities that are provided.

3.5 facility

physical installation or physical area that may be accessed and used

EXAMPLE Elevators, restaurant areas, waiting areas, seats, toilets, shops.

Note 1 to entry: Such facilities may be available on-board *transport means* (3.19) during the transport, at arrivals to and at departures from a *transfer node* (3.18), and at transfer nodes.

3.6 journey

movement of a person who is travelling between two *locations* (3.8)

Note 1 to entry: May consist of one or more *journey segments* (3.7).

3.7 journey segment

part of a *journey* (3.6) defined by a start and a stop *location* (3.8)

Note 1 to entry: A journey segment may be carried out by means of a *trip* (3.20) or a subset of a trip between locations that may be *transfer nodes* (3.18). A journey segment may also be road use (driving, walking and cycling).

3.8 location

identifiable geographic place

Note 1 to entry: A location may be represented by one or more data types that describe a point position, a curve or an area in the real world. A location may be referenced by coordinates from a coordinate reference system or an address from an address system.

[SOURCE: ISO 19112:2003, 4.4, modified – Note 1 to entry has been added.]

3.9

location-based service

LBS

service (3.14) whose return or other property is dependent on the *location* (3.8) of the client requesting the service or of some other thing, object or person

[SOURCE: ISO 19133:2005, 4.11]

3.10

restriction

formal or informal obligation to refrain from doing something

Note 1 to entry: In this International Standard, a restriction refers to a *transfer node* (3.15) or *transport service* (3.19) criterion that limits permissible courses of action.

[SOURCE: ISO 19152:2012, 4.1.19, modified – Note 1 to entry has been added.]

3.11

service

distinct part of the functionality that is provided by an entity through interfaces

[SOURCE: ISO 19119:2005, 4.1]

3.12

stop point

location (3.8), e.g. a platform, at a *transfer node* (3.15) where the *transport means* (3.16) stop to enable the traveller to board or alight from the transport means

3.13

transfer

person's activity to switch between *transport modes* (3.17), *transport networks* (3.18) or *transport means* (3.16)

3.14

transfer link

link that connects *transfer nodes* (3.15) or *stop points* (3.12) within a transfer node

Note 1 to entry: A transfer link enables travellers to move between the different transfer nodes and stop points within a transfer node.

3.15

transfer node

location (3.8) that facilitates *transfers* (3.13) between *transport modes* (3.17), *transport networks* (3.18) and/or *transport means* (3.16)

Note 1 to entry: A transfer node may contain other transfer nodes and may be related to one or more transport modes and transport networks. It may also contain *stop points* (3.12) and facilities for the users of the transfer node. A transfer node may host *services* (3.11) that are provided to the users of the transfer node, e.g. information services, ticket sales, etc.

Note 2 to entry: A transfer node may be a part of a hierarchy of transfer nodes. Thus, a transfer node may be related to many transport modes and transport networks. However, only transfer nodes that are related to just one transport network will have stop points.

Note 3 to entry: The stop points related to different transfer nodes, which may serve different transport modes and networks, may, in real life, have the same physical locations. A tram and a bus may for example share the same platform, but conceptually they may belong to different transfer nodes.

3.16

transport means

any type of vehicle, associated with any *transport mode* (3.17), that is used for the transport of persons or goods

3.17

transport mode

means that travellers can choose for transport

Note 1 to entry: In this International Standard, the term "transport mode" is frequently shortened to "mode" for convenience. Transport mode is usually covering groups of vehicles, e.g. *transport means* (3.16) used for road transport, rail transport, sea transport, air transport and cable transport. A mode for inland water-borne transport is also added.

[SOURCE: ISO 19134:2007, 4.14, modified – Note 1 to entry has been added.]

3.18

transport network

physical network infrastructure for mobility of *transport means* (3.16), containing infrastructure and equipment that facilitate traffic management

Note 1 to entry: A transport network is associated to a specific transport mode and specific types of transport means. The road network, consisting of streets in a city may for example support several transport networks such as transport networks for pedestrians, bicycles and use private cars. The network served by a *bus service* (3.11) is also a transport network.

3.19

transport service

service (3.14) that is offered to a person with a transport demand

Note 1 to entry: This may be services supporting mobility (e.g. public transport services) or services such as luggage handling, assistance, etc.

3.20

trip

instance of a *transport service* (3.19) supporting mobility, for example, a specific flight, a specific ferry departure or a specific taxi tour

Note 1 to entry: May follow a pre-defined *trip pattern* (3.21) or the trip may be *ad hoc* according to specific mobility demands. Depending on the nature of the trip, it may start and stop at several *transfer nodes* (3.15).

Note 2 to entry: A trip may serve many travellers, and the travellers may make use different part of a trip (e.g. different legs between different bus stops), and these parts may be whole *journeys* (3.6) or *journey segments* (3.7).

3.21

trip pattern

pre-defined path defined by means of two or more *transfer nodes* (3.15) and the links and waypoints in between

Note 1 to entry: Defines a path to be followed by a *transport service* (3.19); also called route.

4 Symbols and abbreviated terms

4.1 Acronyms

GML	Geographic Markup Language
LBS	Location-Based Service
UML	Unified Modelling language

4.2 UML Notation

The diagrams that appear in this International Standard are presented using the Unified Modelling Language (UML). UML notation is used as described in ISO 19103 and in the UML standard OMG Unified Modelling Language (OMG UML), Superstructure, Version 2.2.

4.3 Package abbreviations

Two letter abbreviations are used to denote the package that contains a class. Those abbreviations precede class names, connected by a “_”. The International Standard in which those classes are located is indicated in parentheses. A list of those abbreviations follows.

GM	geometry (ISO 19107)
AD	address (ISO 19133)
NT	network (ISO 19133)
TM	temporal (ISO 19108)
TN	transfer node
SF	services and facilities
AT	accessibility types
DT	deviation types
FT	facility types
RT	restriction types
ST	service types

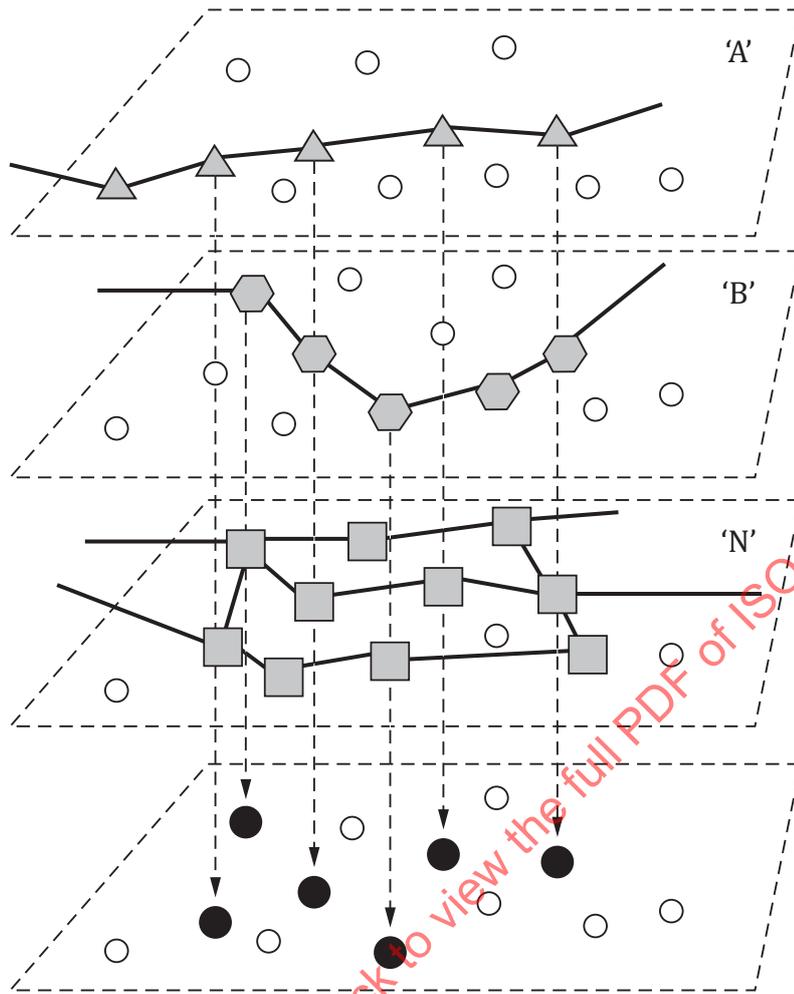
5 Transfer node requirements

5.1 Transfer node context

Systems being compliant with this International Standard shall be built on the following context.

The transfer node context is based on the fact that within a geographically limited area there may be several transport networks. Each network can be described by a set of nodes and links (see layer A, B and N in [Figure 1](#)). Examples of such networks are rail networks, metro networks, bus network, public roads (private cars network) and pedestrian and cyclist networks.

Nodes that enable a transfer of persons between transport networks, as well as nodes that enable persons to transfer between two different transport means within the same transport networks, are in this International Standard called transfer nodes. Such a transfer node may include several nodes from different networks.



Key			
○	node in other transport networks	⬡	node in transport network 'B'
▲	node in transport network 'A'	■	node in transport network 'N'
●	transfer node		

Figure 1 — Transfer node context

Indicated with vertical lines in [Figure 1](#) and illustrated in [Figure 2](#) there will be transfer nodes in the different networks that from a topological (location) point of view coincide with other transfer nodes in other networks. Such aggregations of transfer nodes (the lowest level in [Figure 1](#)) are in this International Standard also called transfer nodes. This implies that there may be a hierarchy of transfer nodes, and a transfer node may serve one network or be an aggregated transfer node that serves several networks. The principle is illustrated in [Figure 2](#). The geographical limitation of the transfer nodes in the 'cylinder' is an aggregated transfer node. It will include the transfer nodes for the different networks and may in addition also include common facilities.

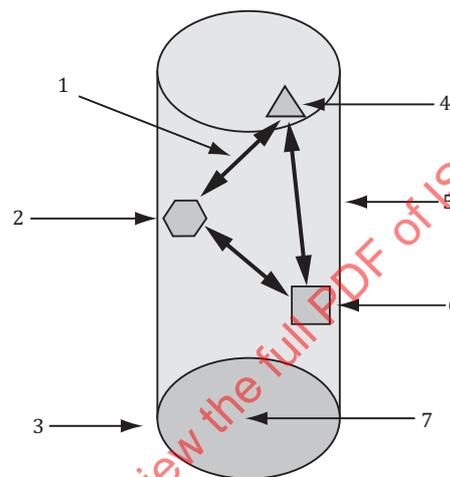
The decision on when different transfer nodes are to be aggregated into another transfer node is a practical concern. If they are co-located, if they have a common name, or if it is desirable to define

common services and facilities and transfer links between the transfer nodes or their stop points, they should be aggregated.

Transfer nodes may also include multiple nodes from the same type of network.

EXAMPLE 1 Both a bus stop and a bus terminal are transfer nodes. In both cases, a transfer from a pedestrian network or private car network to a bus network is supported, or they may also support a transfer from one bus to another bus.

EXAMPLE 2 Large airports are likely to be aggregated transfer nodes. They consist of transfer nodes connected to different networks such as one or more rail networks, the private car network, the bus network, and air network. The transfer node for the air network may also be an aggregated transfer node that may consist of a transfer node for all the different types of network, networks, a transfer node for domestic flights and a transfer node for international flights included.



Key

- | | | | |
|---|--|---|--------------------------|
| 1 | transfer link(s) between nodes in 'A' and 'B' | 5 | transfer node 'cylinder' |
| 2 | node in network B | 6 | node in network N |
| 3 | location (geographical limits for the transfer node) | 7 | transfer node |
| 4 | node in network A | | |

Figure 2 — Transfer nodes principle

5.2 Semantics

Systems being compliant with this International Standard shall be built on the following semantics as defined below and in [Annex A](#) and [Annex B](#):

The transfer node is described by means of two packages.

- Transfer node – a leaf package which specifies information directly related to the transfer nodes.
- Services and facilities – a package which specifies additional information that may be of interest to the users of transfer nodes such as available facilities and services; and deviations, restrictions and accessibility related to these services and facilities.

