

# NeTEx

## Realisation directive for public transport in Switzerland

On the base of schema 1.10

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## Change History

<b>Section</b>	<b>Change</b>	<b>Author</b>	<b>Version</b>
10.6.2 & 10.7.2	Changed usage of DayOffset to 0:1	aa	0.8.8.4
Front page	Updated version info + date of last change	aa	0.8.8.5
Whole document	Revision from the whole document	lp	0.9
Whole document	Revision MENTZ	akl	0.91
Whole document	Pending KKI decision for the whole document	lp	1.00

## 1 Preliminary remarks

This document describes the realisation specifications for the data transfer between SKI and the public transport in Switzerland, based on the official NeTEx standard.

It provides detailed clarifications and describes deviations from the official standard, with the aim of achieving consistent use throughout public transport in Switzerland.

The realisation specifications in this document will be agreed by the KIDS (“Kundeninformationsdaten-Schnittstellen im öV-Schweiz”) working group.

The realisation specifications will be officially released by the National Commission Customer Information (Nationale Kommission Kundeninformation (KKI)) .

The realisation specifications chiefly concern:

- detailed clarifications about points which have abstract and open definitions in the standard.
- detailed clarifications about points which have hitherto been handled inconsistently within public transport in Switzerland.
- intentional deviations from the official standard within public transport in Switzerland.

### 1.1 Supported versions

This document supports version 1.10 of the XSD of the NeTEx norm. The written NeTEx documents are from 2014.

### 1.2 Document structure and limits to its scope

#### 1.2.1 Limits to scope

This realisation specification for public transport in Switzerland (NeTEx) is an addition to the official NeTEx standard. It contains the scope of NeTEx possibilities supported by SKI. Beside this document there will be an agreement with each partner about more technical and operational details of the delivery. In general there are no differences in the implementation to this reference document. Any necessary technical changes need to be discussed with SKI.

#### 1.2.2 Description of usage of the document

This document shows all elements of the norm that are deemed necessary for data exchange for public transport timetables in Switzerland. Each description is based on the text in the standard. However, we tried to enrich the information to simplify implementation. We use following sections:

- Business Requirements: Telling the business story of the element and how it is used in public transportation in Switzerland
- Structure: Contains the detailed physical structure of the element with examples and more information about the business level
- Example: A detailed XML example

The tables in the structure section are based on the original XSD schema documentation and/or descriptions from the standard (whenever the XSD documentation is insufficient), but also adapted to the needs of public transport in Switzerland. In some cases the cardinality may change and fields may become mandatory or optional. An additional row is introduced

for the specification of such business requirements. Elements that are not used/important, are not shown.

Additionally we use the following information in the business requirement row (following each element description):

- **NOT TO BE USED**: This element or field is not used in Switzerland. When the data is present, the file will be rejected during import. This element is not ignored, but rejected.
- **IGNORED AT IMPORT**: This element or field may be provided, but it will not be loaded and removed from the data.

The business requirement row also specifies value transformations and mapping tables in some cases. Only the provided functions and values are to be used, no deviations are allowed.

In some cases there are references to the HRDF format currently used in the data exchange of timetables in Switzerland. This is also to help implementers to understand how to work with it.

### 1.3 Binding nature

This document describes the way in which the NeTEx standard is specifically applied and interpreted in Switzerland. It forms the basis for agreements concerning the connection between the individual public transport partners for exchanging timetables.

### 1.4 Referenced Documents

NeTEx-1	DIN CEN TS16614-1 (2014). Public transport – Network and Timetable Exchange (NeTEx) – Part 1: Public transport network topology exchange format; English version EN 16614-1:2014
NeTEx-2	DIN CEN TS16614-2 (2014). Public transport – Network and Timetable Exchange (NeTEx) –Part 2: Public transport scheduled timetables exchange format; English version CEN/TS 16614-2:2014
NeTEx-3	DIN CEN TS16614-3 (2016). Public transport – Network and Timetable Exchange (NeTEx) – Part 3: Public transport fares exchange format; English version CEN/TS 16614-3:2016
NeTEx-4	DIN CEN TS16614-5 (2020). Public transport – Network and Timetable Exchange (NeTEx) – Part 4: Passenger Information European Profile; English version CEN/TS 16614-4:2020
NeTEx-5	DIN CEN TS16614-5 (2022). Public transport – Network and Timetable Exchange (NeTEx) – Part 5: Alternative modes exchange format; English version CEN/TS 16614-5:2022
NeTEx-6	DIN CEN TS16614-6 (TBD). Public transport – Network and Timetable Exchange (NeTEx) – Part 6: European Passenger Information Accessibility Profile; English version CEN/TS 16614-6:TBD

<a href="#">CE-Directive</a>	DELEGIERTE VERORDNUNG (EU) 2015/962 DER KOMMISSION vom 18. Dezember 2014 zur Ergänzung der Richtlinie 2010/40/EU des Europäischen Parlaments und des Rates hinsichtlich der Bereitstellung EU-weiter Echtzeit-Verkehrsinformationsdienste
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## 2 Introduction

### 2.1 General task definition

The task performed by the NeTEx interface in Switzerland is the transmission of timetable data to one or more partners. The data transmitted via this interface is also required for the provision of timetable data in information systems.

This document sets out the Swiss-wide standard for the implementation of the NeTEx interface and of individual data structures with regard to the mutual exchange of timetable information for modes of transport ( train, bus, ... ) between public transport companies.

The document specifically describes:

- which data may be exchanged between public transport partners
- which NeTEx elements are supported within public transport in Switzerland
- explicit deviations from the corresponding NeTEx
- the format of individual data elements
- the data flows in terms of content and time
- what agreements are necessary with respect to metadata
- what needs to be taken into account when operating the interface
- how data is to be interpreted

### 2.2 Requirements for data exchange

A delivery must always be complete:

- in the time dimension : for the whole timetable year (from December to December), but only one timetable.
- in the scale of the information exchanged : for all operators and all lines or sublines from each operator.

This allows the receiver to overwrite the old delivery with the new one without loss of data.

#### 2.2.1 Transmission of updated scheduling and operational data

Some reference data are maintained by SKI. These data are identified by business values (Abbreviation, Number, ID, ...).

These Business identifiers shall be used by the deliveries to enable their integration and homogenisation for the collection of timetable information.

If attributes of these reference data are transmitted in the deliveries, SKI does not adopt the values of these attributes. SKI takes these values from the reference system.

The relevant reference data is:

- Organisations
- StopPlaces and the whole physical model
- Lines (in a future phase)
- Direction
- Notices with private Codes 2,3,10,11
- TypeOfValues
  - For Notice
  - For ProductCategory
- ValueSets
- Facilities

More information can be found on <https://oev-info.ch>.

### 2.2.2 Supplying the planning data

The data provider is responsible for the timely delivery of the complete timetable information with sufficient quality. Complete means all timetable data in the responsibility of the provider for the whole timetable period.

### 2.3 Estimating the currentness of data

The current process from SKI allows for the production of a complete NeTEx timetable file once a week.

### 2.4 Time formatting and trains after midnight

The time format consists only of the hour, minutes (and seconds) of a 24 hour clock, e.g. '23:55:00'. Times that pass midnight of the current OperatingDay are marked with a DayOffset element. If a ServiceJourney (in a particular Call) runs over midnight, then DayOffset must be set to '1'.

### 2.5 Protocols

The data are to be exchanged on a secure FTP.

- The public transport partners make their files available on a secure FTP
- Export from SKI will also be provided via <https://opentransportdata.swiss/> for download.

### 2.6 Sender identification

The URL should contain an id for the sender already.

Beside the sender of the message (system), participants must also identify the environment from which the message is sent. Both parts are concatenated by a “\_”.

Example:

- <environment>\_<partner system >

The following examples are the standard environment names used in Switzerland:

Environment	Environment identifier
Development	entw
Test	test
Integration	inte
Production	prod

**Table 1: Environment identifiers.**

Other platform identifiers can be used only after mutual agreement. It is not necessary for a partner to have all these environments. However, a mapping between the two involved environment sets is necessary.

## 2.7 File and File name

The file will be compressed with the ZIP algorithm.

### 2.7.1 File sent by data provider to SKI

We suggest that the partner name consists of the short name of the partner and necessary additions to identify the system. In addition, the number of the timetable period is to be indicated in the name, as well as the date and time of creation of the file

Examples.: "test\_zvv\_2024\_20231112\_095217.zip", "prod\_tl\_2024\_20231114\_152836.zip"

The file name must be agreed on between the data provider and SKI.

### 2.7.2 File sent by SKI to data receivers

As the quantity of data is very large for a single XML-file, SKI provides the data in several XML files. In addition to the XML files, SKI provides a README file listing the contents of each XML file.

The name of each XML file is composed of the following information:

IT-Environement	DEV,TEST,INT,PROD	
Format and content of the file	NETEX_TT	Describe the format (NETEX) und the content (TimeTable)
Version		Number of the version of the NeTEx .xsd schema
Country	CHE	ISO code of the country in which the file was produced
Provider	SKI	Name of the provider
Time period		Time period of he data
Name of Export	oev-schweiz	Defines the scope of the timetable data
Frame		Name des Frame
Number		Number of the file of a specific frame
Total		Number of files of the identical frame
Date and Time		Datum und Zeit der Produktion des Files Format : YYYYMMDDHHMM

Example:

- test\_NETEX\_TT\_1.10\_CHE\_SKI\_2023\_OEV-SCHWEIZ\_COM-MON\_1\_1\_202301250401.xml
- OJP-NAP\_NETEX\_TT\_1.10\_CHE\_SKI\_2023\_OEV-SCHWEIZ\_COM-MON\_1\_1\_202301250401.xml

All Files are embedded in a zip-File. The name of the zip-file is composed of the following information:

IT-Environnement	DEV,TEST,INT	In the production environment, the prefix PROD is not written in the name
Format and content of the file	ojp-nap:NETEX_TT	Describe the format (NETEX) and the content (TimeTable)
Version		Number of the version of the NeTEx .xsd schema
Country	CHE	ISO code of the country in which the file was produced
Provider	SKI	Name of the provider
Time period		Time period of he data
Name of Export	oev-schweiz	Defines the scope of the timetable data
Number		Number of the file of a specific frame
Total		Number of files of the identical frame
Date and Time		Datum und Zeit der Produktion des Files Format : YYYYMMDDHHMM

Example :

- test\_ojp-nap\_netex\_tt\_1.10\_che\_ski\_2023\_oev-schweiz\_\_1\_1\_202302010402.zip
- ojp-nap\_netex\_tt\_1.10\_che\_ski\_2023\_oev-schweiz\_\_1\_1\_202302010402.zip

When using the SKI files, the following frame files must be used:

- common
- resource
- service
- site
- At least 1 timetable file

And the following files can be used

- The other timetable files

## 2.8 Character coding

The NeTEx files are always UTF-8 without BOM.

## 2.9 Web services

Web services are currently not supported.

## 3 General elements

### 3.1 Versions and other attributes

(NeTeX 1, 7.3.4.3.1)

SKI will not use version attributes with different versions. The version is always set to “any” during import and export to / for SKI

The attributes

- created (xsd:dateTime)
- changed (xsd:dateTime)
- modification (new | revise | delete)

are also not used by SKI The other common attributes are not used (exception will be apparent in the structure tables of the respective elements).

### 3.2 MultilingualString

NeTeX uses the type “MultilingualString” for descriptive text elements (e.g. Notice text, Name, ShortName etc.). However, only one language can be set for a given element (<MultilingualString lang=“xx”>). Additional languages are introduced through the AlternativeName and AlternativeText object described in section 5.1 and 5.2.

In Switzerland the language is always assumed to be German. The official names of organisations, stations etc. in Switzerland are language independent.

### 3.3 IDs

It is important to note that internal or artificially generated IDs should not be used to extract content whenever business keys and attributes are available. For readability and easy referencing, we will use the following principles:

- We will use attributes to build the technical IDs.
- The class of the object is the beginning of the technical ID in general.
- Where there is a compelling need for global stability, the ID will be a global ID. For more details on identifiers, see <https://oev-info.ch> This information will be also transmitted separately in a KeyList.

ID must be globally unique during importation.

IDs may also be partially or completely artificially generated. The persistence of ID between exports is then usually not guaranteed. **Important business level keys are stored in elements not in IDs** (PublicKey, PrivateKey, KeyList). **They must be communicated as attribute in the elements.**

## 4 Basic structure of NeTeX

(NeTeX-1, p. 220)

NeTeX is organised in frames. The basic structure of those frames is introduced in this section.