In addition, appropriate types and classes from other International Standards are used (see [Figure 3](#)):

- ISO 639 Language codes – which provides data types for language specification;
- ISO 3166 Country codes – which provides data types for country codes specification;
- ISO 19103 Conceptual schema language – which provides data types for date and clock time;

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- ISO 19107 Spatial schema – which provides data types for coordinate geometry;
- ISO 19108 Temporal schema – which provides data types for time duration specifications;
- ISO 19133 Tracking and navigation – which provides data types for addresses and network;
- ISO 19134 Multimodal navigation – which provides some terms and definitions;
- ISO 19136 GML – which provide data types for information links (URIs);
- ISO 19155 Place Identifier (PI) architecture – which provides data types for places.

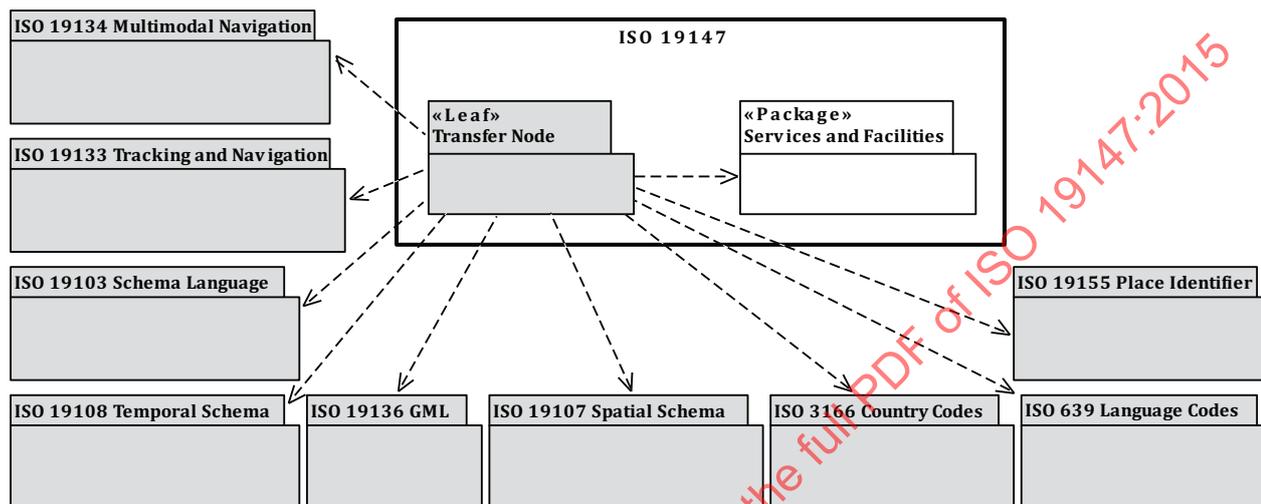


Figure 3 — Context diagram for ISO 19147

6 Conformance

This International Standard defines the requirements for transfer node specifications and has no specific conformance test defined herein.

Conformance to any other International Standard referenced in this International Standard shall be ascertained according to the requirements of the referenced standard or specification.

Conformance to this International Standard is therefore a matter of self-declaration of compliance or by submission to a test house to ascertain that the provisions of the clauses of this International Standard have been adhered to.

The specification of a transfer node is compliant with this International Standard if it includes the following:

- compliant with the normative references in [Clause 2](#);
- uses the terms and definitions in [Clause 3](#) and symbols and abbreviated terms in [Clause 4](#);
- fulfil the requirements in [Clause 5](#);
- uses the information model defined in [Annex A](#);
- uses the services and facilities defined in [Annex B](#).

Annex A (normative)

Transfer nodes information model

A.1 Semantics

The transfer nodes information model is defined in [Figure A.1](#).

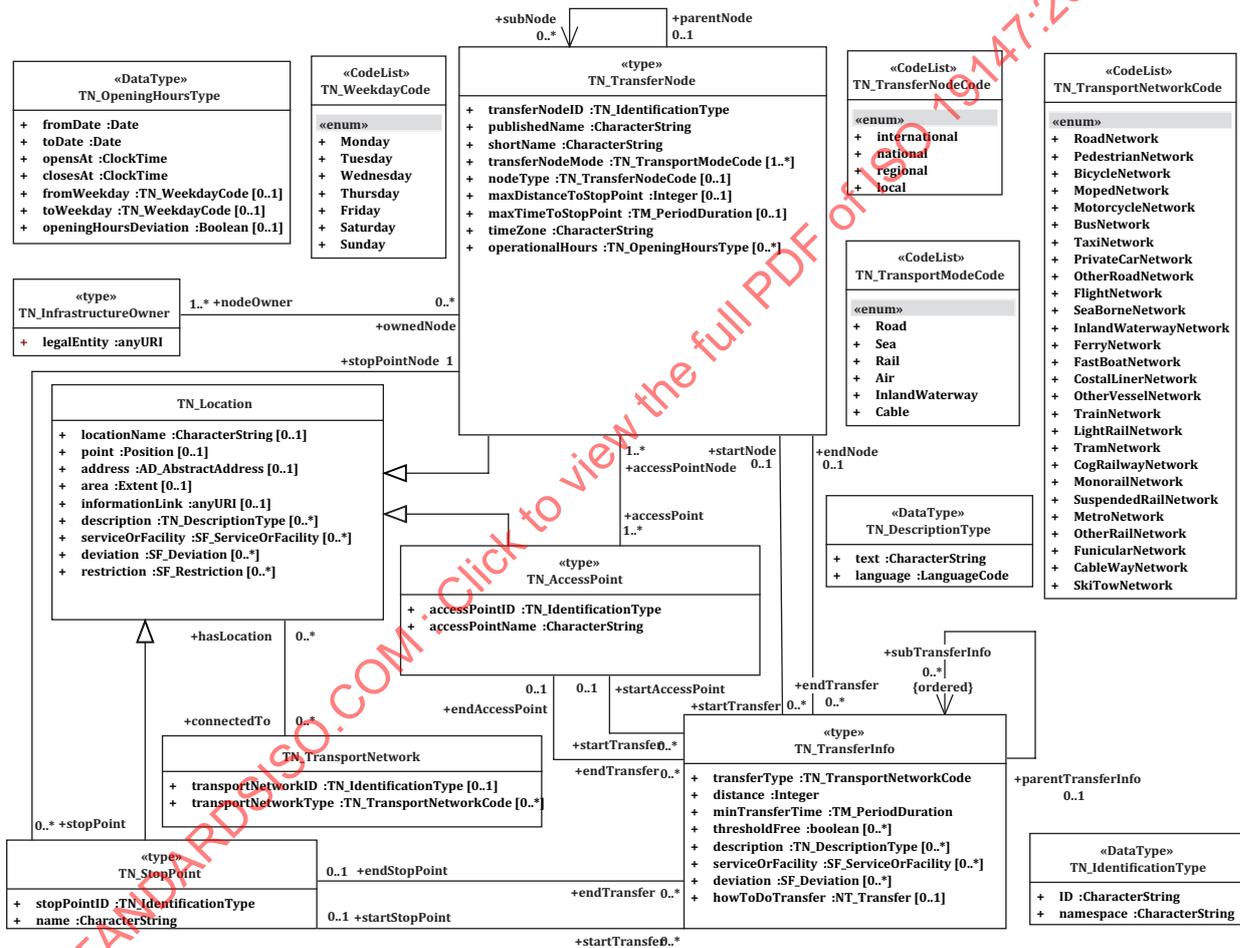


Figure A.1 — Context diagram for transfer node

The transfer node leaf package contains types, data types and code lists that specify overall aspects related to the transfer node infrastructure like the following:

- relations to other transfer nodes;
- stop points at the transfer node;
- transfer node access points;
- transfers to, from, between and within the transfer nodes and stop points.

NOTE 1 The transfer node infrastructure specification does not include the use of the transfer node and the stop point in transport services (bus routes, etc.). Such use is a matter for those planning the transport services (deciding trip patterns, time schedules, etc.). The transfer node model is by intention made independent of these issues.

NOTE 2 The transfer node infrastructure specification is independent of the traffic management related to entrance to, departure from and manoeuvring in the area of the transfer node.

NOTE 3 Services, facilities, deviation and restrictions related to the transfer node, stop points and transfers are defined in the Services and facilities package (see [Annex B](#)).

NOTE 4 TN_TransferNode will replace the MM_TransferNode in ISO 19134. The MM_TransferNode cannot be used since it only relates to one transport mode (the transferNodeType attribute). The networkPosition attribute relates to just the road network. The TN_TransferNode must be able to relate to several transport modes and it can be related to all types of network.

A.2 TN_Location

A.2.1 Semantics

The abstract class TN_Location defines location information that can be used to specify the location of transfer nodes, stop points at transfer nodes and transfer node access points. Different types of locations (i.e. point or area) may be relevant. Area is typically used for transfer nodes. Point may be used for stop points and access points. A location may also have facilities and host services (see the SF_ServiceOrFacility type), e.g. information services, ticket sales, etc. There may be deviations related to several aspects of the location (see the SF_Deviation type), some of the facilities may for example be out of order. There may be restrictions related to the location (see the SF_Restriction type), e.g. access restrictions.

The UML model for TN_Location is given in [Figure A.1](#).

A.2.2 Properties

The attributes of TN_Location are defined in [Table A.1](#).

The cardinalities of all attributes are 0..1 due to the freedom of choice in how to specify the location.

Table A.1 — TN_Location properties

Attribute	Definition	Mandatory/ Optional	Data type	Max. occurrence	Defined in
locationName	Name of a location	0	CharacterString	1	ISO 19103
point	Used if the location is a position (i.e. a point with coordinates)	0	Position	1	ISO 19155
address	Location address	0	AD_AbstractAddress	1	ISO 19133
area	Used if the location is an area	0	Extent	1	ISO 19155
transportNetwork	Transport network associated with the location	0	TN_Identification-Type	N	This IS
informationLink	Link to more information	0	anyURI	1	ISO 19136
description	Text description	0	TN_DescriptionType	N	This IS
serviceOrFacility	Service or facility related to the location	0	SF_ServiceOrFacility	N	This IS
deviation	Deviation related to the location	0	SF_Deviation	N	This IS

Table A.1 (continued)

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
restriction	Restriction related to the location	0	SF_Restriction	N	This IS
Role name: has-Connection	A location may be connected to transport networks	0	Association to TN_TransportNetwork	N	This IS

A.2.3 Constraints

Related to	Constraint
Data type TN_Location	At least one of the attributes must be used.

A.3 TN_TransportNetwork

A.3.1 Semantics

The abstract class TN_TransportNetwork identifies a physical transport network by means of an identifier and/or the network type(s) served by the physical network. This information can be related to a location (see TN_Location type).

Note One physical transport network (e.g. the road network) may serve several transport network types. The networks for pedestrians, bicycles, buses, private cars, etc. may partly overlap and partly have dedicated sections (bicycle paths, pedestrian roads, bus lanes, etc.) in the physical transport network. Thus, at one location, the physical network may be a part of one or more transport network types.

The UML model for TN_TransportNetwork is given in [Figure A.1](#).

A.3.2 Properties

The attributes of TN_TransportNetwork are defined in [Table A.2](#).

The cardinalities of all attributes are 0..1 due to the freedom of choice in how to specify the location.

Table A.2 — TN_TransportNetwork properties

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
transportNetworkID	Unique identifier of a physical transport network	0	TN_Identification-Type	1	This IS
transportNetworkType	Transport network type(s) served by the physical transport network at a specific location. This may for example be road users in general or just pedestrians and bicycles	0	TN_TransportNetwork Code	N	This IS
Role name: connected To	A transport network may be linked to locations	0	Association to TN_Location	N	This IS

A.3.3 Constraints

Related to	Constraint
Data type TN_Transport-Network	Should be used if it is relevant to identify transport networks associated to a location and/or if it is relevant to indicate the transport network type(s) associated to a location.
Data type TN_Transport-Network	At least one of the attributes must be used.
Attribute transportNetworkID	Should be provided if it is relevant to identify the transport network associated to a location.
Attribute transportNetworkType	<p>Should be provided to indicate that certain transport network types provide access to a location. The need for such information must be considered and can be omitted if the access to the location is obvious. For bus stops, it may for example not be necessary to indicate that the road network provides access to the transfer node unless the access is limited to a subset of the road network types (e.g. the pedestrian network).</p> <p>The use varies depending on the type of the associated location (i.e. specializations of TN_Location).</p> <ul style="list-style-type: none"> — If the location is a transfer node: <ul style="list-style-type: none"> — At the lowest level in a transfer node hierarchy, transport network type(s) served by the stop points should be provided. — For transfer nodes at higher levels and for transfer nodes without a hierarchy, the provision of information on all transport network types providing access to the transfer node should be considered. In addition to those served by the stop points in the hierarchy, this may also be the road network in general, networks for pedestrians, passenger cars, etc. For bus stops, this may however not be necessary as mentioned above. — If the location is a stop point: The transport network type(s) served by the stop point should be provided. — If the location is an access point: The transport network types providing access to the transfer access point should be provided.