Framework	Name	Primary contents
	<i>CompositeFrame</i>	Frame to group other VERSION FRAMEs
	<i>GeneralFrame</i> <b>NOT TO BE USED</b>	Any ENTITY or ENTITY IN VERSION
	<i>ResourceFrame</i>	General purpose components such as ORGANISATIONSs VEHICLE TYPEs and code values. VEHICLE TYPE is not used.
Part1	<i>InfrastructureFrame</i> <b>NOT TO BE USED</b>	INFRASTRUCTURE POINTs, LINKs, & RESTRICTIONS
	<i>SiteFrame</i>	SITEs, STOP PLACEs. POINTS OF INTEREST and other fixed objects.
	<i>ServiceFrame</i>	Network description elements such as LINEs, ROUTEs, etc. Tactical Planning elements such as SCHEDULED STOP POINTs, JOURNEY PATTERNS, etc. pattern.
	<i>ServiceCalendar-Frame</i>	SKI uses principally AvailibilyConditions
Part2	<i>TimetableFrame</i>	Timetable elements: SERVICE JOURNEYs with timings.
	<i>VehicleScheduleFrame</i> <b>NOT TO BE USED</b>	VEHICLE SCHEDULEs: BLOCKs and BLOCK PARTs
	<i>DriverScheduleFrame</i> <b>NOT TO BE USED</b>	DRIVER SCHEDULESs: DuTies and DUTY plans.
Part3	<i>FareFrame</i> <b>NOT TO BE USED</b>	Fare related elements: TARIFF STRUCTUREs, FARE PRODUCTs, FARE PRICEs, etc.

The **VersionFrame** itself is abstract and cannot be used in an XML document.

### 4.1 Main body of Response

The main elements of a delivery are described in this section.

#### 4.1.1 Business Requirements

These are default settings for the File and those frames.

#### 4.1.2 Structure

Element	Usage	Structure	Description
PublicationDelivery Attribute	1:1	PublicationDeliveryStructure	Root element of a NeTeX delivery.

<ul style="list-style-type: none"> <li>• xmlns:gml</li> <li>• xmlns:xsi</li> <li>• xmlns:siri</li> <li>• xmlns: schemaLocation</li> </ul>			
PublicationTimestamp	1:1	xsd:dateTime	Time of output of data.
ParticipantRef	1:1	ParticipantCode-Type	Identifier of system providing the data. Often this will be the same as the DATA SOURCE but there may be multiple participant systems belonging to a single data source.
Description	0:1	xsd:normalizedString	Description of the business content and description of the software that produces the file
dataObjects	1:1	Structure	NeTeX VERSION FRAMES making up publication.
CompositeFrame	1:1	Parent: dataObjects  See 4.1.3 Substructure	A set of VERSION FRAMEs to which the same VALIDITY CONDITIONS have been assigned.

### 4.1.3 Substructure

#### CompositeFrame

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>	1:1	VersionFrame	COMPOSITE FRAME.inherits from VERSION FRAME  A set of VERSION FRAMEs to which the same VALIDITY CONDITIONS have been assigned.
ValidBetween	1:1	CompositeFrame	Condition used in order to characterise a given VERSION of a VERSION FRAME. A VALIDITY CONDITION consists of a parameter (e.g. date, triggering event, etc.) and its type of application (e.g. for, from, until, etc.).
FrameDefaults	0:1	CompositeFrame	Set of default values to assume for values in frame if not explicitly stated on individual elements.
frames	0:*	VersionFrame	Frames contained in COMPOSITE FRAME.

#### ResourceFrame

Element	Usage	Structure	Description
ResourceFrame	1:1	ResourceFrame	See 6 <i>Resource Frame</i>
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>			

### SiteFrame

Element	Usage	Structure	Description
SiteFrame	1:1	SiteFrame	See 7 <i>Site Frame</i>
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>			

### ServiceFrame

Element	Usage	Structure	Description
ServiceFrame	1:1	ServiceFrame	See 8 <i>ServiceFrame</i>
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>			

### ServiceCalendarFrame

Element	Usage	Structure	Description
ServiceCalendar-Frame	1:1	ServiceCalendar-Frame	See 9 <i>ServiceCalendarFrame</i>
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>			

### TimetableFrame

Element	Usage	Structure	Description
TimetableFrame	1:1	TimetableFrame	See 10 <i>TimetableFrame</i>
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>			

### Valid Between

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>	1:1	CompositeFrame	COMPOSITE FRAME.inherits from VERSION FRAME
FromDate	1:1	xsd:dateTime (P) AvailabilityCondition	Inclusive start date for validity of AVAILABILITY CONDITION.



			Always the beginning of the time table period
ToDate	1:1	xsd:dateTime (P) AvailabilityCondition	Inclusive End date for validity of AVAILABILITY CONDITION.  Always the end of the time table period

### FrameDefault

Element	Usage	Structure	Description
DefaultCodespaceRef  Attribute • Ref	0:1	CodeSpaceRef	Default CODESPACE to assume for an identifiers that do not have an explicit CODESPACE specified.  Attribute ref is always set to "sbbinfoplus".
DefaultDataSourceRef Attributes: • versionref	0:1	DataSourceRef	DATA SOURCE to use for elements in the frame which do not have a DATA SOURCE specified.  Attribut ref is always set to "sbbinfoplus:DataSource_E01"
DefaultLocale	0:1	Locale	Default LOCALE to use to provide attribute values for elements in the frame which do not have a LOCALE element specified, for example language time zone, etc..  The default locale is German (de) for CFF and Swiss public transport.
TimeZoneOffset	0:1	TimeZoneOffset (xsd:decimal)	Time zone of Entity as offset in hours from GMT, plus or minus. May be decimal for fractional differences.  We prefer times without the suffix "+hh:mm". Instead we specify a default TimeZoneOffset (+2) and SummerTimeZoneOffset (+1).
SummerTimeZoneOffset (P) DefaultLocale	0:1	TimeZoneOffset (xsd:decimal)	Summer time zone of Entity as offset in hours from GMT, plus or minus. May be decimal for fractional differences.  We prefer times without the suffix "+hh:mm". Instead we specify a

			default TimeZoneOffset (+2) and SummerTimeZoneOffset (+1)
DefaultLanguage (P) DefaultLocale	0:1	xsd:language	Default language of LOCALE.  Is always set to "de" for SKI and Swiss public transport

#### 4.1.4 Example

```
<?xml version="1.0" encoding="utf-8"?>
<PublicationDelivery xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:siri="http://www.siri.org.uk/siri" xsi:schemaLocation="
http://www.netex.org.uk/netex
http://netex.org.uk/netex/schema/1.09/xsd/NetEx_publication.xsd" version="1.09" xmlns="http://www.netex.org.uk/netex">
  <PublicationTimestamp>2023-02-15T13:11:43.6104745+01:00</PublicationTimestamp>
  <ParticipantRef>SKI</ParticipantRef>
  <Description>OeV_Sammlung_CH_HRDF_5_40_41_2023_20230617_220212 - NetEx Export, Version: 19.29.0.4322</Description>
  <dataObjects>
    <CompositeFrame id="ch:1:CompositeFrame:j23" version="HRDF">
      <ValidBetween>
        <FromDate>2022-12-11T00:00:00</FromDate>
        <ToDate>2023-12-08T23:59:59</ToDate>
      </ValidBetween>
      <FrameDefaults>
        <DefaultLocale>
          <TimeZoneOffset>1</TimeZoneOffset>
          <SummerTimeZoneOffset>2</SummerTimeZoneOffset>
          <DefaultLanguage>de</DefaultLanguage>
        </DefaultLocale>
      </FrameDefaults>
      <frames>
        <ResourceFrame id="ch:1:ResourceFrame:j23" version="any">
          <!-- content of ResourceFrame -->
        </ResourceFrame>
        <SiteFrame id="ch:1:SiteFrame:j23" version="any">
          <!-- content of SiteFrame -->
        </SiteFrame>
        <ServiceFrame id="ch:1:ServiceFrame:j23" version="any">
          <!-- content of ServiceFrame -->
        </ServiceFrame>
        <ServiceCalendarFrame id="ch:1:ServiceCalendarFrame:j23" version="any">
          <!-- content of ServiceCalendarFrame -->
        </ServiceCalendarFrame>
        <TimetableFrame id="ch:1:TimetableFrame:j23" version="any">
          <!-- content of TimetableFrame -->
        </TimetableFrame>
      </frames>
    </CompositeFrame>
  </dataObjects>
</PublicationDelivery>
```

## 5 Common elements

### 5.1 AlternativeName

(NeTeX-1, 7.4.6)

The ALTERNATIVE NAME Model defines reusable texts For example we use it to distinguish between two places with the same name in different countries. It complements the ALTERNATIVE TEXT entity which is used to provide translations for individual text attributes of elements.

#### 5.1.1 Business Requirements

As a general rule: further names (alias) of a StopPlace or Organisation are modelled with AlternativeNames, whereas direct translations of content (for example of Notice Texts) are modelled with AlternativeTexts.

For names of ORGANISATIONS and STOP PLACES etc., we use ALTERNATIVE NAME. For text translations, however, ALTERNATIVE TEXT is used.

#### 5.1.2 Structure

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"> <li>id</li> <li>version</li> <li>order</li> </ul>			
NameType	0:1	NameTypeEnum	Type of ALTERNATIVE NAME. Type of Name - fixed value. Default is 'alias'. Allowed values: <ul style="list-style-type: none"> <li>alias</li> <li>translation</li> </ul>
TypeOfName	0:1	NormalizedString	Type of ALTERNATIVE NAME.
Name Attributes: <ul style="list-style-type: none"> <li>lang</li> </ul>	1:1	MultilingualString	Text for ALTERNATIVE NAME.
ShortName	0:1	String	Short Text for ALTERNATIVE NAME.

#### 5.1.3 Example

```

<alternativeNames>
  <AlternativeName id="ch:1:AlternativeName:StopPlace:8500010_5" ver-
sion="any">
    <NameType>alias</NameType>
    <TypeOfName>official</TypeOfName>
    <Name lang="de">Basilea FFS</Name>
  </AlternativeName>
  <AlternativeName id="ch:1:AlternativeName:StopPlace:8500010_8" ver-
sion="any">
    <NameType>alias</NameType>
    <TypeOfName>official</TypeOfName>
    <Name lang="de">Bale</Name>
  </AlternativeName>

```

```
</alternativeNames>
```

## 5.2 AlternativeText

(NeTEx-1, 7.4.5)

*It is sometime necessary to provide several variants of a single text, in particular if the information is required in several national languages. The AlternativeText element is a generic way of providing such variants for any text attribute of a DataManagedObject. It can be seen as a complement to the AlternativeName mechanism, and can be used to provide an alias for any description or text attribute.*

*The AlternativeText is part of a DataManagedObject and references the name of the attribute in the NeTEx Metamodel) for which it is providing an alternative. It contains the alternative text as an attribute of type MultilingualString which indicates the language. In addition the text may have a 'Use for' language attribute to indicate a second language for which it may be used as an acceptable presentation if there is no native language alternative; normally this will be the same as the language of the string, but might be different.*

### 5.2.1 Business Requirements

As a general rule: further names (alias) of a StopPlace or Organisation are modelled with AlternativeNames, whereas direct translations of content (for example of Notice Texts) are modelled with AlternativeTexts.

### 5.2.2 Structure

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"><li>id</li><li>version</li><li>attributName</li><li>useForLanguage</li></ul>			
Text Attributes: <ul style="list-style-type: none"><li>lang</li></ul>	1:1	xsd:normalizedString	Alternative Text of referenced element in attributeName.