A.4 TN_TransferNode

A.4.1 Semantics

The type TN_TransferNode supports the provision of descriptions of transfer nodes. A transfer node is a location that facilitates transfers between transport modes or transport means operating in the same or different transport networks.

A transfer node is a specialization of the TN_Location type and inherits location attributes. It may have one or more access points (see the TN_AccessPoint type), and it may have stop points (see the TN_StopPoint type). It may facilitate transfers to other transfer nodes, to access points and between stop points (see the TN_TransferInfo type). A transfer node will have an owner (see the TN_InfrastructureOwner type).

A transfer node may contain other transfer nodes. Hence, there may be a hierarchy of transfer nodes, and one node may support one or more transport modes. Transfer nodes at the lowest level of such a hierarchy have one or more stop points (see the TN_StopPoint type), which are the locations where transport means may stop. The physical location of a transfer node and its stop points may, however, coincide with other transfer nodes and other stop points.

The UML model for TN_TransferNode is given in [Figure A.1](#).

A.4.2 Properties

The attributes and roles of TN_TransferNode are defined in [Table A.3](#).

Table A.3 — TN_TransferNode properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
transferNodeID	The ID of the transfer node	M	TN_IdentificationType	1	This IS
publishedName	The name that is published to the travellers (e.g. in route tables)	M	CharacterString	1	ISO 19103
shortName	Short name (e.g. airport codes)	M	CharacterString	1	ISO 19103
transferNodeMode	Transport modes served by the transfer node. May be several modes for multimodal transfer nodes	M	TN_TransportMode Code	N	This IS
nodeType	International, national, regional, local	O	TN_TransferNode Code	1	This IS
informationLink	Link to more information	O	anyURI	1	ISO 19136
maxDistanceTo-Stop Point	Maximum distance to stop points belonging to the transfer node in metres	O	Integer	1	ISO 19103
maxTimeToStop Point	Maximum time it takes to go to stop points belonging to the transfer node (average duration)	O	TM_PeriodDuration	1	ISO 19108
timeZone	Time zone to which the transfer node belongs	M	CharacterString	1	ISO 19103
operationalHours	The time when the transfer node is open	O	TN_OpeningHours Type	N	This IS
Role name: parent-Node	The transfer node may be the parent of other transfer nodes (the airport may for example have several terminals)	O	Association to: TN_TransferNode	1	This IS
Role name: sub-Node	The transfer node may be a part of another transfer node (an airport terminal for domestic flights is for example a part of the airport)	O	Association to TN_TransferNode	N	This IS
Role name: accessPoint	A transfer node has one or more access points	M	Association to TN_AccessPoint	N	This IS
Role name: endTransfer	A transfer node may be the end of a transfer	O	Association to TN_TransferInfo	N	This IS
Role name: node-Owner	A transfer node will have an owner	M	Association to TN_InfrastructureOwner	N	This IS
Role name: start-Transfer	A transfer node may be the start of a transfer	O	Association to TN_TransferInfo	N	This IS
Role name: stop-Point	A transfer node may have stop points	O	Association to TN_StopPoint	N	This IS

A.4.3 Constraint

Related to	Constraint
Relation between TN_TransferNode and TN_StopPoint	In a hierarchy of transfer nodes, only the lowest level in a hierarchy of transfer nodes can have stop points.

A.5 TN_AccessPoint

A.5.1 Semantics

The type TN_AccessPoint supports the provision of descriptions of access points to transfer nodes (see the TN_TransferNode type). One access point may provide access to one or more transfer nodes, and access points may also be included in transfer descriptions (see the TN_TransferInfo type).

Location attributes are inherited from TN_Location.

The UML model for TN_AccessPoint is given in [Figure A.1](#).

A.5.2 Properties

The attributes and roles of TN_AccessPoint are defined in [Table A.4](#).

Table A.4 — TN_AccessPoint properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
accessPointID	The unique identifier of the access point	M	TN_Identification-Type	1	ISO 19103
accessPointName	Name of access point	M	CharacterString	1	ISO 19103
Role name: start-Transfer	The TN_AccessPoint may be the start of one or more transfers	0	Association to TN_TransferInfo	N	This IS
Role name: endTransfer	The TN_AccessPoint may be the end of one or more transfers	0	Association to TN_TransferInfo	N	This IS
Role name: accessPointNode	The TN_AccessPoint to a transfer node	M	Association to TN_TransferNode	N	This IS

A.6 TN_StopPoint

A.6.1 Semantics

The type TN_StopPoint supports the provision descriptions of stop points. A stop point is a location at a transfer node (see the TN_TransferNode type) where transport means can stop.

A stop point is related to just one transfer node and serves one or more transport networks. The associated transfer node must be connected to the associated mode(s).

Transfers may be specified to and from stop points (see the TN_TransferInfo type).

Location attributes are inherited from TN_Location.

NOTE The physical location of a stop point may coincide with stop points belonging to other transfer nodes and other transport modes. This depends on how the logical definition of the transfer node hierarchy is defined.

The UML model for TN_StopPoint is given in [Figure A.1](#).

A.6.2 Properties

The attributes and roles of TN_StopPoint are defined in [Table A.5](#).

Table A.5 — TN_StopPoint properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
stopPointID	The stop point identifier	M	TN_Identification-Type	1	ISO 19103
name	Name of stop point	M	CharacterString	1	ISO 19103
Role name: stop-PointNode	Transfer node related to the stop point	M	Association to TN_TransferNode	1	This IS
Role name: start-Transfer	Start of transfer	0	Association to TN_TransferInfo	N	This IS
Role name: endTransfer	End of transfer	0	Association to TN_TransferInfo	N	This IS

A.6.3 Constraint

Related to	Constraint
Relation between TN_TransferNode and TN_StopPoint	Only the lowest level in a hierarchy of transfer nodes can have stop points.

A.7 TN_TransferInfo

A.7.1 Semantics

The type TN_TransferInfo supports the provision of descriptions of transfers related to transfer nodes. A transfer has a start and a stop which may be a transfer node access point (see the TN_AccessPoint type), a stop point (see the TN_StopPoint type) or a transfer node (see the TN_TransferNode type).

A transfer may also be described by means of an ordered set of sub-Transfers. A transfer from one stop point at one transfer node to another stop point at another transfer node may for example be described by means of an ordered set of transfers from the first stop point via access points to the final stop point.

The UML model for TN_TransferInfo is given in [Figure A.1](#).

A.7.2 Properties

The attributes and roles of TN_TransferInfo are defined in [Table A.6](#).

Table A.6 — TN_TransferInfo properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
transferType	Transport network type used during transfer. Usually this is "pedestrian", but other modes may also be of relevance. There may for example be rail transport between the terminals at airports	M	TN_TransportNetwork Code	1	This IS

Table A.6 (continued)

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
distance	The transfer distance in metres	M	Integer	1	ISO 19103
minTransferTime	Minimum transfer time	M	TM_PeriodDuration	1	ISO 19108
thresholdFree	Indicates whether the transfer is threshold free or not	0	Boolean	1	ISO 19103
description	Text description of the transfer	0	TN_Description-Type	N	This IS
serviceOrFacility	Services and facilities provided related to the transfer	0	SF_ServiceOrFacility	N	This IS
deviation	Deviations related to the transfer	0	SF_Deviation	N	This IS
howToDoTransfer	Describes how to do the transfer (for example, where to walk)	0	NT_Transfer	1	ISO 19133
Role name: parent-TransferInfo	One transfer may be described by means of several transfer links	0	Association to TN_TransferInfo	1	This IS
Role name: sub-TransferInfo	One transfer may be a part of another transfer	0	Association to TN_TransferInfo	N	This IS
Role name: start-AccessPoint	The transfer may start at an access point	0	Association to TN_AccessPoint	1	This IS
Role name: endAccessPoint	The transfer may end at an access point	0	Association to TN_AccessPoint	1	This IS
Role name: start-Node	The transfer may start at a transfer node	0	Association to TN_TransferNode	1	This IS
Role name: end-Node	The transfer may end at a transfer node	0	Association to TN_TransferNode	1	This IS
Role name: start-StopPoint	The transfer may start at a stop point	0	Association to TN_StopPoint	1	This IS
Role name: end-StopPoint	The transfer may end at a stop point	0	Association to TN_StopPoint	1	This IS

A.8 TN_InfrastructureOwner

A.8.1 Semantics

The owner of the transfer node infrastructure is responsible for the information about the infrastructure and the infrastructure itself.

The UML model for TN_InfrastructureOwner is given in [Figure A.1](#).

A.8.2 Properties

The attribute and role of TN_InfrastructureOwner are defined in [Table A.7](#).

Table A.7 — TN_InfrastructureOwner properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
legalEntity	A reference to the owner	M	anyURI	1	ISO 19136
Role name: owned-Node	May be the owner of one or more transfer nodes	0	Association to TN_TransferNode	N	This IS

A.9 TN_OpeningHoursType

A.9.1 Semantics

The data type TN_OpeningHoursType supports the provision of information about the opening hours in a period specified by means of two dates.

The UML model for TN_OpeningHoursType is given in [Figure A.1](#).

A.9.2 Properties

The attributes of TN_OpeningHoursType are defined in [Table A.8](#).

Table A.8 — TN_OpeningHoursType properties

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
fromDate	The first date with the specified opening hours	M	Date	1	ISO 19103
toDate	The last date with the specified opening hours	M	Date	1	ISO 19103
opensAt	The time when it opens	M	ClockTime	1	ISO 19103
closesAt	The time when it closes	M	ClockTime	1	ISO 19103
fromWeekday	The day it opens. Used together with toWeekday to indicate a period	0	TN_Weekday	1	This IS
toWeekday	The day it closes. Used together with fromWeekday to indicate a period	0	TN_Weekday	1	This IS
openingHoursDeviation	If true, the TN_OpeningHoursType instance shall overrun other instances for the same period	0	Boolean	1	ISO 19103

A.9.3 Constraints

Related to	Constraint
Data type TN_OpeningHoursType	If openingHoursDeviation is true, the instance shall overrun other instances for the same period.
Attribute fromWeekday	If fromWeekday is not null, toWeekday shall not be null.
Attribute toWeekday	If toWeekday is not null, fromWeekday shall not be null.

A.10 TN_DescriptionType

A.10.1 Semantics

The TN_DescriptionType data type supports the provision of descriptions in different languages.

The UML model for TN_DescriptionType is given in [Figure A.1](#).

A.10.2 Properties

The attributes of TN_DescriptionType are defined in [Table A.9](#).

Table A.9 — TN_DescriptionType properties

Attribute	Definition	Mandatory/ Optional	Data type	Max. occurrence	Defined in
language	Identifies the language that is used	M	LanguageCode	1	ISO 639
text	The text in the given language	M	CharacterString	1	ISO 19103

A.11 TN_IdentificationType

A.11.1 Semantics

The data type TN_IdentificationType defines a generic reference by means of an identifier and a namespace. By means of this structure, networks, stop points, etc. can be identified, and existing identifiers can be used.

The UML model for TN_IdentificationType is given in [Figure A.1](#).

A.11.2 Properties

The attributes of TN_IdentificationType are defined in [Table A.10](#).

Table A.10 — TN_IdentificationType properties

Attribute	Definition	Mandatory/ Optional	Data type	Max. occurrence	Defined in
ID	Identifier	0	CharacterString	1	ISO 19103
namespace	The namespace of the identifier	0	CharacterString	1	ISO 19136

A.11.3 Constraints

Related to	Constraint
Data type TN_IdentificationType	ID shall be unique within namespace.

A.12 TN_TransportModeCode

A.12.1 Semantics

The TN_TransportModeCode code list is the value domain for transport modes. It indicates the type of generic modes that are relevant.

The UML model for TN_TransportModeCode is given in [Figure A.1](#).

A.12.2 Code values

The values in the TN_TransportModeCode code list are defined in [Table A.11](#).