### 5.2.3 Example with id

```
<notices>
  <Notice id="ch:1:Notice:Hin-1229900" version="any">
    <alternativeTexts>
      <AlternativeText id="ch:1:AlternativeText:Notice-Hin_1229900-fr"
version="any" attributeName="Text" useForLanguage="fr">
        <Text>Départ sur quai 2.</Text>
      </AlternativeText>
      <AlternativeText id="ch:1:AlternativeText:Notice-Hin_1229900-it"
version="any" attributeName="Text" useForLanguage="it">
        <Text>Partenza in banchina 2.</Text>
      </AlternativeText>
      <AlternativeText id="ch:1:AlternativeText:Notice-Hin_1229900-en"
version="any" attributeName="Text" useForLanguage="en">
        <Text>Departure on quay 2.</Text>
      </AlternativeText>
    </alternativeTexts>
  </Notice>
</notices>
```

```
    </AlternativeText>
  </alternativeTexts>
  <Text lang=>de>>Abfahrt auf Gleis 2.</Text>
  <TypeOfNoticeRef ref="ch:1:TypeOfNotice:3" version="any" />
</Notice>
</notices>
```

#### 5.2.4 Example without id

```
<AlternativeText attributeName="Name">
  <Text lang="it">Train Express Regional</Text>
</AlternativeText>
```

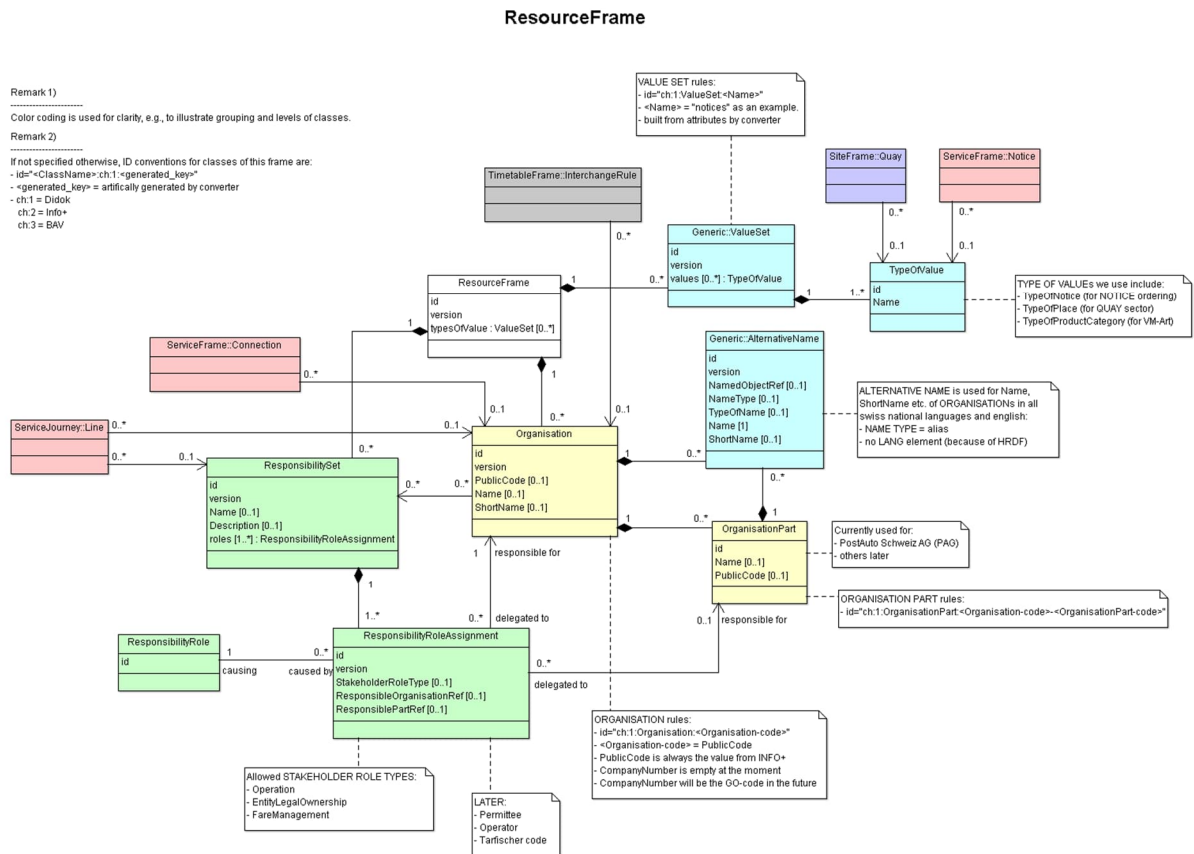
# 6 Resource Frame

(NeTeX-1, 7.7.2.2.1)

The RESOURCE FRAME is used to group Reusable Components for exchange, for example to declare the local code values used in a given data set (VALUE SETS and TYPE OF VALUES.), or entities common to many frames such as ORGANISATIONS and RESPONSIBILITY SETS. A RESOURCE FRAME can be grouped with other frames using a COMPOSITE FRAME.

In other words, the RESOURCE FRAME is a coherent set of resource data to which the same VALIDITY CONDITIONS have been assigned. Used to define common resources that will be referenced by other types of FRAME.

See the following class diagram for the most important objects of the RESOURCE FRAME and their relationships to the other frames.



## 6.1.1 Business Requirements

-

## 6.1.2 Structure

Element	Usage	Structure	Description
Attributes: • Id • Version		VersionFrame	RESOURCE FRAME inherits from VERSION FRAME.

responsibilitySets	0:*	ResponsibilitySet	RESPONSIBILITY SETs contained in RESOURCE FRAME. ResponsibilitySets are used for the cases in which the LegalEntity, the Operator and the organisation selling the tickets are different.
typesOfValue	0:*	ValueSet	Sets of TYPE OF VALUE contained in the RESOURCE FRAME.
organisations	0:*	Organisation	ORGANISATIONS contained in RESOURCE FRAME. Contains the relevant Operators and other Organisations.

### 6.1.3 Example

```

<ResourceFrame id="ch:1:ResourceFrame:j22" version="any">
  <responsibilitySets>
    <ResponsibilitySet id="ch:1:ResponsibilitySet:BLS_33_BLS" version="any">
      <!-- content of ResponsibilitySet -- >
    </ResponsibilitySet>
    <ResponsibilitySet id="ch:1:ResponsibilitySet:SBB_11_SBB" version="any">
      <!-- content of ResponsibilitySet -- >
    </ResponsibilitySet>
  </responsibilitySets>
  <typesOfValue>
    <ValueSet id="ch:1:ValueSet:notices" version="any"
nameOfClass="TypeOfNotice">
      <values>
        <!-- content of value -- >
      </values>
    </ValueSet>
    <ValueSet id="ch:1:ValueSet:TypeOfProductCategory" version="any"
nameOfClass="TypeOfProductCategory">
      <values>
        <!-- content of value -- >
      </values>
    </ValueSet>
  </typesOfValue>
  <organisations>
    <Operator id="ch:1:Operator:11" version="any">
      <!-- content of Operator -- >
    </Operator>
    <Operator id="ch:1:Operator:33" version="any">
      <!-- content of Operator -- >
    </Operator>
  </organisations>
</ResourceFrame>

```

## 6.2 TypeOfValue

The ResourceFrame contains all the ValueSets and TypeOfValues. That are used for classification of NeTEx entities like Notice, ProductCategory etc. It is preferred that the TypeOfValue are copied from the SKI files and no individual TypeOfValue are created.

### 6.2.1 Business Requirements

TypeOfValue's are stored in ValueSets as part of the ResourceFrame. We use TypeOfValue references in various Frames in objects including:

- Notice: references TypeOfNotice
- ServiceJourney: references TypeOfProductCategory

### 6.2.2 Structure

Element	Usage	Structure	Description
<ul style="list-style-type: none"> <li>• id</li> <li>• version</li> <li>• nameOfClass</li> </ul>		DataManagedObject	TYPE OF VALUE inherits from DATA MANAGED OBJECT.
Name	0:1	xsd:MultilingualString	Name of TYPE OF VALUE.
values	0:*	TypeOfValue	Short Name of TYPE OF VALUE.

### 6.2.3 Structure : TypeOfNotice

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> <li>• nameOfClasses</li> </ul>			nameOfClass="TypeOfNotice"
Name	1:1	String	Business Description
PrivateCode	1:1	String	Private Code Allowed Values and Meanings
<b>Value PrivatCode</b>	<b>Name</b>	<b>Desc.</b>	
1	Allgemeiner Hinweis	General infotext.	
2	Zugname	Name of the train. Is not used, as it is stored in the ServiceJourney Name.	
3	Gleis-Angabe	Quay and quaysection information.	



10	Angebot	Most of the ServiceFacilitySet are also transmitted as Notice. On top of that we have multiple services and facilities in Switzerland that cannot be mapped to ServiceFacilitySets. To deliver those special cases as Notices we need an additional TypeOfNotice.
11	Region	Postauto is divided into several regions.

### 6.2.4 Example : TypeOfNotice

```
<ValueSet id="ch:1:ValueSet:notices" version="any"
nameOfClass="TypeOfNotice">
  <values>
    <TypeOfNotice id="ch:1:TypeOfNotice:11" version="any">
      <Name>Region</Name>
      <PrivateCode>11</PrivateCode>
    </TypeOfNotice>
    <TypeOfNotice id="ch:1:TypeOfNotice:1" version="any">
      <Name>Allgemeiner Hinweis</Name>
      <PrivateCode>1</PrivateCode>
    </TypeOfNotice>
    <TypeOfNotice id="ch:1:TypeOfNotice:10" version="any">
      <Name>Angebot</Name>
      <PrivateCode>10</PrivateCode>
    </TypeOfNotice>
    <TypeOfNotice id="ch:1:TypeOfNotice:3" version="any">
      <Name>Gleis-Angabe</Name>
      <PrivateCode>3</PrivateCode>
    </TypeOfNotice>
    <TypeOfNotice id="ch:1:TypeOfNotice:2" version="any">
      <Name>Zugname</Name>
      <PrivateCode>2</PrivateCode>
    </TypeOfNotice>
  </values>
</ValueSet>
```

### 6.2.5 Structure : TypeOfProductCategory

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"> <li>id</li> <li>version</li> <li>nameOfClass</li> </ul>			nameOfClass="TypeOfProductCategory"
Name	1:1	String	Business Description
ShortName	1:1	String	ShortName
alternativeTexts	0:*	AlternativeText See 5.2 <i>AlternativeText</i>	

For the ServiceJourneys exclusively provided in Switzerland, only the ProductCategories defined in the document "06 Harmonisierung Verkehrsmittel" (see <https://www.allianceswisspass.ch/de/tarife-vorschriften/uebersicht/V580/Produkte-der-V580-FIScommun-1>) may be referenced.

For ServiceJourneys provided in other countries or partially in Switzerland, there are no restrictions, provided that the category does not overlap with the ProductCategories defined for Switzerland.

## 6.2.6 Example : TypeOfProductCategory

```
<ValueSet id="ch:1:ValueSet:TypeOfProductCategory" version="any"
nameOfClass="TypeOfProductCategory">
  <Name>ProductCategories</Name>
  <values>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:TER" ver-
sion="any">
      <alternativeTexts>
        <AlternativeText attributeName="Name">
          <Text lang="it">Train Express Regional</Text>
        </AlternativeText>
        <AlternativeText attributeName="Name">
          <Text lang="en">Train Express Regional</Text>
        </AlternativeText>
        <AlternativeText attributeName="Name">
          <Text lang="fr">Train Express Regional</Text>
        </AlternativeText>
      </alternativeTexts>
      <Name lang="de">TER</Name>
      <ShortName>TER</ShortName>
    </TypeOfProductCategory>
  </values>
</ValueSet>
```

## 6.3 Organisation

(NeTEEx-1, 7.4.5)

*The entity ORGANISATION represents an organisation that is involved in the planning, collecting or provision of PT information.*

### 6.3.1 Business Requirements

The ORGANISATION is a need to describe a concrete organisation like operator.

The Organisations are identified by their GO-number in Switzerland (see the <https://open-transportdata.swiss/de/dataset/didok/resource/d66259a0-a77c-4aee-b7bd-e4fba99dcbb1>). The TU-Code is to be used for operators of other countries.

To be noted: From 2024, organisations will also be identified by SBOIDs. For more informations, see document [https://transportdatamanagement.ch/content/uploads/2021/05/SwissBusinessOrganisationID\\_DE\\_1\\_2.pdf](https://transportdatamanagement.ch/content/uploads/2021/05/SwissBusinessOrganisationID_DE_1_2.pdf)

### 6.3.2 Structure

Element	Usage	Structure	Description
Attributes: • id • version		DataManagedObject	ORGANISATION inherits from DATA MANAGED OBJECT.
Operator	1:*	Operator	Identifier of ORGANISATION.

## 6.4 Operator

(NeTEx-1, 7.7.8.3.3)

*A company providing public transport services.*

### 6.4.1 Business Requirements

The list contains all transport enterprises for which timetable information is delivered.

The Operators are identified by their GO-number in Switzerland. The TU-Code is to be used for operators of other countries.

To be noted: From 2024, organisations will also be identified by SBOIDs.

The operators must be set.

### 6.4.2 Structure

Element	Usage	Structure	Description
Attributes: • id • version		Organisation	OPERATOR inherits from ORGANISATION.
keyList	0:*	KeyValue See	KEY LIST with the KEY VALUES related to the SwissBusinessOrganisation  SKI delivers the following Key-Values: one for the DIDOK one for the SBOID  For delivery to SKI only one Value is necessary.
PrivateCode	1:1	PrivateCode	GO-Nummer from DIDOK or TU-Code from INFO+
Name	0:1	xsd:MultilingualString	

ShortName	1:1	MultilingualString	Abbreviation from DIDOK or from INFO+
-----------	-----	--------------------	---------------------------------------

### 6.4.1 Substructure

#### KeyList

Element	Usage	Structure	Description
KEY LIST with the KEY VALUES related to the Business Organisation			
KeyValue	0:*	KeyValue	

#### KeyValue

Element	Usage	Structure	Description
Key	1:1	xsd.normalizedString	Key
Value	1:1	xsd.normalizedString	Value

### 6.4.2 Example

```

<organisations>
  <Operator id="ch:1:Operator:11" version="any">
    <keyList>
      <KeyValue>
        <Key>DIDOK</Key>
        <Value>11</Value>
      </KeyValue>
      <KeyValue>
        <Key>SBOID</Key>
        <Value>ch:1:sboid:100001</Value>
      </KeyValue>
    </keyList>
    <PrivateCode>11</PrivateCode>
    <Name>Schweizerische Bundesbahnen SBB</Name>
    <ShortName>SBB</ShortName>
  </Operator>
  <Operator id="ch:1:Operator:801" version="any">
    <keyList>
      <KeyValue>
        <Key>DIDOK</Key>
        <Value>801</Value>
      </KeyValue>
      <KeyValue>
        <Key>SBOID</Key>
        <Value>ch:1:sboid:100602</Value>
      </KeyValue>
    </keyList>
    <PrivateCode>801</PrivateCode>
    <Name>PostAuto Schweiz</Name>
    <ShortName>PAG</ShortName>
  </Operator>
</organisations>

```

## 6.5 ResponsibilitySet

(NeTEx-1, 7.4.4.3.1)

*In essence, a list of responsibilities that applies to one or more ENTITIES IN VERSION. A RESPONSIBILITY SET is composed of one or more RESPONSIBILITY ROLE ASSIGNMENTS*

### 6.5.1 Business Requirements

We use this model to communicate the hierarchy between lines and sub-lines.