Table A.11 — TN_TransportModeCode properties

Code value	Description
Road	The mode associated to road-use.
Sea	The mode associated to water-borne transport at sea.
Rail	The mode associated to railroad transport
Air	The mode associated to air-borne transport.
InlandWaterway	The mode associated to water-borne transport at inland waterways.
Cable	The mode associated to cable-operated transport.

A.13 TN_TransportNetworkCode

A.13.1 Semantics

The TN_TransportNetworkCode code list is the value domain for transport network types. It indicates the type of generic networks that are relevant.

The UML model for TN_TransportNetworkCode is given in [Figure A.1](#).

NOTE Transport networks of different types may more or less overlap. The transport network for pedestrians, private cars and busses may for example to a large extent consist of the same roads, but the buses may be allowed to enter streets or areas where there are no access for private cars, and the pedestrians may have dedicated footpaths and there may be pedestrian areas in cities.

A.13.2 Code values

The values in the TN_TransportNetworkCode code list are defined in [Table A.12](#).

Table A.12 — TN_TransportNetworkCode properties

Code value	Description
RoadNetwork	Road network in general, accessible for all road users.
PedestrianNetwork	Transport network used by pedestrians.
BicycleNetwork	Transport network used by bicycles.
MopedNetwork	Transport network used by mopeds.
MotorcycleNetwork	Transport network used by motorcycles.
BusNetwork	Transport network for bus services.
TaxiNetwork	Transport network for taxi services.
PrivateCarNetwork	Transport network for private cars.
OtherRoadNetwork	Transport network accessible for other road users than those mentioned above.
FlightNetwork	Transport network for aircraft services.
SeaBorneNetwork	Transport network for all sea-borne transport in general.
InlandWaterwayNetwork	Transport network for all inland water-borne transport in general.
FerryNetwork	Transport network for ferry services.
FastBoatNetwork	Transport network for high-speed passenger boats.

Table A.12 (continued)

Code value	Description
CoastalLinerNetwork	Transport network for coastal liner.
OtherWaterwayNetwork	Transport network for other water-borne transport.
TrainNetwork	Transport network used by trains.
LightRailNetwork	Transport network for light rail services (rail network within a limited area).
TramNetwork	Transport network used by trams (in urban areas - runs often at street level, sharing road space with motor traffic and pedestrians - usually electrically powered).
CogRailwayNetwork	Transport network for cog railway services (allows vehicles to operate on steep gradients, consisting of a railway provided with a toothed rack rail where vehicles are fitted with one or more cog wheels or pinions that mesh with this rack rail).
MonorailNetwork	Transport network for monorail services.
SuspendedRailNetwork	Transport network for suspended rail services (often a monorail which runs hanging from a rail).
MetroNetwork	Transport network for metro services.
OtherRailNetwork	Transport network for other rail services than those mentioned above.
FunicularNetwork	Transport network for funicular services.
CableWayNetwork	Transport network with cableways.
SkiTowNetwork	Transport network with ski tows.

A.13.3 Constraints

Related to	Constraint
Attribute RoadNetwork	Should be used when all networks related to the road mode are of relevance.
Attribute SeaBorneNetwork	Should be used when all networks related to the sea mode are of relevance.
Attribute InlandWaterwayNetwork	Should be used when all networks related to the InlandWaterway mode are of relevance.

A.14 TN_TransferNodeCode

A.14.1 Semantics

The TN_TransferNodeCode code list is the value domain for indication of the type of transfers that are supported.

The UML model for TN_TransferNodeCode is given in [Figure A.1](#).

A.14.2 Code values

Code values in the TN_TransferNodeCode code list are defined in [Table A.13](#).

Table A.13 — Code values for TN_TransferNodeCode

Code value	Description
international	The transfer node provides transfers towards international routes.
national	The transfer node provides transfers between national routes.
regional	The transfer node provides transfers between regional routes.

Table A.13 (continued)

Code value	Description
local	The transfer node provides transfers between local routes.

A.15 TN_WeekdayCode

A.15.1 Semantics

The TN_WeekdayCode code list is the value domain for weekdays.

The UML model for TN_Weekday is given in [Figure A.1](#).

A.15.2 Code values

The values in the TN_Weekday code list are defined in [Table A.14](#).

Table A.14 — TN_WeekdayCode properties

Code value	Description
Monday	The first day of the week.
Tuesday	The second day of the week.
Wednesday	The third day of the week.
Thursday	The fourth day of the week.
Friday	The fifth day of the week.
Saturday	The sixth day of the week.
Sunday	The seventh day of the week.

Annex B (normative)

Services and facilities

B.1 Semantics

The Services and facilities package depends on five leaf packages as illustrated in [Figure B.1](#). The leaf packages define data types that are required for the definition of the services and facilities.

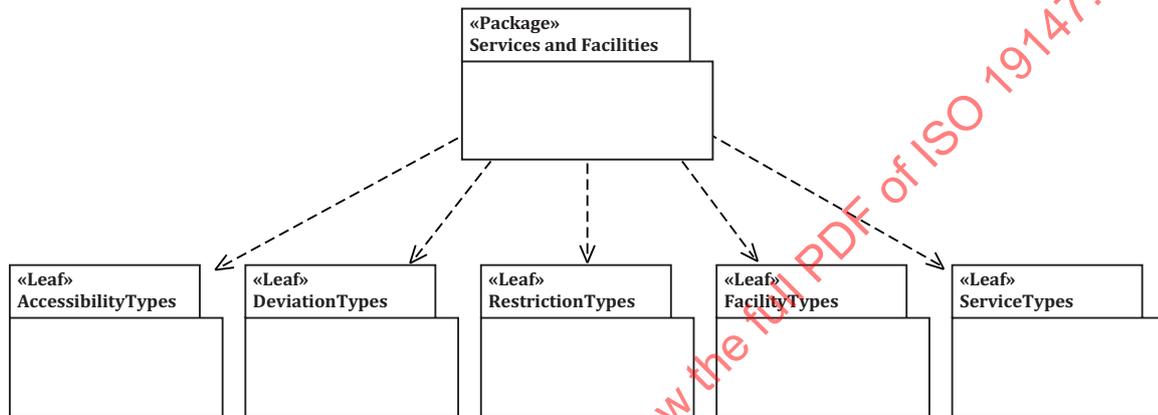


Figure B.1 — Services and facilities package structure

The Services and facilities package (see [Figure B.2](#)) contains types supporting information provision to those who are travelling. This is information about services and facilities at transfer nodes, at stop point, in relation to transfers and on-board transport means, and related accessibility, deviation and restrictions.

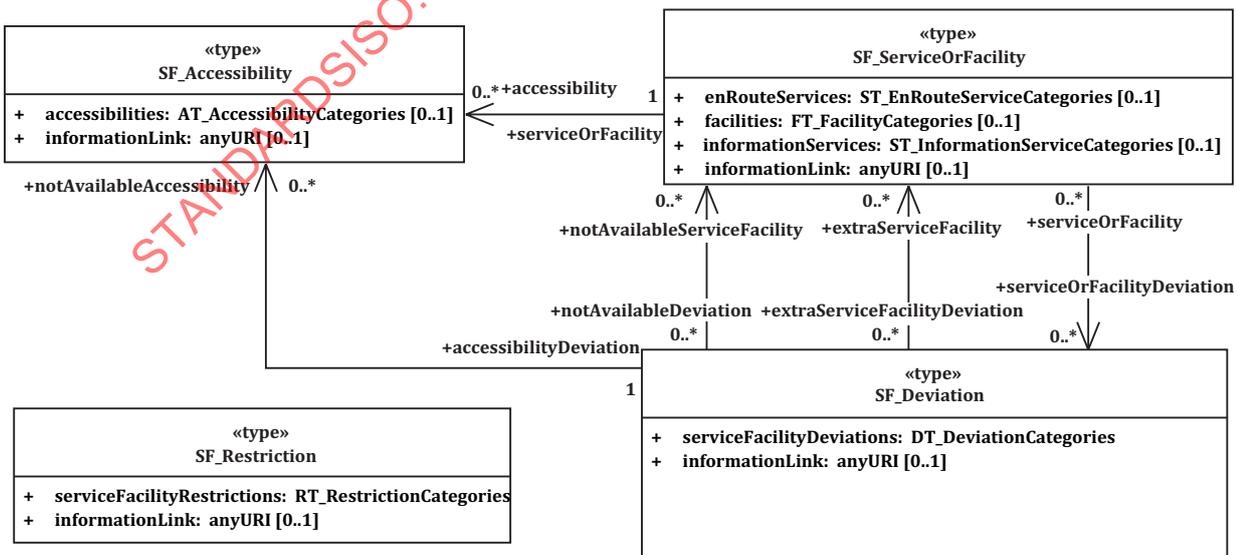


Figure B.2 — Context diagram for Services and facilities

Services and facilities may have accessibility information, and there may also be deviations related to services and facilities. Such deviations may be related to accessibility (e.g. reduced accessibility compared to the normal situation) or to the services quality (e.g. services may not be provided compared to the normal situation or extra services may be provided).

EXAMPLE In Figure B.3, the principles in the definition of SF_Accessibility, SF_Deviation, SF_Restriction and SF_ServiceOrFacility are illustrated. The XX prefix is just an example. In the real diagrams, XX is substituted by AT, DT, FT, RT and ST which refers to packages as described in 4.3. In the example:

- SF_Accessibility, SF_Deviation, SF_Restriction and SF_ServiceOrFacility are represented by the XX_FeatureExample type. In the example, the related features belong to just one set of feature categories. However, in principle, there may be several feature categories. A link to more information may also be provided.
- The XX_FeatureExampleCategories data type (corresponding to AT_AccessibilityCategories, DT_DeviationCategories, FT_FacilityCategories, RT_RestrictionCategories, ST_EnRouteServiceCategories and ST_InformationServiceCategories) defines the relevant set of feature categories. Zero or more features may be selected from each category.
- Just the feature category of type XX_FeatureExample1 is further explored by the example. It inherits attributes from the abstract XX_FeatureExampleInfo class and has a feature code attribute. The possible values of the feature code are defined by the XX_FeatureCodeExample code list.

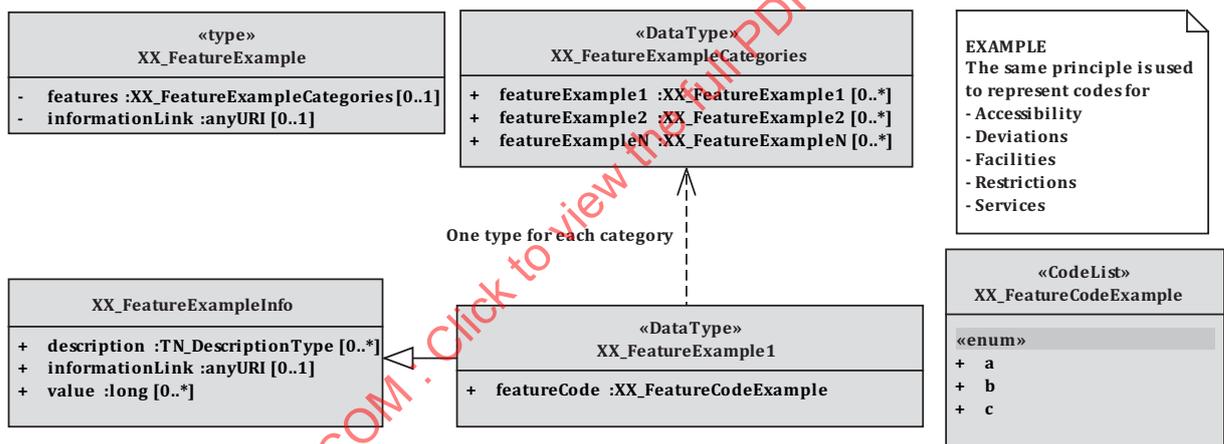


Figure B.3 — Example showing principles of the data type and code list definitions

B.2 Use of the information models

The information models in Annex B are comprehensive to cover all needs. All properties and codes do not have to be used to describe all transfer nodes. Profiles, which define sub-sets of the information models, may for example be defined for different types of transfer nodes. The description of small bus stops along the road may for example be based on another profile than then the one used on international airports.

B.3 SF_Accessibility

B.3.1 Semantics

The SF_Accessibility provides information about accessibility to services and facilities at transfer nodes and on-board transport means by means of generic accessibility terms and/or an information link to such information. For more information, see the AccessibilityTypes package.

The UML model for SF_Accessibility is given in [Figure B.2](#).

NOTE The provision of accessibility information by means of the generic terms enables an automated processing of accessibility information. Travel planners may for example find travel alternatives and transfer nodes that fulfil accessibility requirements.

B.3.2 Properties

The attributes and roles of SF_Accessibility are defined in [Table B.1](#).

Table B.1 — SF_Accessibility properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
accessibilities	Provides information about accessibility by means of generic codes associated to accessibility categories	O	AT_Accessibility Categories	1	This IS
informationLink	Link to more information	O	anyURI	1	ISO 19136
Role name: service-OrFacility	The accessibility information is related to a service or a facility	M	Association to SF_ServiceOrFacility	1	This IS
Role name: accessibilityDeviation	There may be a deviation with respect to accessibility	M	Association to SF_Deviation	1	This IS

B.4 SF_Deviation

B.4.1 Semantics

The SF_Deviation provides information about a deviation related to services, facilities or accessibility at transfer nodes and on-board transport means by means of generic deviation terms. For more information, see the DeviationTypes package. Services may be due to deviation not be provided or there may be a provision of extra services. Deviations may also be related to accessibility.

The UML model for SF_Deviation is given in [Figure B.2](#).

NOTE The provision of deviation information by means of the generic terms enables an automated processing of deviation information. Travel planners may for example find real-time information about deviations.

B.4.2 Properties

The attributes and roles of SF_Deviation are defined in [Table B.2](#).

Table B.2 — SF_Deviation properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
serviceFacilityDeviations	Provides information about deviations by means of generic codes associated to deviation	M	DT_Deviations Categories	1	This IS
informationLink	Link to more information	O	anyURI	1	ISO 19136

Table B.2 (continued)

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
Role name: notAvailableAccessibility	There may be a deviation with respect to accessibility – in this case, reduced accessibility	0	Association to SF_Accessibility	N	This IS
Role name: notAvailableServiceFacility	There may be a deviation with respect to the availability of a service or facility	0	Association to SF_ServiceOrFacility	N	This IS
Role name: extraServiceFacility	There may be a deviation with respect to a service or facility – in this case, extra availability	0	Association to SF_ServiceOrFacility	N	This IS
Role name: serviceOrFacility	There may be deviations related to a service or facility	0	Association to SF_ServiceOrFacility	N	This IS

B.5 SF_Restriction

B.5.1 Semantics

The SF_Restriction provides information about restrictions related to services, facilities or accessibility at transfer nodes and on-board transport means by means of generic restriction terms. For more information, see the RestrictionTypes package.

The UML model for SF_Restriction is given in [Figure B.2](#).

NOTE The provision of restriction information by means of the generic terms enables an automated processing of restriction information. Travel planners may for example find and use information about restrictions.

B.5.2 Properties

The attributes of SF_Restriction are defined in [Table B.3](#).

Table B.3 — SF_Restriction properties

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
serviceFacilityRestrictions	Provides information about restrictions by means of generic codes associated to restriction categories	M	RT_RestrictionCategories	1	This IS
informationLink	Link to more information	0	anyURI	1	ISO 19136

B.6 SF_ServiceOrFacility

B.6.1 Semantics

The SF_ServiceOrFacility provides information about services and facilities at transfer nodes and on-board transport means by means of generic service and facility terms. For more information, see the FacilityTypes and ServiceTypes packages.

The UML model for SF_ServiceOrFacility is given in [Figure B.2](#).

NOTE The provision of service and facility information by means of generic terms enables an automated processing of service and facility information. Travel planners may for example use information about required services and facilities to find relevant travel alternatives.

B.6.2 Properties

The attributes and roles of SF_ServiceOrFacility are defined in [Table B.4](#).

Table B.4 — SF_ServiceOrFacility properties

Attribute/Role name	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
enRouteServices	Provides information about en-route services by means of generic codes associated to en-route service categories	0	ST_EnRouteServiceCategories	1	This IS
facilities	Provides information about facilities by means of generic codes associated to facility categories	0	FT_FacilityCategories	1	This IS
informationServices	Provides information about information services by means of generic codes associated to information service categories	0	ST_InformationServiceCategories	1	This IS
informationLink	Link to more information	0	anyURI	1	ISO 19136
Role name: accessibility	There may be accessibility information related to a service or a facility	0	Association to SF_Accessibility	N	This IS
Role name: extraServiceFacilityDeviation	There may be a positive deviation related to a service or a facility. An extra service may be provided	0	Association to SF_Deviation	N	This IS
Role name: notAvailableDeviation	There may be a negative deviation related to a service or a facility. A service may not be available	0	Association to SF_Deviation	N	This IS
Role name: serviceOrFacilityDeviation	There may be a deviation related to a service or a facility	0	Association to SF_Deviation	N	This IS

B.7 AccessibilityTypes

B.7.1 Semantics

The “leaf” packet AccessibilityTypes (Figure B.4) defines data types and codes related to accessibility.

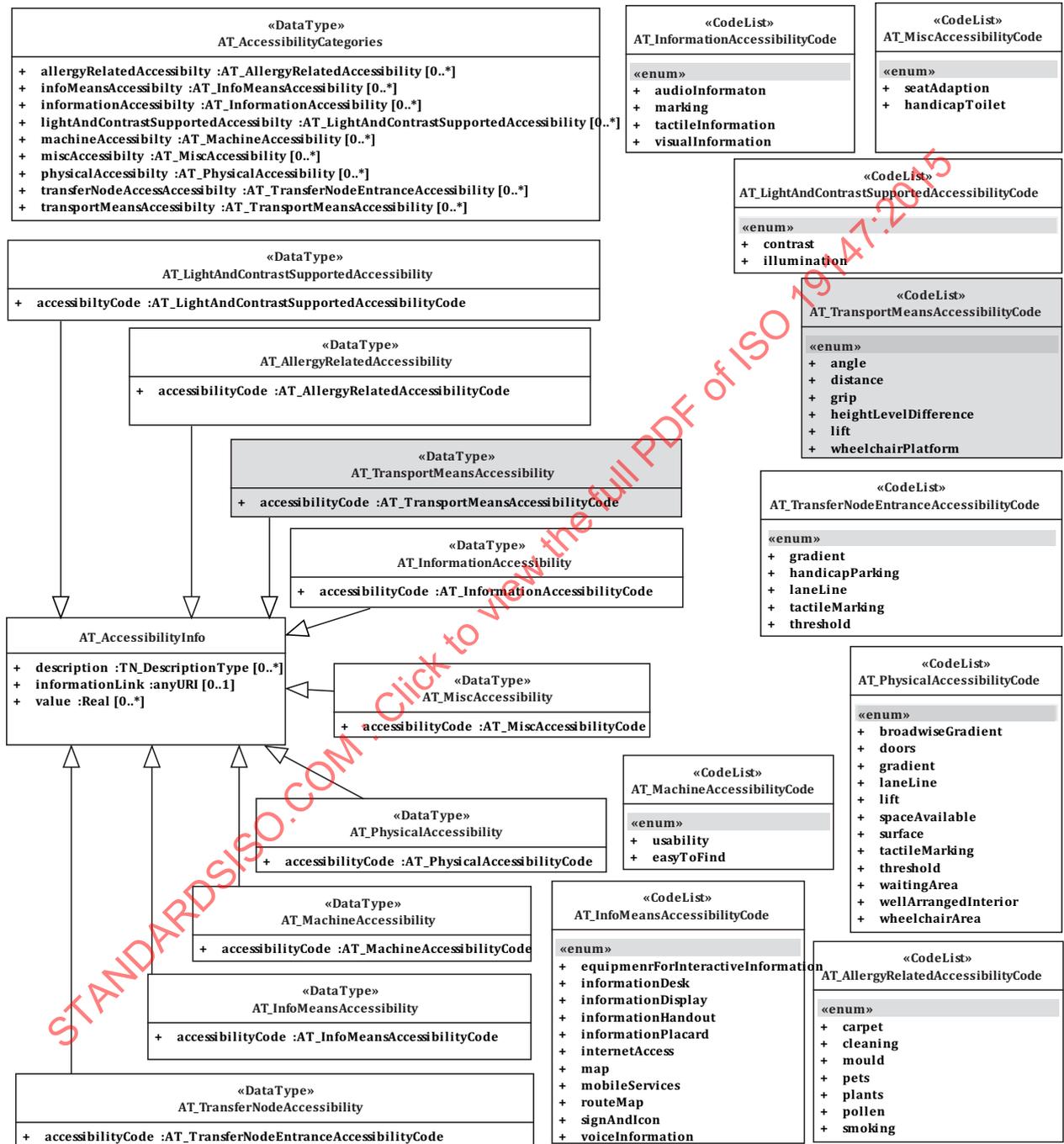


Figure B.4 — Context diagram: AccessibilityTypes

Similar to the illustration in [Figure B.3](#), several accessibility categories may be relevant to the traveller (defined by the `AT_AccessibilityCategories` data type). For each category, zero or more descriptions may be given by means of the following:

- Pre-defined codes for each accessibility category (e.g. `AT_MachineAccessibilityCode`). These codes provide qualitative accessibility information (i.e. the availability of accessibility or not). There are code lists for each accessibility category.
- Values for provision of quantitative information. The values will depend on the code (see the abstract `AT_AccessibilityInfo` type that is inherited by data types defining the individual accessibility types).
- Provision of more information by means of character strings descriptions or information links (see the abstract `AT_AccessibilityInfo` type that is inherited by data types defining the individual accessibility types).

The qualitative information provided by the codes is in many cases not enough. Quantitative information (values) shall be added when information about the degree of accessibility is required.

The values that should be provided related to the different accessibility codes should be defined.

NOTE 1 The shaded classes may not be relevant to transfer nodes, but are included since they may be relevant accessibility information in other contexts.

B.7.2 `AT_AccessibilityCategories`

B.7.2.1 Semantics

The `AT_AccessibilityCategories` defines the accessibility organized into categories. There may be zero or more accessibility descriptions for each category.

The UML model for `AT_AccessibilityCategories` is given in [Figure B.4](#).

B.7.2.2 Properties

The attributes of `AT_AccessibilityCategories` are defined in [Table B.5](#).

Table B.5 — AT_AccessibilityCategories properties

Attribute	Definition	Mandatory/ Optional	Data type	Max. occurrence	Defined in
allergyRelatedAccessibility	Describes the accessibility related to allergy	0	AT_AllergyRelated Accessibility	N	This IS – see AT_ Accessi- bility- Info speciali- zations
infoMeansAccessibility	Describes the accessibility to information by means of mechanisms for information provision	0	AT_InfoMeans Accessibility	N	
informationAccessibility	Describes the accessibility to information by referring to the media used for information provision	0	AT_Information Accessibility	N	
lightAndContrastSupported Accessibility	Describes how accessibility is supported by illumination and use of contrasts	0	AT_LightAndContrast Supported Accessi- bility	N	
machineAccessibility	Describes the accessibility to machines and automates	0	AT_Machine Accessibility	N	
miscAccessibility	Describes other issues related to accessibility	0	AT_MiscAccessibility	N	
physicalAccessibility	Describes the physical accessibility in a room and or a space	0	AT_Physical Accessibility	N	
transferNodeAccessibil- ity	Describes the accessibility related to the entrance to a transfer node	0	AT_TransferNode Accessibility	N	
transportMeansAccessi- bility	Describes the accessibility related to the entrance to a transport means	0	AT_TransportMeans Accessibility	N	

B.7.3 AT_AccessibilityInfo

B.7.3.1 Semantics

The AT_AccessibilityInfo is an abstract data type that is inherited by data types defining the individual accessibility types.

The UML model for AT_AccessibilityInfo is given in [Figure B.4](#).

B.7.3.2 Properties

The attributes of AT_AccessibilityInfo are defined in [Table B.6](#).

Table B.6 — AT_AccessibilityInfo properties

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
description	Provides a text description	0	TN_DescriptionType	N	This IS
informationLink	Link to more information	0	anyURI	1	ISO 19136
value	Value associated to the accessibility (quantitative information)	0	Real	N	ISO 19103

B.7.4 AT_AccessibilityInfo specializations

B.7.4.1 Semantics

All the specializations of AT_AccessibilityInfo describe an aspect of accessibility by means of a code value (represented by the accessibilityCode attribute).