### 6.5.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>• Id</li> <li>• Version</li> </ul>		DataManagedObject	RESPONSIBILITY SET inherits from DATA MANAGED OBJECT.
Name Attribut: Lang	0:1	MultilingualString	Name of RESPONSIBILITY SET.
PrivateCode	0:1	PrivateCode	
roles	1:*	ResponsibilityRole-Assignment	RESPONSIBILITY ROLE ASSIGNMENTS making up the RESPONSIBILITY SET.

### 6.5.3 Example

```
<responsibilitySets>
  <ResponsibilitySet id="ch:1:ResponsibilitySet:BVB_BVB" version="any">
    <Name>Basler Verkehrsbetriebe</Name>
    <PrivateCode>BVB</PrivateCode>
    <roles>
      <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:BVB_BVB:1" version="any">
        <StakeholderRoleType>EntityLegalOwnership</StakeholderRoleType>
        <ResponsibleOrganisationRef ref="ch:1:Operator:823" version="any" />
      </ResponsibilityRoleAssignment>
      <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:BVB_BVB:2" version="any">
        <StakeholderRoleType>Operation</StakeholderRoleType>
        <ResponsibleOrganisationRef ref="ch:1:Operator:823" version="any" />
      </ResponsibilityRoleAssignment>
    </roles>
  </ResponsibilitySet>
</responsibilitySets>
```

## 6.6 ResponsibilityRoleAssignment

(NeTEx-1 7.4.4.3.2)

*Assignment of a specific RESPONSIBILITY ROLE to a specific organisation and/or subdivision. A RESPONSIBILITY ROLE is a particular role an ORGANISATION or an ORGANISATION PART is playing.*

### 6.6.1 Business Requirements

Not all roles must be filled.

### 6.6.2 Structure

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"><li>• Id</li><li>• version</li></ul>			
StakeholderRoleType	1:1	xsd:StakeholderRole- TypeEnum  Only the values de- fined below are al- lowed in Switzerland: <ul style="list-style-type: none"><li>• Operation</li><li>• EntityLegalOwn- ership</li><li>• FareManagement</li><li>• Planning</li></ul>	
ResponsibleOrgani- sationRef	1:1	OrganisationRef	Reference to an ORGANISATION to which this RESPONSIBILITY ROLE is assigned.

### 6.6.3 Example

See example 6.5.3 *Example*

# 7 Site Frame

(NeTeX-1, 8.5.2)

The SITE FRAME holds a coherent set of Site elements for data exchange. These elements are explained in subsequent sections.

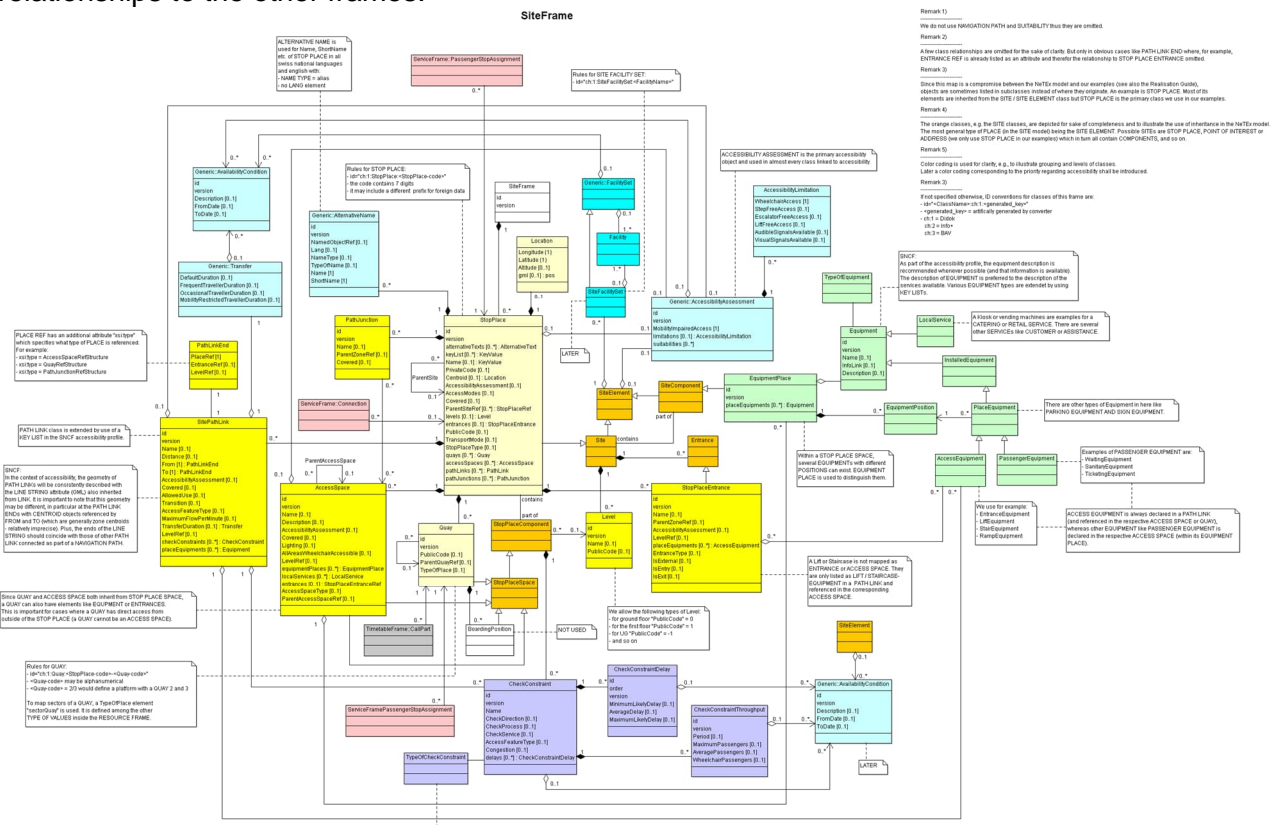
A set of SITE data (and other data logically related to these) to which the same VALIDITY CONDITIONS have been assigned.

The SITE MODEL provides a general description of common properties of a physically situated location, such as a station or point of interest, including its entrances, levels, equipment, paths, accessibility properties, etc.

The SITE FRAME comprises among other classes:

- STOP PLACE: models a station or stop with its properties like location, levels and access features.
- QUAY: models the places of a station or stop where passengers can board a vehicle.

See the following class diagram for the most important objects of the SITE FRAME and their relationships to the other frames.



## 7.1.1 Business Requirements

### 7.1.2 Structure

Element	Usage	Structure	Description
Attributes <ul style="list-style-type: none"> <li>• Id</li> <li>• version</li> </ul>			
topographicPlaces	0:*	TopographicPlace	This element will be used for countries, cantons and communes. Currently it is somewhat cryptic.
stopPlaces	0:*	StopPlace	
quays	0:*	Quay	Child of StopPlace

### 7.1.3 Example

```

<SiteFrame id="ch:1:SiteFrame:j22" version="any">
  <topographicPlaces>
    <TopographicPlace id="ch:1:TopographicPlace:140d4b1c-1ad8-4abd-
b898-5f11f7502686" version="any">
      <!-- content of TopographicPlace -- >
    </TopographicPlace>
    <TopographicPlace id="ch:1:TopographicPlace:1777b35b-55c9-4fb6-
9cec-301225102120" version="any">
      <!-- content of TopographicPlace -- >
    </TopographicPlace>
  </topographicPlaces>
  <stopPlaces>
    <StopPlace id="ch:1:StopPlace:8507000" version="any">
      <!-- content of StopPlace -- >
      <quays>
        <Quay id="ch:1:Quay:8507000-1" version="any">
          <!-- content of Quay -- >
        </Quay>
        <Quay id="ch:1:Quay:8504221-2" version="any">
          <!-- content of Quay -- >
        </Quay>
      </quays>
    </StopPlace>
    <StopPlace id="ch:1:StopPlace:8504232" version="any">
      <!-- content of StopPlace -- >
    </StopPlace>
  </stopPlaces>
</SiteFrame>

```

## 7.2 TopographicPlace

(prCEN TS 16614-PI Profile FV (E)-v7\_v3, section 6.2.6)

*A TOPOGRAPHIC PLACE is a geographical settlement which provides topographical context when searching for or presenting travel information, for example as the origin or destination of a trip.*



## 7.2.1 Business Requirements

The TopographicPlace represent the cantons and communes in Switzerland. The value will be set to the cantons for stops.

## 7.2.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>• Id</li> <li>• Version</li> </ul>			
Descriptor	1:1	Descriptor	
TopographicPlaceType	1:1	Topographic-TypeEnum	Allowed values: country, county
ParentTopographicPlaceRef	0:1	Reference to TopographicPlace	Only used if TopographicPlaceType = "County"

## 7.2.3 Substructure

### Descriptor

Element	Usage	Structure	Description
alternativeTexts	0:*	See 5.2 AlternativeText	
Name	1:1	xsd.normalizedString	German description of the canton
ShortName	0:1	xsd.normalizedString	Abreviation of the canton

## 7.2.4 Example

```

<topographicPlaces>
  <TopographicPlace id="ch:1:TopographicPlace:CH-BE" version="any">
    <Descriptor>
      <alternativeTexts>
        <AlternativeText attributeName="Name">
          <Text lang="it">Bern</Text>
        </AlternativeText>
        <AlternativeText attributeName="Name">
          <Text lang="en">Bern</Text>
        </AlternativeText>
        <AlternativeText attributeName="Name">
          <Text lang="fr">Berne</Text>
        </AlternativeText>
      </alternativeTexts>
      <Name>Bern</Name>
      <ShortName>BE</ShortName>
    </Descriptor>
    <TopographicPlaceType>county</TopographicPlaceType>
  </TopographicPlace>
</topographicPlaces>

```

```

<ParentTopographicPlaceRef ref="ch:1:TopographicPlace:CH"
version="any" />
</TopographicPlace>
<TopographicPlace id="ch:1:TopographicPlace:CH" version="any">
  <Descriptor>
    <alternativeTexts>
      <AlternativeText attributeName="Name">
        <Text lang="it">Svizzera</Text>
      </AlternativeText>
      <AlternativeText attributeName="Name">
        <Text lang="en">Switzerland</Text>
      </AlternativeText>
      <AlternativeText attributeName="Name">
        <Text lang="fr">Suisse</Text>
      </AlternativeText>
    </alternativeTexts>
    <Name>Schweiz</Name>
    <ShortName>CH</ShortName>
  </Descriptor>
  <TopographicPlaceType>country</TopographicPlaceType>
</TopographicPlace>
</topographicPlaces>

```

## 7.3 StopPlace

(NeTeX-1, 8.5.4.5.1, NeTeX-8.5.3.3.1)

*The STOP PLACE model describes different aspects of a physical point of access to transport, such as a stop or station.*

*A STOP PLACE represents physical stop or station; that is an interchange, a pair of stops or a cluster of stops on a LINE. A STOP PLACE is a type of SITE. Note that a STOP PLACE is a distinct concept from the representation of the stop in a timetable – the SCHEDULED STOP POINT. The two can be connected using a STOP ASSIGNMENT.*

*The various spaces of which a STOP PLACE is comprised are described as different types of SITE COMPONENT specific to a STOP PLACE, such as platforms (QUAYs).*

### 7.3.1 Business Requirements

In Switzerland all these StopPlace codes are defined in Didok by order of the Department of Transport (BAV). If the BAV will regulate also “Haltepunkte” and “Haltekante” then also the Quays will be regulated. Foreign StopPlaces may be mapped to Swiss Didok codes.

It is important to notice that the main connection between Didok codes and the NeTeX export are the ScheduledStopPoints. Those will have the same Id (besides the different <Element Name> as the StopPlace in many cases. Exceptions are meta stations and local public transport that already uses assignment to “Haltekanten”. In that case the ScheduledStop-Point is more refined than the DiDok UIC like codes.

There will be meta-stations added with their own code. In some cases these are added for operational or searching reasons.