The UML model for specializations is given in [Figure B.4](#).

The UML-classes for AT_AccessibilityInfo specializations are given in [Figure B.4](#). These are: AT_AllergyRelatedAccessibility, AT_InfoMeansAccessibility, AT_InformationAccessibility, AT_LightAndContrastSupportedAccessibility, AT_MachineAccessibility, AT_MiscAccessibility, AT_PhysicalAccessibility, AT_TransferNodeAccessibility and AT_TransferMeansAccessibility.

B.7.4.2 Properties

All the specializations of AT_AccessibilityInfo have an accessibilityCode attribute as defined in [Table B.7](#). The data type of the attribute corresponds to the respective code lists.

Table B.7 — Linkage towards code lists

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
accessibility-Code	A code indicating an aspect of accessibility	M	AT_AllergyRelatedAccessibility-Code AT_InfoMeansAccessibilityCode AT_InformationAccessibilityCode AT_LightAndContrastSupportedAccessibilityCode AT_MachineAccessibilityCode AT_MiscAccessibilityCode AT_PhysicalAccessibilityCode AT_TransferNodeAccessibility-Code AT_TransferMeansAccessibility-Code	1	This IS

B.7.5 AT_AllergyRelatedAccessibilityCode

B.7.5.1 Semantics

The AT_AllergyRelatedAccessibilityCode code list is the value domain for indication of an aspect that is of importance to accessibility for allergic persons.

The UML model for AT_AllergyRelatedAccessibilityCode is given in [Figure B.4](#).

B.7.5.2 Code values

The code values in the AT_AllergyRelatedAccessibilityCode code list are defined in [Table B.8](#).

Table B.8 — AT_AllergyRelatedAccessibilityCode values

Code value	Description
carpet	Indicates that there are carpets.
cleaning	Indicates that the associated area is clean.
mould	Indicates that there is mould in the vicinity.
pets	Indicates that pets may be present.
plants	Indicates that there are plants in the vicinity.
pollen	Indicates that there is likely to be pollen.
smoking	Indicates that smoking is allowed.

B.7.6 AT_InfoMeansAccessibilityCode

B.7.6.1 Semantics

The AT_InfoMeansAccessibilityCode code list is the value domain for indication of the mechanism used for information provision.

The UML model for AT_InfoMeansAccessibilityCode is given in [Figure B.4](#).

B.7.6.2 Code values

The code values in the AT_InfoMeansAccessibilityCode code list are defined in [Table B.9](#).

Table B.9 — AT_InfoMeansAccessibilityCode values

Code value	Description
equipmentForInteractiveInformation	Indicates that information is available through interactive user interface.
informationDesk	Indicates the presence of information desk(s).
informationDisplay	Indicates that information is provided by means of displays/information boards.
informationHandout	Indicates that information hand-outs are available.
internetAccess	Indicates that information is provided via internet access.
informationPlacard	Indicates that information is provided via information placard.
Map	Indicates that a map is available.
mobileServices	Indicates that information is provided via mobile services.
routeMap	Indicates that a route map is available.
signAndIcon	Indicates extensive use of sign and icons (not just text).
voiceInformation	Indicates that audio information is provided.

B.7.7 AT_InformationAccessibilityCode

B.7.7.1 Semantics

The AT_InformationAccessibilityCode code list is the value domain for indication of the medium that is used for information provision.

The UML model for AT_InformationAccessibilityCode is given in [Figure B.4](#).

B.7.7.2 Code values

The code values in the AT_InformationAccessibilityCode code list are defined in [Table B.10](#).

Table B.10 — AT_InformationAccessibilityCode values

Code value	Description
audioInformaton	Indicates use of audio signals, wire loop, noise in the area, announcements, etc.
marking	Indicates the clarity with respect to naming and directions, font size, etc.
tactileInformation	Indicates use of tactile marking. E.g. tactile maps and braille.
visualInformation	Placing, illumination, contrast end reflection, fonts used, visibility from waiting area, etc.

B.7.8 AT_LightAndContrastSupportedAccessibilityCode

B.7.8.1 Semantics

The AT_LightAndContrastSupportedAccessibilityCode code list is the value domain for indication of how accessibility for visually impaired persons is supported by illumination and use of contrasts.

The UML model for AT_LightAndContrastSupportedAccessibilityCode is given in [Figure B.4](#).

B.7.8.2 Code values

The code values in the AT_LightAndContrastSupportedAccessibilityCode code list are defined in [Table B.11](#).

Table B.11 — AT_LightAndContrastSupportedAccessibilityCode values

Code value	Description
contrast	Contrast colours on furniture, doors and frames, making of glass doors and glass walls, etc.
illumination	Indicates that the illumination supports orientation and access to information. May also indicate troublesome reflection of light from floor, etc.

B.7.9 AT_MachineAccessibilityCode

B.7.9.1 Semantics

The AT_MachineAccessibilityCode code list is the value domain for indication of accessibility to machines and automates.

The UML model for AT_MachineAccessibilityCode is given in [Figure B.4](#).

B.7.9.2 Code values

The code values in the AT_MachineAccessibilityCode code list are defined in [Table B.12](#).

Table B.12 — AT_MachineAccessibilityCode values

Code value	Description
usability	Indicates that the machine is easy to use, can be reached from wheelchair, tactile buttons, etc.
easyToFind	Indicates that the machine is easy to find e.g. close to lane lines.

B.7.10 AT_MiscAccessibilityCode

B.7.10.1 Semantics

The AT_MiscAccessibilityCode code list is the value domain for indication of accessibility issues that are not covered by any of the other code lists for accessibility.

The UML model for AT_MiscAccessibilityCode is given in [Figure B.4](#).

B.7.10.2 Code values

The code values in the AT_MiscAccessibilityCode code list are defined in [Table B.13](#).

Table B.13 — AT_MiscAccessibilityCode values

Code value	Description
seatAdaption	Indicates availability of reclining chairs, contrast colours, height, space for wheelchair close to seat, arm rest, back rest, etc.
handicapToilet	Indicates availability of toilet with universal accessibility.

B.7.11 AT_PhysicalAccessibilityCode

B.7.11.1 Semantics

The AT_PhysicalAccessibilityCode code list is the value domain for indication of accessibility related to rooms and spaces.

The UML model for AT_PhysicalAccessibilityCode is given in [Figure B.4](#).

B.7.11.2 Code values

The code values in the AT_PhysicalAccessibilityCode code list are defined in [Table B.14](#).

Table B.14 — AT_PhysicalAccessibilityCode values

Code value	Description
broadwiseGradient	Indicates whether more than 1:33.
doors	Indicates type of door (roundabout door, sliding door, etc.) and their characteristics.
gradient	Gradient information.
laneLine	Lane line availability.
Lift	Lift availability.
spaceAvailable	So that the wheelchair can be turned, etc.
surface	Not slippery, smooth, carpet characteristics, etc.
tactileMarking	Indicates use of tactile marking.
threshold	Indicate threshold.
waitingArea	Indicates presence of waiting area.
wellArrangedInterior	No obstacles, easy to get an overview.
wheelchairArea	Indicates availability of area that can be used by wheel chairs.

B.7.12 AT_TransferNodeAccessibilityCode

B.7.12.1 Semantics

The AT_TransferNodeAccessibilityCode code list is the value domain for indication of accessibility related to the entrance to a transfer node.

The UML model for AT_TransferNodeAccessibilityCode is given in [Figure B.4](#).

B.7.12.2 Code values

The code values in the AT_TransferNodeAccessibilityCode code list are defined in [Table B.15](#).

Table B.15 — AT_TransferNodeAccessibilityCode values

Code value	Description
gradient	E.g. 1:12 or 1:20.
handicapParking	Indicates availability of handicap parking.
laneLine	Indicates lane line availability.
tactileMarking	Indicates use of tactile marking e.g. between pavement and stop area.
threshold	More than 2,5 cm.

B.7.13 AT_TransportMeansAccessibilityCode

B.7.13.1 Semantics

The AT_TransportMeansAccessibilityCode code list is the value domain for indication of accessibility related to the entrance to a transport means.

The UML model for AT_TransportMeansAccessibilityCode is given in [Figure B.4](#).

B.7.13.2 Code values

The code values in the AT_TransportMeansAccessibilityCode code list are defined in [Table B.16](#).

Table B.16 — AT_TransportMeansAccessibilityCode values

Code value	Description
angle	Indicates the angle of the entrance.
distance	Between transport means and stop area platform or between transport means and stop point mark.
grip	Indicates the availability of grips.
heightLevelDifference	Between platform and transport means.
lift	Indicates the availability of lift.
wheelchairPlatform	Indicates the availability of a wheelchair platform.

B.8 DeviationTypes

B.8.1 Semantics

The “leaf” packet DeviationTypes in [Figure B.5](#) defines data types and codes related to deviations.

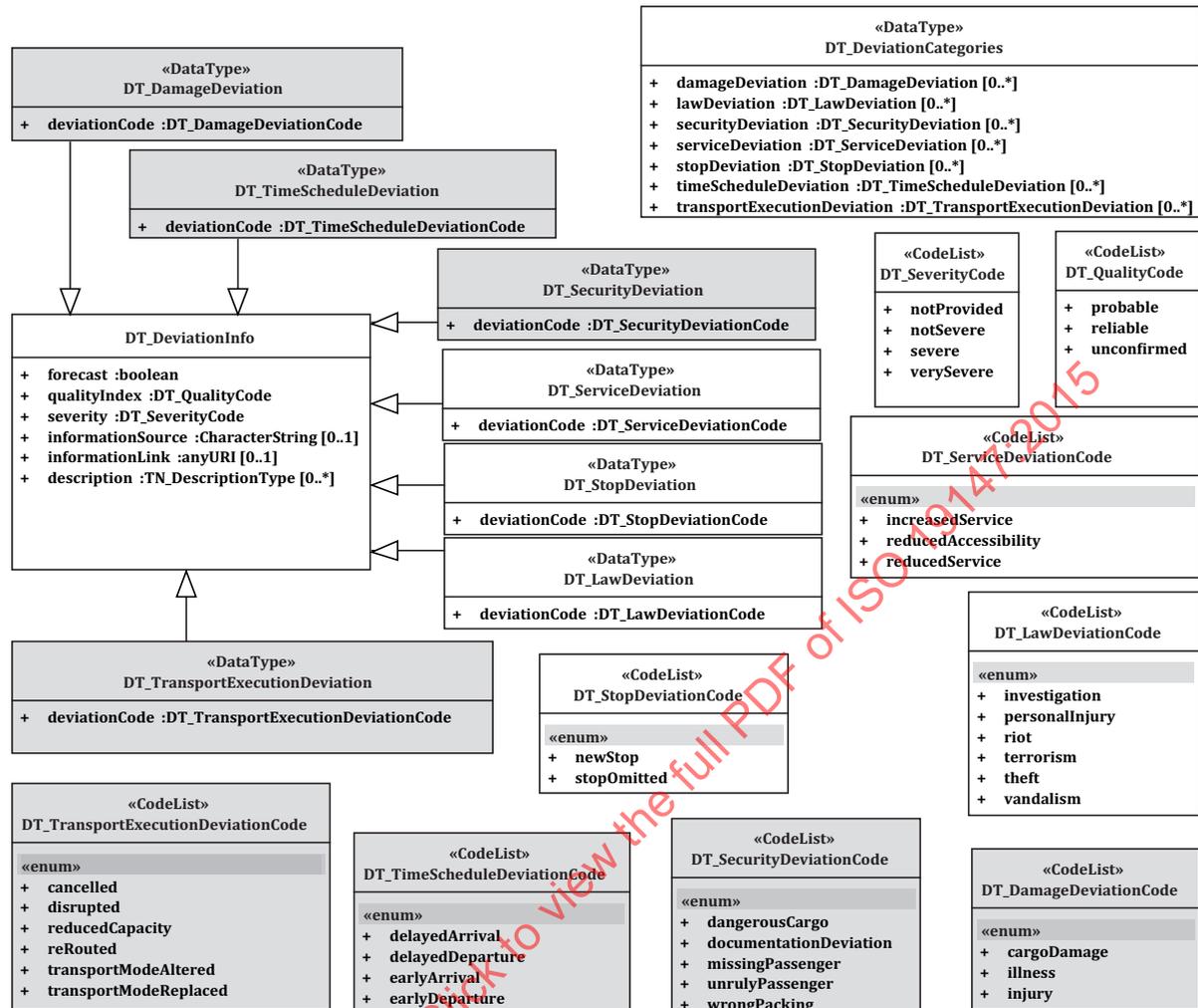


Figure B.5 — Context Diagram: DeviationTypes

Similar to the illustration in Figure B.3, several deviation categories may be relevant to the traveller (see the DT_DeviationCategories data type). For each category, zero or more descriptions may be given by means of the following:

- Pre-defined codes for each deviation category. There are code lists for each deviation category.
- A qualification index for indication of the reliability of the deviation information (deviation information may be unconfirmed real-time information). See the abstract DT_DeviationInfo type that is inherited by data types defining the individual deviation types.
- An indication of whether the deviation is actually or just predicted (a delay may for example be compensated). See the abstract DT_DeviationInfo type that is inherited by data types defining the individual deviation types.
- An indication of the severity of the deviation. See the abstract DT_DeviationInfo type that is inherited by data types defining the individual deviation types.
- Description of the deviation. See the abstract DT_DeviationInfo type that is inherited by data types defining the individual deviation types.

NOTE The shaded classes may not be relevant to transfer nodes, but are included since they may be relevant accessibility information in other contexts.

B.8.2 DT_DeviationCategories

B.8.2.1 Semantics

The DT_DeviationCategories defines the deviations organized into categories. There may be zero or more deviations descriptions for each category.

The UML model for DT_DeviationCategories is given in [Figure B.5](#).

B.8.2.2 Properties

The attributes of DT_DeviationCategories are defined in [Table B.17](#).

Table B.17 — DT_DeviationCategories properties

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
damageDeviation	There are one or more deviations due to the condition of cargo or persons.	0	DT_DamageDeviation	N	This IS – See DT_DeviationInfo specializations
lawDeviation	There are one or more deviations due to a law violation.	0	DT_LawDeviation	N	
securityDeviation	There are one or more deviations due to security issues.	0	DT_SecurityDeviation	N	
serviceDeviation	There are one or more deviations related to the services that are provided.	0	DT_ServiceDeviation	N	
stopDeviation	There are one or more deviations related to a stop at a transfer node.	0	DT_StopDeviation	N	
timeScheduleDeviation	There are one or more deviations related to a time schedule.	0	DT_TimeScheduleDeviation	N	
transportExecutionDeviation	There are one or more deviations related to the execution of a transport service.	0	DT_TransportExecutionDeviation	N	

B.8.3 DT_DeviationInfo

B.8.3.1 Semantics

The DT_DeviationInfo is an abstract data type that is inherited by data types defining the individual deviation types.

The UML model for DT_DeviationInfo is given in [Figure B.5](#).

B.8.3.2 Properties

The attributes of DT_DeviationInfo are defined in [Table B.18](#).

Table B.18 — DT_DeviationInfo properties

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
forecast	Indicates whether it is a deviation forecast (TRUE) or an actual deviation (FALSE).	M	Boolean	1	ISO 19103
qualityIndex	Indicates the confidence of the deviation information (probable, reliable, unconfirmed).	M	DT_QualityCode	1	This IS
severity	Indicates the amount of disruption to traffic likely to be caused by the deviation (not provided, not severe, severe, very severe).	M	DT_SeverityCode	1	This IS
information-Source	Indicates from whom the information is provided (e.g. official authority, road user, etc.)	O	CharacterString	1	ISO 19103
informationLink	Link to more information.	O	anyURI	1	ISO 19136
description	Provides a text description.	O	TN_DescriptionType	N	This IS

B.8.4 DT_DeviationInfo specializations

B.8.4.1 Semantics

All the specializations of DT_DeviationInfo describe an aspect of accessibility by means of a code value (represented by the deviationCode attribute).

The UML-classes for the DT_DeviationInfo specializations are given in [Figure B.4](#). These are: DT_DamageDeviation, DT_LawDeviation, DT_SecurityDeviation, DT_ServiceDeviation, DT_StopDeviation, DT_TimeScheduleDeviation and DT_TransportExecutionDeviation.

B.8.4.2 Properties

All the specializations of DT_DeviationInfo have a deviationCode attribute as defined in [Table B.19](#). The data type of the attribute corresponds to the respective code lists.

Table B.19 — Linkage towards code lists

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
deviationCode	A code indicating a type of deviation.	M	DT_DamageDeviationCode DT_LawDeviationCode DT_SecurityDeviationCode DT_ServiceDeviationCode DT_StopDeviationCode DT_TimeScheduleDeviation DT_TransportExecutionDeviation-Code	1	This IS

B.8.5 DT_DamageDeviationCode

B.8.5.1 Semantics

The DT_DamageDeviationCode code list is the value domain for indication of deviations due to the condition of cargo or persons.

The UML model for DT_DamageDeviationCode is given in [Figure B.5](#).

B.8.5.2 Code values

The code values in the DT_DamageDeviationCode code list are defined in [Table B.20](#).

Table B.20 — DT_DamageDeviationCode values

Code value	Description
cargoDamage	Cargo damage
illness	Illness of person
injury	Injury of person

B.8.6 DT_LawDeviationCode

B.8.6.1 Semantics

The DT_LawDeviationCode code list is the value domain for indication of deviations related to violations of laws or regulations.

The UML model for DT_LawDeviationCode is given in [Figure B.5](#).

B.8.6.2 Code values

The code values in the DT_LawDeviationCode code list are defined in [Table B.21](#).

Table B.21 — DT_LawDeviationCode values

Code value	Description
terrorism	Terrorism
riot	Riot
vandalism	Vandalism
investigation	Investigation going on
personalInjury	Personal injury
theft	Cargo theft

B.8.7 DT_SecurityDeviationCode

B.8.7.1 Semantics

The DT_SecurityDeviationCode code list is the value domain for indication of deviations related to security issues.

The UML model for DT_SecurityDeviationCode is given in [Figure B.5](#).

B.8.7.2 Code values

The code values in the DT_SecurityDeviationCode code list are defined in [Table B.22](#).

Table B.22 — DT_SecurityDeviationCode values

Code value	Description
dangerousCargo	Deviation - the dangerous cargo is not reported.
documentationDeviation	Required documentation is not available.
missingPassenger	No show of passenger (e.g. passenger with checked in luggage).
unrulyPassenger	Unruly passenger that is considered to be a safety risk.
wrongPacking	The cargo is not packed according to regulations.

B.8.8 DT_ServiceDeviationCode

B.8.8.1 Semantics

The DT_ServiceDeviationCode code list is the value domain for indication of deviations related the provision of services.

The UML model for DT_ServiceDeviationCode is given in [Figure B.5](#).

B.8.8.2 Code values

The code values in the DT_ServiceDeviationCode code list are defined in [Table B.23](#).

Table B.23 — DT_ServiceDeviationCode values

Code value	Description
increasedService	More services that planned are provided.
reducedAccessibility	The accessibility is not as good as planned.
reducedService	Less services than planned are provided.

B.8.9 DT_StopDeviationCode

B.8.9.1 Semantics

The DT_StopDeviationCode code list is the value domain for indication of deviations related to stops at transfer nodes.

The UML model for DT_StopDeviationCode is given in [Figure B.5](#).

B.8.9.2 Code values

The code values in the DT_StopDeviationCode code list are defined in [Table B.24](#).

Table B.24 — DT_StopDeviationCode values

Code value	Description
newStop	An extra stop is planned.
stopOmitted	A stop has to be omitted.

B.8.10 DT_TimeScheduleDeviationCode

B.8.10.1 Semantics

The DT_TimeScheduleDeviationCode code list is the value domain for indication of deviations related to time schedules.

The UML model for DT_TimeScheduleDeviationCode is given in [Figure B.5](#).

B.8.10.2 Code values

The code values in the DT_TimeScheduleDeviationCode code list are defined in [Table B.25](#).

Table B.25 — DT_TimeScheduleDeviationCode values

Code value	Description
delayedArrival	The arrival is delayed.
delayedDeparture	The departure is delayed.
earlyArrival	Arrival will be earlier than planned.
earlyDeparture	Departure will be earlier than planned.

B.8.11 DT_TransportExecutionDeviationCode

B.8.11.1 Semantics

The DT_TransportExecutionDeviationCode code list is the value domain for indication of deviations related to the execution of transport services.

The UML model for DT_TransportExecutionDeviationCode is given in [Figure B.5](#).

B.8.11.2 Code values

The code values in the DT_TransportExecutionDeviationCode code list are defined in [Table B.26](#).

Table B.26 — DT_TransportExecutionDeviationCode values

Code value	Description
cancelled	The departure is cancelled.
disrupted	The transport/tour is disrupted.
reducedCapacity	The departure will have reduced capacity.
rerouted	The route is changed.
transportModeAltered	The transport mode is changed.
transportModeReplaced	The transport means is replaced.

B.8.12 DT_SeverityCode

B.8.12.1 Semantics

DT_SeverityCode is a code list defining codes for indication of the severity of the deviation.

The UML model for DT_SeverityCode is given in [Figure B.5](#).

B.8.12.2 Code values

The code values in the DT_SeverityCode code list are defined in [Table B.27](#).

Table B.27 — DT_SeverityCode value

Code value	Description
notProvided	No information on severity is available.

Table B.27 (continued)

Code value	Description
notSevere	The deviation is not considered to be severe.
severe	The deviation is considered to be severe.
verySevere	The deviation is considered to be very severe.

B.8.13 DT_QualityCode

B.8.13.1 Semantics

The DT_QualityCode is a code list defining codes for indication of the reliability of the deviation information.

The UML model for DT_QualityCode is given in [Figure B.5](#).

B.8.13.2 Code values

Code values in DT_QualityCode are listed in [Table B.28](#).

Table B.28 — DT_QualityCode values

Code value	Description
Probable	The deviation information is considered to be quite reliable.
Reliable	The deviation information is considered to be 100 % reliable.
Unconfirmed	The deviation information is not confirmed by official sources.

B.9 FacilityTypes

B.9.1 Semantics

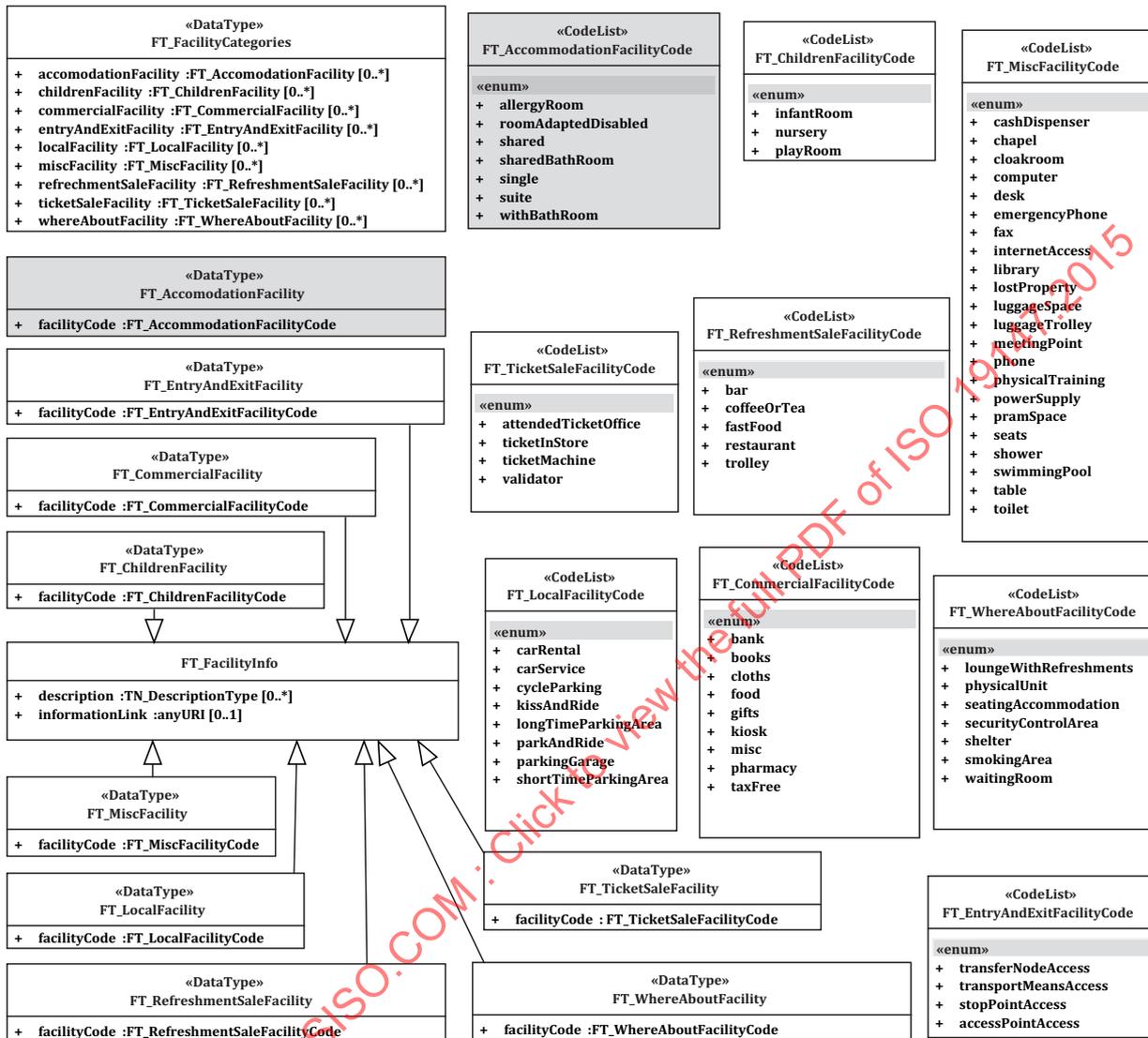


Figure B.6 — Context Diagram: FacilityTypes

The “leaf” packet FacilityTypes defines data types and codes related to facilities.