### 7.3.2 Structure

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"> <li>• Id</li> <li>• version</li> </ul>			
ValidBetween	0..*	See 7.3.3 <i>Substructure</i>	Validity from the StopPlace
alternativeTexts	0:*	AlternativeText See 5.2 <i>AlternativeText</i>	Abbreviation of the STOP PLACE.
keyList	0:*	KeyValue See 7.3.3 <i>Substructure</i>	KEY LIST with the KEY VALUES related to the STOP PLACE.  SKI use KeyValues: one for the Didok number one for the SLOID  For delivery to SKI only one Value is necessary.
Extensions	0:1	ExtensionStructure See 7.3.3 <i>Substructure</i>	Extensions of the STOP PLACE. <ul style="list-style-type: none"> <li>• HafasPriority</li> <li>• HafasKInfo</li> </ul>
Name		MultiLingualString	Name of TYPE OF VALUE.
ShortName		MultiLingualString	Description of TYPE OF VALUE.
Attributes:			Is used to transmit the abbreviation of the StopPlace. There is not one abbreviation for all StopPlaces
• lang			
PrivateCode	1:1	PrivateCodeType	Private Code of STOP PLACE. Field <b>must be filled</b> . In Switzerland it is the <b>DiDok</b> number.
Centroid	0:1	Location See 7.3.3 <i>Substructure</i>	Global or national location of STOP PLACE.
alternativeNames	0:*	AlternativeName See 5.1 <i>AlternativeName</i>	Alternative names for SITE ELEMENT. We will also use these for synonyms. From INFO+ the synonyms are used on the StopPlace.
TopographicPlaceRef	0:1	Reference to TopographicPlace	Link to TopographicPlace of type county or country
Weighting	0:1	InterchangeUseEnum	Default relative weighting to be used for stop place.

			<p>The STOP PLACE element WEIGHTING basically accomplishes this feature but only allows the following values:</p> <ul style="list-style-type: none"> <li>• noInterchange</li> <li>• interchangeAllowed</li> <li>• recommendedInterchange</li> <li>• preferredInterchange</li> </ul> <p>To incorporate the desired value range, we will add an EXTENSION element "HafasPriority" that contains the full information.</p>
quays	0:*	Quay See 7.4 Quay	The QUAYs contained in the STOP PLACE, that is platforms, jetties, bays, taxi ranks, and other points of physical access to VEHICLES.

### 7.3.3 Substructure

#### ValidBetween

Element	Usage	Structure	Description
Validity from the StopPoint			
FromDate	0:1	date YYYY-MM-DDTHH:MM:SS	First day of validity
ToDate	0:1	date YYYY-MM-DDTHH:MM:SS	Last day of validity

#### KeyList

Element	Usage	Structure	Description
KEY LIST with the KEY VALUEs related to the STOP PLACE.			
KeyValue	0:*	KeyValue	

#### KeyValue

Element	Usage	Structure	Description
Key	1:1	xsd.normalizedString	Key
Value	1:1	xsd.normalizedString	Value

#### Extensions

Element	Usage	Structure	Description
KEY LIST with the KEY VALUEs related to the STOP PLACE.			
HafasPriority	0:1	HafasPriority	Interchange Priority wenn several alternative interchange possibilities exist
HafasKMIInfo	0:1	HafasKMIInfo	Value for Interchange points

### HafasPriority

Element	Usage	Structure	Description
Value	1:1	integer	Interchange Priority wenn several alternative interchange possibilities exist

### HafasKMInfo

Element	Usage	Structure	Description
Value	1:1	integer	Value for Interchange points

### Centroid

Element	Usage	Structure	Description
srsName (P) Location	0:1	LocatingSystemNameType	GML id of Type of LOCATING SYSTEM used.
Longitude	1:1	LongitudeType	Longitude of Location.
Latitude	1:1	LatitudeType	Latitude of Location.
Altitude	0:	AltitudeType	Altitude of Location.
Coordinates (P) Location	0:1	CoordinateString gml:pos	GML coordinates providing location in a specified Location system. We use this element for Swiss coordinates in our data (swisstopo link). This String is only provided during export by SKI.

#### Comment to Centroid

The "Centroid" always contains a location.

- The main coordinates are given as WSG84.
- The Swiss coordinates are added as well, when available (see below)
- INFO+ will not use the data from the import. Always the DIDOK master data will be used for all Swiss coordinates. INFO+ will use the data of foreign places. That information will be forwarded to Didok.

### 7.3.4 Example

```
<StopPlace id="ch:1:StopPlace:8503000" version="any">
  <ValidBetween>
    <FromDate>1978-10-01T00:00:00</FromDate>
    <ToDate>2500-12-31T00:00:00</ToDate>
  </ValidBetween>
  <alternativeTexts>
    <AlternativeText attributeName="Text">
      <Text lang="de">ZUE</Text>
    </AlternativeText>
  </alternativeTexts>
  <keyList>
    <KeyValue>
      <Key>DIDOK</Key>
      <Value>8503000</Value>
    </KeyValue>
  </keyList>
</StopPlace>
```

```

    </KeyValue>
    <KeyValue>
      <Key>SLOID</Key>
      <Value>ch:1:sloid:03000</Value>
    </KeyValue>
  </keyList>
  <Extensions>
    <HafasPriority>
      <Value>4</Value>
    </HafasPriority>
    <HafasKMInfo>
      <Value>1000</Value>
    </HafasKMInfo>
  </Extensions>
  <Name>Zürich HB</Name>
  <ShortName lang="de">8503000</ShortName>
  <PrivateCode>8503000</PrivateCode>
  <Centroid>
    <Location>
      <Longitude>8.540212</Longitude>
      <Latitude>47.378177</Latitude>
    </Location>
  </Centroid>
  <alternativeNames>
    <AlternativeName id="ch:1:AlternativeName:StopPlace:8503000_8" ver-
    sion="any">
      <NameType>alias</NameType>
      <TypeOfName>official</TypeOfName>
      <Name lang="de">ZH</Name>
    </AlternativeName>
    <AlternativeName id="ch:1:AlternativeName:StopPlace:8503000_10" ver-
    sion="any">
      <NameType>alias</NameType>
      <TypeOfName>official</TypeOfName>
      <Name lang="de">Zurigo</Name>
    </AlternativeName>
    <AlternativeName id="ch:1:AlternativeName:StopPlace:8503000_11" ver-
    sion="any">
      <NameType>alias</NameType>
      <TypeOfName>official</TypeOfName>
      <Name lang="de">Züri</Name>
    </AlternativeName>
  </alternativeNames>
  <TopographicPlaceRef ref="ch:1:TopographicPlace:CH-ZH" version="any" />
  <Weighting>preferredInterchange</Weighting>
  <quays>
    <Quay id="ch:1:Quay:8503000-10" version="any">
      <PublicCode>10</PublicCode>
      <keyList>
        <KeyValue>
          <Key>SLOID</Key>
          <Value>ch:1:sloid:03000:0:10</Value>
        </KeyValue>
      </keyList>
    </Quay>
    <Quay id="ch:1:Quay:8503000-11" version="any">
      <PublicCode>11</PublicCode>
      <keyList>
        <KeyValue>

```

```

        <Key>SLOID</Key>
        <Value>ch:1:sloid:03000:0:11</Value>
    </KeyValue>
</keyList>
</Quay>
...
</quays>
</StopPlace>

```

### 7.4 Quay

(NeTEx-1 8.5.4.5.6)

A place such as platform, stance, or quayside where passengers have access to PT vehicles, taxi, cars or other means of transportation. A QUAY may serve one or more VEHICLE STOPPING PLACES and be associated with one or more STOP POINTS.

A QUAY may contain other sub QUAYs. A child QUAY must be physically contained within its parent QUAY.

Further more:

- A nested QUAY is always physically contiguous with its parent and so has the same accessibility characteristics as it parents.
- Nested QUAYs should not be used to mark individual positions on a platform – BOARDING POSITIONS service this function.
- Nested QUAYs and ACCESS PLACES must always be on the same LEVEL as their parent

#### 7.4.1 Business Requirements

QUAYs are mapped with the following resolution:

- No hierarchy between the different definitions of quays is foreseen at the moment
- All combinations between sectors of the same quay are considered as independent quays.
- Combinations of several quays are considered as independent quays.

In future the modelling of the Quays might adhere to EPIAP (NeTEx part 6) more to make sure that accessibility features can be modelled correctly..

#### 7.4.2 Structure

Element	Usage	Structure	Description
<b>Attributes</b> <ul style="list-style-type: none"> <li>• Id</li> <li>• Version</li> </ul>			
keyList	0:1	KeyValue  See 7.4.3 Substructure	KEY LIST with the KEY VALUES related to the QUAY.  SKI use KeyValues: <ul style="list-style-type: none"> <li>• for the SLOID</li> </ul> For delivery to SKI only if available
Centroid	0:1	Location	Location of POINT of QUAY.

		See See 7.4.3 Sub-structure	
PublicCode	0:1	String	Code use to identify QUAY to the public.
SiteRef	0:1	SiteRefStructure	Can reference the parent Quay or StopPlace.

### 7.4.3 Substructure

#### KeyList

Element	Usage	Structure	Description
KEY LIST with the KEY VALUEs related to the QUAY.			
KeyValue	0:*	KeyValue	

#### KeyValue

Element	Usage	Structure	Description
Key	1:1	xsd.normalizedString	Key
Value	1:1	xsd.normalizedString	Value

#### Centroid

Element	Usage	Structure	Description
srsName (P) Location	0:1	LocatingSystemNameType	GML id of Type of LOCATING SYSTEM used.
Longitude	1:1	LongitudeType	Longitude of Location.
Latitude	1:1	LatitudeType	Latitude of Location.
Altitude	0:	AltitudeType	Altitude of Location.
Coordinates (P) Location	0:1	CoordinateString gml:pos	GML coordinates providing location in a specified Location system. We use this element for Swiss coordinates in our data (swisstopo link). This String is only provided during export by SKI.

#### Comment to Centroid

The "Centroid" always contains a location.

- The main coordinates are given as WSG84.
- The Swiss coordinates are added as well, when available (see below)
- INFO+ will not use the data from the import. Always the DIDOK master data will be used for all Swiss coordinates. INFO+ will use the data of foreign places. That information will be forwarded to Didok.

### 7.4.4 Example

See 7.3.4 Example



# 8 ServiceFrame

(NeTeX-1, 8.3.2.1)

The service related elements of the Network Description model can be grouped into a SERVICE FRAME which holds a coherent set of elements for data exchange.

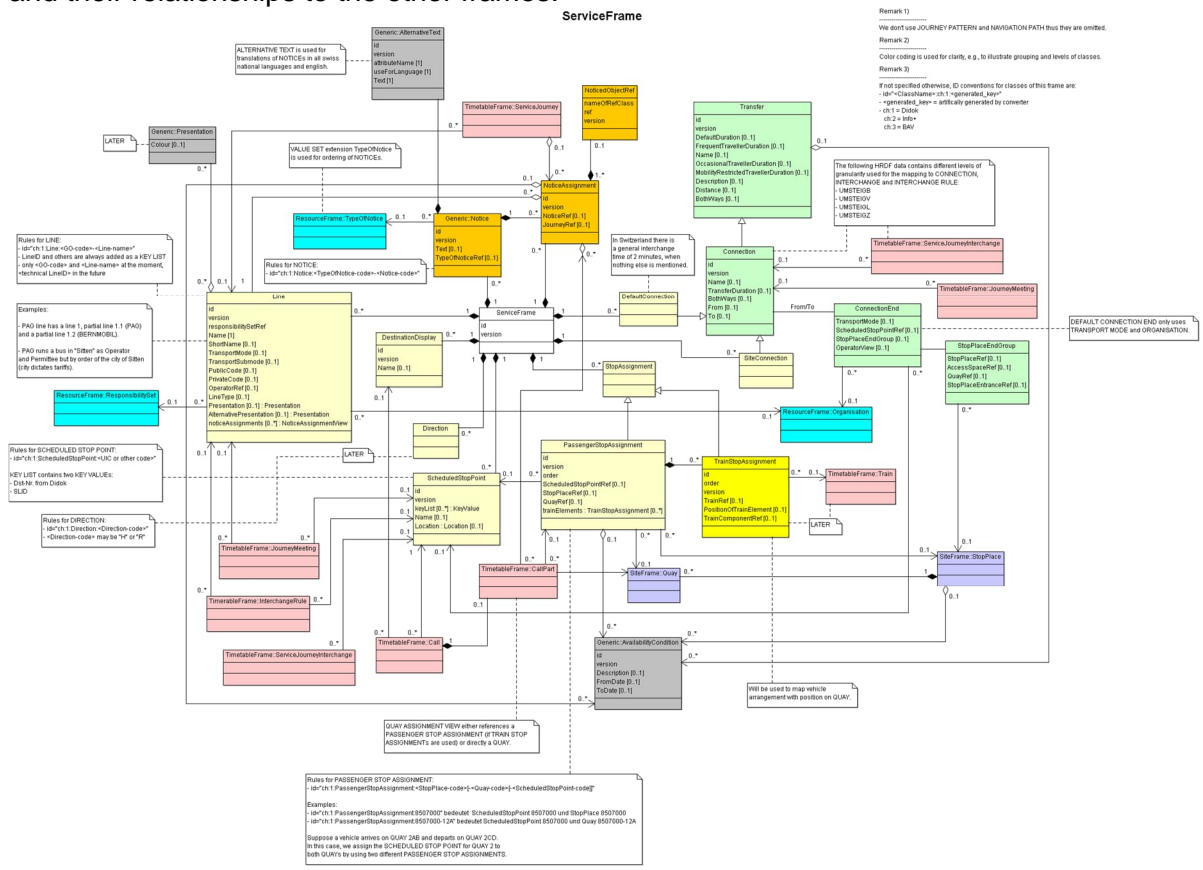
The Service Frame model comprises among others:

- Route model: fixed LINES and ROUTEs of a transport network.
- Flexible Network model: flexible LINES and ROUTEs of a demand responsive transport network.
- Line Network model: overall topology of the LINES and LINE SECTIONS that make up a transport network.
- Service Pattern model: SCHEDULED STOP POINTS and SERVICE LINKS, i.e., points and links referenced by schedules.

Other important classes of the SERVICE FRAME include:

- PASSENGER STOP ASSIGNMENTS and TRAIN STOP ASSIGNMENTS which model the relationship between stops in the timetable and the physical platforms of an actual station or other stop.
- CONNECTIONS as the topological model of INTERCHANGES. They model the possibility of a transfer between two SCHEDULED STOP POINTS.
- NOTICES which are then assigned to JOURNEYS and CALLS of the TIMETABLE FRAME through NOTICE ASSIGNMENTS. They model the association of footnotes and passenger information content such as stop announcements and the network.

See the following class diagram for the most important objects of the RESOURCE FRAME and their relationships to the other frames.



### 8.1.1 Business Requirements

-

### 8.1.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		VersionFrame	SERVICE FRAME inherits from VERSION FRAME.
directions	0:*	Direction	DIRECTIONS in SERVICE FRAME. <Direction version="any" id="ch:1:Direction:H"> <DirectionType>out-bound</DirectionType></Direction>
lines	0:*	Line	LINES in SERVICE FRAME.  They are referenced in various elements of the TimetableFrame (ServiceJourneys, InterchangeRule etc.)
destinationDisplays	0:*	DestinationDisplay	DESTINATION DISPLAYS in SERVICE FRAME.  They are referenced by individual Calls of ServiceJourneys.
scheduledStopPoints	0:*	ScheduledStopPoint	SCHEDULED STOP POINTS in SERVICE FRAME.
connections	0:*	Connection	CONNECTIONS in SERVICE FRAME.
stopAssignments	0:*	StopAssignment	STOP ASSIGNMENT in SERVICE FRAME.  PassengerStopAssignment of Schedules Stop Points to Stop Places
notices	0:*	Notice	Notices

### 8.1.3 Example

```
<ServiceFrame id="ch:1:ServiceFrame:j23" version="any">
  <directions>
    <!-- content of directions -- >
  </directions>
  <lines>
    <!-- content of lines -- >
  </lines>
  <destinationDisplays>
    <!-- content of destinationDisplays -- >
  </destinationDisplays>
</ServiceFrame>
```

```

</destinationDisplays>
<scheduledStopPoints>
  <!-- content of scheduledStopPoints -- >
</scheduledStopPoints>
<connections>
  <!-- content of connections -- >
</connections>
<stopAssignments>
  <!-- content of stopAssignments -- >
</stopAssignments>
<notices>
  <!-- content of notices -- >
</notices>
</ServiceFrame>

```

## 8.2 Direction

(NeTeX-1, 8.4.5.5.1 Direction)

*A classification for the general orientation of ROUTEs.*

### 8.2.1 Business Requirements

In Switzerland we only use H (Hin, Outbound) and R (Rück, Inbound).

We thought about using a default value, but will not use one for the time being, so all the data without direction will be set to Outbound. The example shows the definition to be used.

### 8.2.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		DataManagedObject	DIRECTION inherits from DATA MANAGED OBJECT.
Name	1:1	Xsd:normal-izedString	Name of DIRECTION.
DirectionType	1:1	DirectionTypeEnum	A fixed value associated with this direction.  Used Values from Direction-TypeEnum: <ul style="list-style-type: none"> <li>outbound</li> <li>inbound</li> </ul>

### 8.2.3 Example

```

<directions>
  <Direction version="any" id="ch:1:Direction:H">
    <DirectionType>outbound</DirectionType>
  </Direction>
  <Direction version="any" id="ch:1:Direction:R">
    <DirectionType>inbound</DirectionType>
  </Direction>

```

```
</directions>
```

In Switzerland always use exactly these two directions.

## 8.3 Line

(VDV 462, section 12.2 / NeTeX-1, 8.4.5.8.3)

*Transmodel defines a LINE as a grouping of ROUTEs that is generally known to the public by a similar name or number. These ROUTEs are usually very similar to each other from the topological point of view.*

*Each LINE has a unique number PrivateCode, a ShortName and a Name. Passengers recognise a LINE by its published "PublicCode". The transport mode is specified in "TransportMode", e.g metro, tram, bus etc..*

*The assignment of a LINE to an ORGANISATION is done by the element OperatorRef and to the operationalContext with OperationalContextRef.*

### 8.3.1 Business Requirements

Note that there exist journeys in Switzerland and neighbouring countries that are not associated with a Line. In NeTeX, however, the ServiceJourneys corresponding to such journeys must still reference something in LineRef. To ensure this, we introduce a placeholder Line called "NoLine" for each Operator that has journeys without a Line.

For more information about SwissLineID: see [https://www.xn--v-info-vxa.ch/sites/default/files/2023-06/slnid-spezifikation\\_v1.25\\_0.pdf](https://www.xn--v-info-vxa.ch/sites/default/files/2023-06/slnid-spezifikation_v1.25_0.pdf)

### 8.3.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"><li>id</li><li>version</li><li>responsibilitySetRef</li></ul>		DataManagedObject	LINE inherits from DATA MANAGED OBJECT.
ValidBetween	0:1	See 8.3.3 SubStructure	ValidityOf Line
KeyList	1:1	See 8.3.3 SubStructure	BusinessIdentification of the line
Name Attribute: <ul style="list-style-type: none"><li>lang</li></ul>	1:1	MultilingualString	Name of Line
ShortName	0:1	MultilingualString	Short Name of LINE.
TransportMode	0:1	VehicleModeEnum	Identifier of Primary TRANSPORT MODE of LINE.  See 11.1.1 TransportMode
TransportSubmode	0:1	TransportSubmodeEnum	Identifier of TRANSPORT MODE of LINE.  See 11.1.2 TransportSubMode

PublicCode	0:1	xsd:normalizedString	Public identifier of LINE. It is composed of the abbreviation for productCategory and the name of the line
PrivateCode	0:1	xsd:normalizedString	Alternative identifier of LINE.
OperatorRef	0:1	OperatorRef See 6.4 Operator	Reference to OPERATOR of LINE.
TypeOfProductCategoryRef	0:1	TypeOfProductCategoryRef See 6.2.5Structure : TypeOfProductCategory	Reference to TypeOfProductCategory

### 8.3.3 SubStructure

#### ValidBetween

Element	Usage	Structure	Description
Validity from the StopPoint			
FromDate	0:1	date YYYY-MM-DDTHH:MM:SS	First day of validity of timetable year
ToDate	0:1	date YYYY-MM-DDTHH:MM:SS	Last day of validity of timetable year

#### KeyList

Element	Usage	Structure	Description
KEY LIST with the KEY VALUEs related to the STOP PLACE.			
KeyValue	0:*	KeyValue	

#### KeyValue

Element	Usage	Structure	Description
Key	1:1	xsd.normalizedString	Key
Value	1:1	xsd.normalizedString	Value

### 8.3.4 Example

```

<lines>
  <Line id="ch:2:Line:11.S.3" version="any" responsibilitySetRef="ch:1:ResponsibilitySet:SBB_11_SBB">
    <ValidBetween>
      <FromDate>2022-12-11T00:00:00</FromDate>
      <ToDate>2023-12-09T23:59:59</ToDate>
    </ValidBetween>
    <keyList>
      <KeyValue>
        <Key>SLNID</Key>
        <Value>ch:1:slnid:102846</Value>
      </KeyValue>
    </keyList>
  </Line>
</lines>

```

```

<Name>3</Name>
<ShortName>3_</ShortName>
<TransportMode>rail</TransportMode>
<TransportSubmode>
  <RailSubmode>suburbanRailway</RailSubmode>
</TransportSubmode>
<PublicCode>3</PublicCode>
<OperatorRef ref="ch:1:Operator:11" version="any" />
<TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:TER" ver-
sion="any" />
</Line>
<Line id="ch:2:Line:85000.TER.NoLine1" version="any" responsibil-
itySetRef="ch:1:ResponsibilitySet:NA_85000_NA">
  <ValidBetween>
    <FromDate>2022-12-11T00:00:00</FromDate>
    <ToDate>2023-12-09T23:59:59</ToDate>
  </ValidBetween>
  <Name>NoLine1</Name>
  <ShortName>1Y</ShortName>
  <TransportMode>rail</TransportMode>
  <TransportSubmode>
    <RailSubmode>regionalRail</RailSubmode>
  </TransportSubmode>
  <PublicCode>NoLine1</PublicCode>
  <OperatorRef ref="ch:1:Operator:85000" version="any" />
  <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:TER" ver-
sion="any" />
</Line>
<Line id="ch:2:Line:11.IC.1 " version="any" responsibilitySetRef="
ch:1:ResponsibilitySet:SBB_11_SBB">
  <ValidBetween>
    <FromDate>2022-12-11T00:00:00</FromDate>
    <ToDate>2023-12-09T23:59:59</ToDate>
  </ValidBetween>
  <Name>1</Name>
  <ShortName>IC</ShortName>
  <TransportMode>rail</TransportMode>
  <TransportSubmode>
    <RailSubmode>longDistance</RailSubmode>
  </TransportSubmode>
  <PublicCode>1</PublicCode>
  <OperatorRef ref="ch:1:Operator:11" version="any" />
  <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:IC" ver-
sion="any" />
</Line>
</lines>

```

## 8.4 DestinationDisplay

(NeTEx-1, 8.4.5.8.4)

*The DESTINATION DISPLAY is an advertised destination of a specific LINE, usually displayed on a head-sign*

### 8.4.1 Business Requirements

-

## 8.4.2 Structure

Element	Usage	Structure	Description
Attribute: <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		DataManagedObject	DESTINATION DISPLAY inherits from DATA MANAGED OBJECT
Name Attribute: <ul style="list-style-type: none"> <li>lang</li> </ul>	1:1	MultilingualString	Name of DESTINATION DISPLAY.  Is always language neutral.  The data is taken from the Destination or from the reference in *R (HRDF). If DURCHBI is used then the destination display shows the final destination.
DriverDisplayText	0:1	MultilingualString	Text to display to DRIVER.
PrivateCode	0:1	PrivateCode	

## 8.4.1 Example

```
<destinationDisplays>
  <DestinationDisplay id="ch:1:DestinationDisplay:212" version="any">
    <Name lang="de">Porrentruy</Name>
    <DriverDisplayText lang="de">Porrentruy</DriverDisplayText>
    <PrivateCode>212</PrivateCode>
  </DestinationDisplay>
</destinationDisplays>
```

## 8.5 ScheduledStopPoint

(NeTeX-1, 8.6.3.4.2)

A POINT where passengers can board or alight from vehicles. Where a STOP PLACE models stop points with the desired level of topographic details (areas, entrances, paths etc.), a SCHEDULED STOP POINT corresponds to the simpler network representation used for LINES, STOP ASSIGNMENTS, JOURNEYS and so on. The connection of these network points with their respective STOP PLACES is done via STOP ASSIGNMENTS.

### 8.5.1 Business Requirements

ScheduledStopPoint is a core concept. It is the "Point" used in the timetable for the services to stop. A ScheduledStopPoint can refer to a Quay or only a StopPlace. So the level of hierarchy is not determined by the element (see PassengerStopAssignment).

A ScheduledStopPoint can represent two types of stop points:

- In most cases, the ScheduledStopPoint is the station named in the timetable, especially as some organisations don't have a full physical model of their StopPlaces.
- In some cases, the ScheduledStopPoint may be mapped to the Quay. The more detailed mapping is also done with the PassengerStopAssignment.