Similar to the illustration in [Figure B.3](#), several facility categories may be relevant to the traveller (see the FT_FacilityCategories data type). For each category, zero or more descriptions may be given by means of the following.

- Pre-defined codes for each facility category. There are code lists for each facility category.
- Description of the facility.

NOTE The shaded classes may not be relevant to transfer nodes, but are included since they may be relevant accessibility information in other contexts.

B.9.2 FT_FacilityCategories

B.9.2.1 Semantics

FT_FacilityCategories defines the facilities organized into categories. There may be zero or more facility descriptions for each category. Deviations and accessibility information can be related to these facilities as described in [B.1](#).

The UML model for FT_FacilityCategories is given in [Figure B.6](#).

B.9.2.2 Properties

The attributes of FT_FacilityCategories are defined in [Table B.29](#).

Table B.29 — FT_FacilityCategories properties

Attribute	Definition	Mandatory/Optional	Data type	Max. occurrence	Defined in
accommodationFacility	Describes accommodation facilities	0	FT_AccommodationFacility	N	This IS – See FT_FacilityInfo specializations
childrenFacility	Describes facilities for children	0	FT_ChildrenFacility	N	
commercialFacility	Describes commercial facilities	0	FT_CommercialFacility	N	
entryAndExitFacility	Describes facilities related to entries and exits for, e.g. transfer nodes, stop points, access points or transport means	0	FT_EntryAndExitFacility	N	
localFacility	Describes facilities in the vicinity	0	FT_LocalFacility	N	
miscFacility	Describes different facilities that are not covered by the other categories	0	FT_MiscFacility	N	
refreshmentSaleFacility	Describes facilities for where food or beverages can be bought	0	FT_RefreshmentSaleFacility	N	
ticketSaleFacility	Describes ticket sale facilities	0	FT_TicketSaleFacility	N	
whereAboutFacility	Describes facilities related to areas or rooms	0	FT_WhereAboutFacility	N	

B.9.3 FT_FacilityInfo

B.9.3.1 Semantics

FT_FacilityInfo is an abstract data type that is inherited by data types defining the individual facility types.

The UML model for FT_FacilityInfo is given in [Figure B.6](#).

B.9.3.2 Properties

The attributes of FT_FacilityInfo are defined in [Table B.30](#).

Table B.30 — FT_FacilityInfo properties

Attribute	Definition	Mandatory/ Optional	Data type	Max. occurrence	Defined in
description	Provides a text description.	0	TN_DescriptionType	N	This IS
informationLink	Link to more information.	0	anyURI	1	ISO 19136

B.9.4 FT_FacilityInfo specializations

B.9.4.1 Semantics

All the specializations of FT_FacilityInfo describe facilities means of a code value (represented by the facilityCode attribute).

The UML-classes for the FT_FacilityInfo specializations are given in [Figure B.6](#). These are: FT_AccommodationFacility, FT_ChildrenFacility, FT_CommercialFacility, FT_EntryAndExitFacility, FT_LocalFacility, FT_MiscFacility, FT_RefreshmentSaleFacility, FT_TicketSaleFacility and FT_WhereAboutFacility.

B.9.4.2 Properties

All the specializations of FT_FacilityInfo have a facilityCode attribute as defined in [Table B.31](#). The data type of the attribute corresponds to the respective code lists.

Table B.31 — Linkage towards code lists

Attribute	Definition	Mandatory/ Optional	Data type	Max. occurrence	Defined in
facilityCode	A code indicating a type of facility.	M	FT_AccommodationFacility FT_ChildrenFacility FT_CommercialFacility FT_EntryAndExitFacility FT_LocalFacility FT_MiscFacility FT_RefreshmentSaleFacility FT_TicketSaleFacility FT_WhereAboutFacility	1	This IS

B.9.5 FT_ChildrenFacilityCode

B.9.5.1 Semantics

The FT_ChildrenFacilityCode code list is the value domain for indication of the availability of facilities for children.

The UML model for FT_ChildrenFacilityCode is given in [Figure B.6](#).

B.9.5.2 Code values

The code values in the FT_ChildrenFacilityCode code list are defined in [Table B.32](#).

Table B.32 — FT_ChildrenFacilityCode values

Code value	Description
infantRoom	Room adapted to the needs of infants is available.

Table B.32 (continued)

Code value	Description
Nursery	Nursery available.
playRoom	Play room is available.

B.9.6 FT_CommercialFacilityCode

B.9.6.1 Semantics

The FT_CommercialFacilityCode code list is the value domain for indication of the availability of commercial businesses.

The UML model for FT_CommercialFacilityCode is given in [Figure B.6](#).

B.9.6.2 Code values

The code values in the FT_CommercialFacilityCode code list are defined in [Table B.33](#).

Table B.33 — FT_CommercialFacilityCode values

Code value	Description
bank	Bank is available.
Books	Book shop is available.
Cloths	Clothing shop is available.
Food	Grocery is available.
Gifts	Gift shop is available.
Kiosk	Kiosk is available.
Misc	Other shops are available.
Pharmacy	Pharmacy is available.
taxFree	Tax-free shop is available.

B.9.7 FT_EntryAndExitFacilityCode

B.9.7.1 Semantics

The FT_EntryAndExitFacilityCode code list is the value domain for indication of the availability of entry and exit points. Deviations and accessibility information can thus be connected to this information as described in [B.1](#). This can be used related to, for example, transfer nodes, stop points, access points and transport means.

The UML model for FT_EntryAndExitFacilityCode is given in [Figure B.6](#).

B.9.7.2 Code values

The code values in the FT_EntryAndExitFacilityCode code list are defined in [Table B.34](#).

Table B.34 — FT_EntryAndExitFacilityCode values

Code value	Description
transferNodeAccess	Access to transfer node.
transportMeansAccess	Access to transport means.
stopPointAccess	Access to stop point.

Table B.34 (continued)

Code value	Description
accessPointAccess	Access to access point.

B.9.8 FT_LocalFacilityCode

B.9.8.1 Semantics

The FT_LocalFacilityCode code list is the value domain for indication of the availability of facilities in the vicinity of the transfer node.

The UML model for FT_LocalFacilityCode is given in [Figure B.6](#).

B.9.8.2 Code values

The code values in the FT_LocalFacilityCode code list are defined in [Table B.35](#).

Table B.35 — FT_LocalFacilityCode values

Code value	Description
carRental	Car rental is available.
carService	Car service is available.
cycleParking	Bicycle parking is available.
kissAndRide	Kiss and ride area is available (area where passengers can leave the car).
longTimeParkingArea	Parking facilities for more than 12 h are available.
parkAndRide	Park and ride area is available (parking area close to transfer to public transport).
parkingGarage	Parking garage is available.
shortTimeParkingArea	Parking facilities for less than 12 h are available.

B.9.9 FT_MiscFacilityCode

B.9.9.1 Semantics

The FT_MiscFacilityCode code list is the value domain for indication of the availability of miscellaneous facilities that are not covered by the other facility-related code lists.

The UML model for FT_MiscFacilityCode is given in [Figure B.6](#).

B.9.9.2 Code values

The code values in the FT_MiscFacilityCode code list are defined in [Table B.36](#).

Table B.36 — FT_MiscFacilityCode values

Code value	Description
cashDispenser	Cash dispenser is available.
desk	Desk for working is available.
chapel	Chapel is available.
cloakroom	Cloakroom is available.
computer	Computer is available.
emergencyPhone	Emergency phone is available.

Table B.36 (continued)

Code value	Description
fax	Fax machine is available.
internetAccess	Internet access is available.
library	Library facilities are available.
lostProperty	Lost property point is available.
luggageSpace	Luggage space is available.
luggageTrolley	Luggage trolley is available.
meetingPoint	Meeting point is available.
phone	Phone is available.
physicalTraining	Physical training facilities are available.
powerSupply	Power supply is available.
pramSpace	Pram space is available.
seats	Seats are available.
shower	Showers are available.
swimmingPool	Swimming pool is available.
table	Tables are available.
toilet	Toilets are available.

B.9.10 FT_RefreshmentSaleFacilityCode

B.9.10.1 Semantics

The FT_RefreshmentSaleFacilityCode code list is the value domain for indication of the availability of facilities where food and beverages can be bought.

The UML model for FT_RefreshmentSaleFacilityCode is given in [Figure B.6](#).

B.9.10.2 Code values

The code values in the FT_RefreshmentSaleFacilityCode code list are defined in [Table B.37](#).

Table B.37 — FT_RefreshmentSaleFacilityCode values

Code value	Description
bar	Bar facilities are available.
coffeeOrTea	Coffee or tea facilities are available.
fastFood	Fast food facilities are available.
restaurant	Restaurants are available.
trolley	Trolley sale is available.

B.9.11 FT_TicketSaleFacilityCode

B.9.11.1 Semantics

The FT_TicketSaleFacilityCode code list is the value domain for indication of the availability of facilities where tickets can be bought or validated.

The UML model for FT_TicketSaleFacilityCode is given in [Figure B.6](#).

B.9.11.2 Code values

The code values in the FT_TicketSaleFacilityCode code list are defined in [Table B.38](#).

Table B.38 — FT_TicketSaleFacilityCode values

Code value	Description
attendedTicketOffice	Attended ticket office is available.
ticketInStore	Tickets are available in nearby store.
ticketMachine	Ticket machine is available.
validator	Validator is available.

B.9.12 FT_WhereAboutFacilityCode

B.9.12.1 Semantics

The FT_WhereAboutFacilityCode code list is the value domain for indication of the availability of facilities represented by rooms or spaces.

The UML model for FT_WhereAboutFacilityCode is given in [Figure B.6](#).

A code value 'physicalUnit' is added to the code list to arrange for a generic reference to any part of a transfer node or transport means. By means of this code, value accessibility or deviation information can be associated to this part of the transfer note or transport mean (see [Figure B.2](#)). More details on the particular part of a transfer node or transport means should be provided in the description attribute of FT_WhereAboutFacility (inherited from FT_FacilityInfo).

B.9.12.2 Code values

The code values in the FT_WhereAboutFacilityCode code list are defined in [Table B.39](#).

Table B.39 — FT_WhereAboutFacilityCode values

Code value	Description
loungeWithRefreshments	Lounge with refreshments is available.
physicalUnit	Part of transfer node or transport means, e.g. a floor, a lounge or a stop point.
seatingAccommodation	Seating accommodations are available.
securityControlArea	There is a security control area.
shelter	Shelter is available.
smokingArea	Smoking area is available.
waitingRoom	Waiting room is available.

B.9.12.3 Constraint

Related to	Constraint
Code value physicalUnit	Should only be used to arrange for provision of accessibility or deviation information associated with a particular part of the transfer note or transport mean. More details on the particular part of a transfer node or transport means should be provided in the description attribute of FT_WhereAboutFacility (inherited from FT_FacilityInfo).