## 8.5.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>			
keyList	0:1	KeyValue See 8.5.3 <i>Substructure</i>	KEY LIST with the KEY VALUEs belonging to the SCHEDULED STOP POINT. Will contain the the DiDok number of the StopPlace.
Name Attribute <ul style="list-style-type: none"> <li>lang</li> </ul>	0:1	xsd:MultilingualString	Name of SCHEDULED STOP POINT.  Contains the Name of the Stop-Place.
ShortName Attribute <ul style="list-style-type: none"> <li>lang</li> </ul>	0:1	xsd:MultilingualString	Short Name of SCHEDULED STOP POINT.  StopPlace : Name of the Place Quay : ShortName of the Quay

## 8.5.3 Substructure

### KeyList

Element	Usage	Structure	Description
KEY LIST with the KEY VALUEs related to the ScheduledStopPoint. It is the same Code as the Code of the StopPoint			
KeyValue	0:*	KeyValue	

### KeyValue

Element	Usage	Structure	Description
Key	1:1	xsd.normalizedString	Key
Value	1:1	xsd.normalizedString	Value

## 8.5.4 Example

```

<scheduledStopPoints>
  <ScheduledStopPoint id="ch:1:ScheduledStopPoint:8504128:1" version="any">
    <keyList>
      <KeyValue>
        <Key>DIDOK</Key>
        <Value>8504128</Value>
      </KeyValue>
      <KeyValue>
        <Key>SLOID</Key>
        <Value>ch:1:sloid:4128</Value>
      </KeyValue>
    </keyList>
    <Name lang="de">Murten/Morat</Name>
  </ScheduledStopPoint>
</scheduledStopPoints>

```



```

<ShortName lang="de">1</ShortName>
</ScheduledStopPoint>
<ScheduledStopPoint id="ch:1:ScheduledStopPoint:8504129:1" ver-
sion="any">
  <keyList>
    <KeyValue>
      <Key>DIDOK</Key>
      <Value>8504129</Value>
    </KeyValue>
    <KeyValue>
      <Key>SLOID</Key>
      <Value>ch:1:sloid:4129</Value>
    </KeyValue>
  </keyList>
  <Name lang="de">Galmiz</Name>
  <ShortName lang="de">1</ShortName>
</ScheduledStopPoint>
</scheduledStopPoints>

```

## 8.6 PassengerStopAssignment

(NeTeX-1, 8.6.6.4.2)

*The allocation of a SCHEDULED STOP POINT to a specific STOP PLACE for a PASSENGER SERVICE and, also possibly, a QUAY or BOARDING POSITION.*

### 8.6.1 Business Requirements

PassengerStopAssignments bring the SiteModel and the ServiceModel in alignment. We have two general cases:

- A ScheduledStopPoint in a Call is linked to a StopPlace for arrival and departure.
- A ScheduledStopPoint in a Call is linked to a Quay for arrival and departure.

Suppose a vehicle arrives on QUAY 2A and departs on QUAY 2D. In this case we model only the SCHEDULED STOP POINT for QUAY 2 but assign this STOP POINT to both QUAYs by using two different PASSENGER STOP ASSIGNMENTS.

### 8.6.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> <li>• order</li> </ul>		StopAssignment	PASSENGER STOP ASSIGNMENT inherits from STOP ASSIGNMENT.
ScheduledStopPointRef	0:1	ScheduledStopPointRef  See 8.5 ScheduledStopPoint	Reference to a SCHEDULED STOP POINT to be assigned.
StopPlaceRef	1:1	StopPlaceRef  See 7.3 StopPlace	Reference to STOP PLACE to which the SCHEDULED STOP POINT is assigned.

QuayRef	0:1	QuayRef See 7.4 Quay	Reference to a QUAY within the STOP PLACE to which the SCHEDULED STOP POINT is assigned.
---------	-----	-------------------------	--

### 8.6.3 Example

```

<stopAssignments>
  <PassengerStopAssignment id="ch:1:PassengerStopAssignment:8590129:A"
version="any" order="1">
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8590129:A" ver-
sion="any" />
    <StopPlaceRef ref="ch:1:StopPlace:8590129" version="any" />
    <QuayRef ref="ch:1:Quay:8590129:A" version="any" />
  </PassengerStopAssignment>
  <PassengerStopAssignment id="ch:1:PassengerStopAssignment:8590129:2"
version="any" order="2">
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8590129:2" ver-
sion="any" />
    <StopPlaceRef ref="ch:1:StopPlace:8590129" version="any" />
    <QuayRef ref="ch:1:Quay:8590129:2" version="any" />
  </PassengerStopAssignment>
  <PassengerStopAssignment id="ch:1:PassengerStopAssign-
ment:8507000:13CD" version="any" order="3">
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8507000:13CD "
version="any" />
    <StopPlaceRef ref="ch:1:StopPlace:8507000" version="any" />
    <QuayRef ref="ch:1:Quay:8507000:13CD " version="any" />
  </PassengerStopAssignment>
</stopAssignments>

```

## 8.7 DefaultConnection

(NeTeX-1, 8.5.14)

A CONNECTION expresses that there is a possible walking link<sup>1</sup> that is suitable for a passenger to interchange from one public transport vehicle to another between two specified SCHEDULED STOP POINTs and the time allocated for a passenger to traverse the link. Software used to control guaranteed interchanges can use the time information given to use a CONNECTION link as to assist calculating how long a distributor SERVICE JOURNEY needs to wait after a fetcher SERVICE JOURNEY has arrived before it can depart. If no specific CONNECTION link is available, timings from a DEFAULT CONNECTION must be used.

### 8.7.1 Business Requirements

DefaultConnections are used to transmit the ConnectionTimes for the following constellations:

- between 2 ProductCategories
- between 2 Operators
- In a defined StopPlace
- In a defined StopPlace and 2 Operators

<sup>1</sup> In some cases we use Connection to model bigger interchange times (e.g. going by metro from gare de Lyon à gare du Nord. A special case was the national “Schwingfest” with shuttle busses.

- in a defined StopPlace, 2 Operators and 2 ProductCategories
- For more Detail see 11 Appendix

### 8.7.2 Structure

Element	Usage	Structure	Description
Attributes <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>			CONNECTION inherits from TRANSFER.
Extensions	0:1	ExtensionStructure	Used for changes in ProductCategory (Angebotskategorie) in SITE CONNECTION END.
WalkTransferDuration	0:1	TransferDuration-Structure	Scheduling TRANSFER TIMES that apply to TRANSFER.
BothWays	0:1	xsd:boolean	Whether TRANSFER can be traversed in both directions.
From	0:1	TransportModeEnum for DefaultConnection or SiteConnectionEnd element for SiteConnection or OperatorView	Properties of end at which CONNECTION starts.
To	0:1	TransportModeEnum for DefaultConnection or SiteConnectionEnd element for SiteConnection or OperatorView	Properties of end at which CONNECTION ends.
StopPlaceRef	0:1	StopPlaceRef	

### 8.7.1 Substructure Extension

Element	Usage	Structure	Description
FromProductCategoryRef	1:1	TypeOfProductCategoryRefStructure	Extension needed to map "Verkehrsmittel-Gattung", which is similar to but more detailed than TransportSubmode, for transfer times of interchanges.
ToProductCategoryRef	1:1	TypeOfProductCategoryRefStructure	Extension needed to map HRDF "Verkehrsmittel-Gattung", which is similar to but more detailed than TransportSubmode, for transfer times of interchanges.

## 8.7.2 Example

### Between two Modes

```
<DefaultConnection id="ch:1:DefaultConnection:9999999-1" version="any">
  <TransferDuration>
    <DefaultDuration>PT2M</DefaultDuration>
  </TransferDuration>
  <From>
    <TransportMode>tram</TransportMode>
  </From>
  <To>
    <TransportMode>tram</TransportMode>
  </To>
</DefaultConnection>
```

### Between two Operators

```
<DefaultConnection id="11-11" version="any">
  <TransferDuration>
    <DefaultDuration>PT2M</DefaultDuration>
  </TransferDuration>
  <From>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </From>
  <To>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </To>
</DefaultConnection>
```

### In a defined StopPlace

```
<DefaultConnection id="ch:1:DefaultConnection:8500126" version="any">
  <TransferDuration>
    <DefaultDuration>PT3M</DefaultDuration>
  </TransferDuration>
  <StopPlaceRef ref="ch:1:StopPlace:8500126" version="any" />
</DefaultConnection>
```

### In a defined StopPlace and two Operators

```
<DefaultConnection id="ch:1:DefaultConnection:8501300-2" version="any">
  <TransferDuration>
    <DefaultDuration>PT3M</DefaultDuration>
  </TransferDuration>
  <From>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </From>
  <To>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:131" version="any" />
    </OperatorView>
  </To>
```

```
<StopPlaceRef ref="ch:1:StopPlace:8501300" version="any" />
</DefaultConnection>
```

in a defined StopPlace, two Operators and two ProductCategories

```
<DefaultConnection id="ch:1:DefaultConnection:8500010-10" version="any">
  <Extensions>
    <FromProductCategoryRef ref="ch:1:TypeOfProductCategory:ICE" ver-
    sion="any" />
    <ToProductCategoryRef ref="ch:1:TypeOfProductCategory:TE2" ver-
    sion="any" />
  </Extensions>
  <TransferDuration>
    <DefaultDuration>PT11M</DefaultDuration>
  </TransferDuration>
  <From>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </From>
  <To>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </To>
  <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any" />
</DefaultConnection>
```

## 8.8 SiteConnection

(NeTEx-1, 8.5.14.7.3)

The physical (spatial) possibility for a passenger to change from one public transport vehicle to another to continue the trip. The ends of connection can be specified STOP PLACE or STOP AREA.

### 8.8.1 Business Requirements

The SiteConnection describes the transfer times between two adjacent StopPlaces  
For more Detail see *11 Appendix*

### 8.8.2 Structure

Element	Usage	Structure	Description
Attributes: • id • version		-structure	CONNECTION inherits from TRANSFER.
TransferDuration	0:1	TransferDuration-Structure	Scheduling TRANSFER TIMES that apply to TRANSFER.
BothWays	0:1	xsd:boolean	Whether TRANSFER can be traversed in both directions.
From	1:1	SiteConnectionEnd	Properties of end at which CONNECTION starts.
To	1:1	SiteConnectionEnd	Properties of end at which CONNECTION ends.

### 8.8.3 Substructure

#### SiteConnectionEnd

Element	Usage	Structure	Description
		DefaultConne- ctionEnd	
StopPlaceRef	1:1	StopPlaceRefStruc- ture	Reference to destination STOP PLACE of SITE CONNECTION.

#### TransferDurationStructure

Element	Usage	Structure	Description
		TransferDuration	Times taken to make a TRANS- FER.
DefaultDuration	1:1	xsd:duration	Default time needed to make transfer

### 8.8.4 Example

```
<SiteConnection id="ch:1:SiteConnection:8500010-8500010" version="any">
  <WalkTransferDuration>
    <DefaultDuration>PT5M</DefaultDuration>
  </WalkTransferDuration>
  <BothWays>false</BothWays>
  <From>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any" />
  </From>
  <To>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any" />
  </To>
</SiteConnection>
<SiteConnection id="ch:1:SiteConnection:8500010-8500146" version="any">
  <WalkTransferDuration>
    <DefaultDuration>PT9M</DefaultDuration>
  </WalkTransferDuration>
  <BothWays>false</BothWays>
  <From>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" versionRef="any" />
  </From>
  <To>
    <StopPlaceRef ref="ch:1:StopPlace:8500146" versionRef="any" />
  </To>
</SiteConnection>
```

### 8.9 Notice

(NeTEx-1, 7.7.18.4.1)

*The NOTICE Model defines reusable text note elements that may be attached to timetables as footnotes, used as announcements, etc. NOTICES are associated with other entities using a NOTICE ASSIGNMENT. NOTICES may be classified with a TYPE OF NOTICE.*

## 8.9.1 Business Requirements

-

## 8.9.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		DataManagedObject	NOTICE inherits from DATA MANAGED OBJECT.
Text Attribute <ul style="list-style-type: none"> <li>lang</li> </ul>	0:1	MultilingualString	Content text for NOTICE
alternativeTexts	0:*	Alternative Text  See 5.2 <i>AlternativeText</i>	
PublicCode	0:1	xsd:normalizedString	The public code is transmitted when it is to be published and when it is the type of notice 10
PrivateCode	0:1	xsd:normalizedString	
ShortCode	0:1	PrivateCodeType	
PrivateCode	1:1	TypeOfNoticeRef  See 6.2.3 <i>Structure : TypeOfNotice</i>	Reference to TYPE OF NOTICE
CanBeAdvertised	0:1	xsd:boolean	Whether NOTICE is advertised

## 8.9.3 Example

```

<notices>
  <Notice id="ch:1:Notice:A__SN" version="any">
    <alternativeTexts>
      <AlternativeText attributeName="Text">
        <Text>Catering zone / Vending machine</Text>
      </AlternativeText>
      <AlternativeText attributeName="Text">
        <Text>Zone catering / Distributeur</Text>
      </AlternativeText>
      <AlternativeText attributeName="Text">
        <Text>Zona catering / Distributore</Text>
      </AlternativeText>
    </alternativeTexts>
    <Text lang="de">Cateringzone / Automaten</Text>
    <ShortCode>A__SN</ShortCode>
    <PrivateCode>A__SN</PrivateCode>
    <TypeOfNoticeRef ref="ch:1:TypeOfNotice:10" version="any" />
    <CanBeAdvertised>true</CanBeAdvertised>
  </Notice>
</notices>

```

# 9 ServiceCalendarFrame

(NeTeX-1, 7.7.5)

The Calendar elements are grouped in a SERVICE CALENDAR FRAME. This allows the same SERVICE CALENDAR to be shared with many other functional frames (especially TIMETABLE FRAMES), and for a given functional frame to be used with different SERVICE CALENDARS just by changing the SERVICE CALENDAR FRAME associated with it.

See the following class diagram for the most important objects of the SERVICE CALENDAR FRAME and their relationships to the other frames.

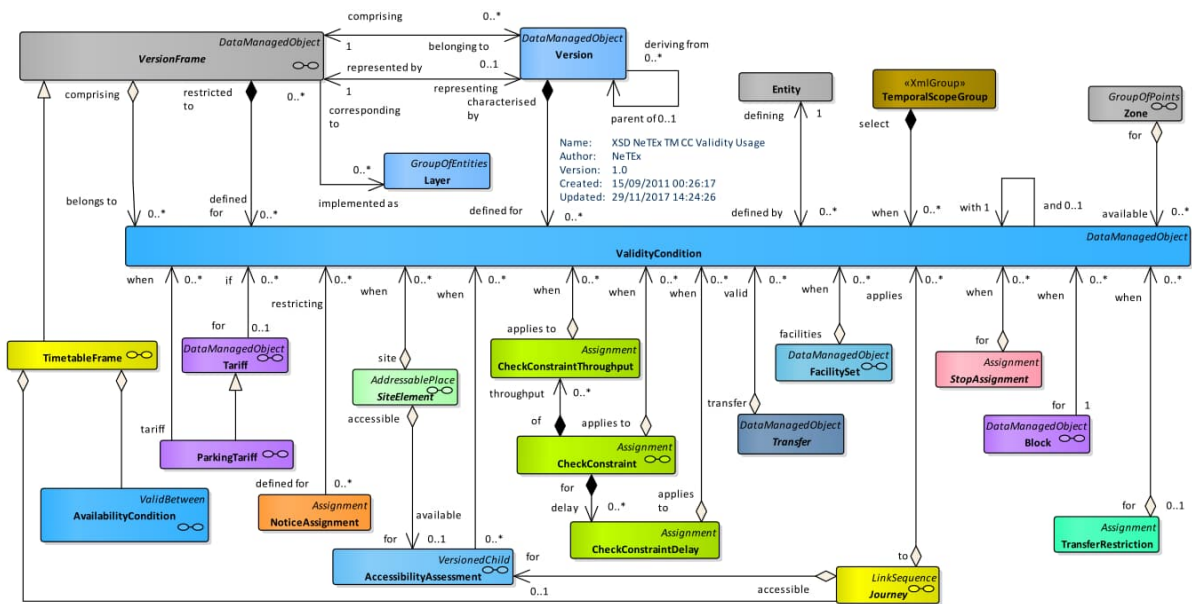


Figure 1: A selection of classes that may use of a VALIDITY CONDITION

Note that VALIDITY CONDITIONS could be combined and ANDED (all the conditions must be fulfilled at the same time) thanks to the WITH CONDITION REF attribute. **We will work with FromDate/ToDate and ValidDayBits of AvailabilityCondition only.**



## ServiceCalendarFrame

Remark 1)

Color coding is used for clarity, e.g., to illustrate grouping and levels of classes.

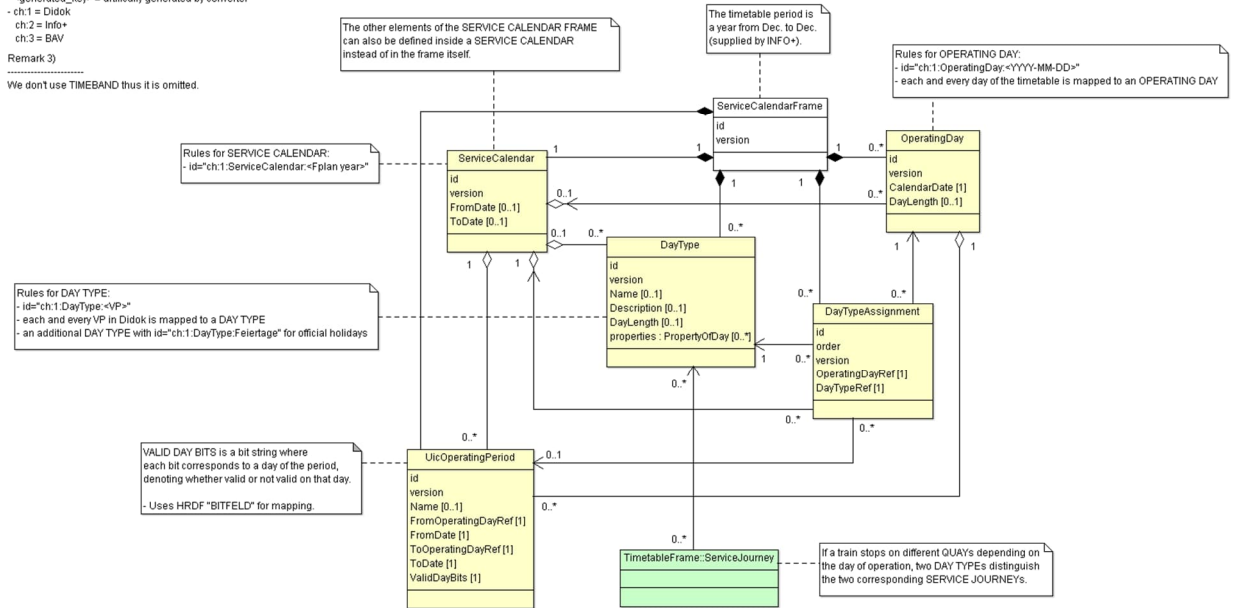
Remark 2)

If not specified otherwise, ID conventions for classes of this frame are:

- id="<ClassName>-ch.1.-generated\_key"
- <generated\_key> = artificially generated by converter
- ch.1 = Didok
- ch.2 = Info+
- ch.3 = BAV

Remark 3)

We don't use TIMEBAND thus it is omitted.



## 9.1 Business Requirements

-

## 9.2 Structure

Element	Usage	Structure	Description
validityConditions	0:*	AvailabilityCondition	AVAILABILITY CONDITIONS in SERVICE CALENDAR.  AvailabilityCondition replaces OperatingDay and OperatingPeriod. It represents VP.
ServiceCalendar	0:*	+Structure	SERVICE CALENDAR inherits from DATA MANAGED OBJECT.  This will be a full year.
dayTypes	0:*	DayType	DAY TYPES in SERVICE CALENDAR.  We keep only the DayType for NationalHoliday.
timebands	0:*	Timeband	TIMEBANDS in SERVICE CALENDAR.
dayTypeAssignment	0:*	DayTypeAssignment	DAY TYPE ASSIGNMENTS in SERVICE CALENDAR

## 9.2.1 Example

```
<ServiceCalendarFrame id="ch:1:ServiceCalendarFrame:j23" version="any">
  <validityConditions>
    <AvailabilityCondition id="ch:1:AvailabilityCondition:b7" ver-
      sion="any">
      <!-- content of AvailabilityCondition>
    </AvailabilityCondition>
  </validityConditions>
  <ServiceCalendar id="ch:1:ServiceCalendar:j23" version="any">
  </ServiceCalendar>
  <dayTypes>
    <DayType id="ch:1:DayType:ycy10_1" version="any">
      <!-- content of DayType>
    </DayType>
  </dayTypes>
  <timebands>
    <Timeband id="ch:1:Timeband:1140:1260" version="any">
    </Timeband>
  </timebands>
  <dayTypeAssignment>
    <!-- content of DayTypeAssignment>
  </dayTypeAssignment >
</ServiceCalendarFrame>
```

## 9.3 AvailabilityCondition

(NeTeX-1 7.7.6)

*AVAILABILITY CONDITION is a specialisation of VALIDITY CONDITION to specify precise temporal conditions. For example, an ENTRANCE of a STOP PLACE may be valid (it exists) but not available for some of the time (it is closed between 9 pm and 6 am). Both VALIDITY CONDITIONS and AVAILABILITY CONDITIONS may be associated for the same entity.*

*An AVAILABILITY CONDITION can be defined by specific DAY TYPES and/or OPERATING DAYS. It may be further qualified by one or more of TIME BANDS. The DATED AVAILABILITY CONDITION being the instance of VALIDITY CONDITION on a specific CALENDAR DAY.*

*Examples of use of AVAILABILITY CONDITION include ENTRANCES, EQUIPMENTS, STOP PLACES, etc.*

### 9.3.1 Business Requirements

AvailabilityCondition replaces OperatingDay and OperatingPeriod. Whenever a reference to a VP ("Verkehrsperiode" or operating period in english) is needed, we use an AvailabilityConditionRef:

- The referenced AvailabilityConditions are centrally stored in the ServiceCalendar-Frame.

The element ValidDayBits directly indicates the days on which some service is provided or not. They are similar to the HRDF bitfields.

ValidDayBits is required whenever the AvailabilityCondition is of temporal nature (more often than not). Examples include:

- ServiceJourney
- JourneyMeeting
- NoticeAssignment
- ServiceFacilitySet
- ServiceJourneyInterchange
- InterchangeRule

### 9.3.2 Structure

Element	Usage	Structure	Description	Example
Attribute <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> </ul>		ValidityCondition	AVAILABILITY CONDITION inherits from VALIDITY CONDITION.	
FromDate	0:1	xsd:dateTime	Inclusive start date for validity of AVAILABILITY CONDITION.  Is equal to the start date of the timetable year or, more generally, the period in which the ValidDayBits apply.	2019-12-15T00:00:00Z
ToDate	0:1	xsd:dateTime	Inclusive End date for validity of AVAILABILITY CONDITION.  Is equal to the end date of the timetable year or, more generally, the period in which the ValidDayBits apply.	2020-12-12T00:00:00Z
ValidDayBits	0:1	bitString	Alternative way of stating the validity of days within the start and end	11110101000100010001011



## 9.4.2 Structure

Element	Usage	Structure	Description
Attribute: <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>	1:1	ServiceCalendar-IdType	Identifier of SERVICE CALENDAR.
Name	0:1	MultilingualString	Name of SERVICE CALENDAR.
FromDate	0:1	xsd:date	Inclusive start date for validity of SERVICE CALENDAR.  First date of timetable period
ToDate	0:1	xsd:date	Inclusive end date for validity of SERVICE CALENDAR.  Last date of timetable period

## 9.4.1 Example

```
<ServiceCalendar version="any" id="ch:1:ServiceCalendar:2018">
  <Name>Fahrplan 2018</Name>
  <FromDate>2017-12-10</FromDate>
  <ToDate>2018-12-08</ToDate>
</ServiceCalendar>
```

## 9.5 DayType

(NeTEx-1, 7.7.5.5.2)

*In Transmodel, a DAY TYPE is defined as a combination of various different properties a day may have, and which will influence the transport demand and the running conditions.*

### 9.5.1 Business Requirements

The day type is used to describe the validity of the holidays in Switzerland. Each day is described with a day Type.

### 9.5.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		DataManagedObject	DAY TYPE inherits from DATA MANAGED OBJECT.  Id = ch:1:DayType:Feiertage
alternativeTexts	0:*	See 5.2 <i>AlternativeText</i>	ValidityConditions applying to the DayType.
Name	0:1	MultilingualString	Name of DAY TYPE.
Properties	0:*	PropertyOfDay	PROPERTIES of DAY TYPE. Only used by swiss holidays

### 9.5.3 SubStructure

## Properties

Element	Usage	Structure	Description
HolidayTypes	0:1	HolidayTypeEnum	Holiday type assigned to PROPERTY OF DAY

### 9.5.4 Example

```

<dayTypes>
  <DayType id="ch:1:DayType:Bundesfeier" version="any">
    <alternativeTexts>
      <AlternativeText attributeName="Name">
        <Text lang="it">Festa nazionale</Text>
      </AlternativeText>
      <AlternativeText attributeName="Name">
        <Text lang="en">National Day</Text>
      </AlternativeText>
      <AlternativeText attributeName="Name">
        <Text lang="fr">Fête nationale</Text>
      </AlternativeText>
    </alternativeTexts>
    <Name>Bundesfeier</Name>
    <properties>
      <PropertyOfDay>
        <HolidayTypes>NationalHoliday</HolidayTypes>
      </PropertyOfDay>
    </properties>
  </DayType>
</dayTypes>
<dayTypeAssignments>
  <DayTypeAssignment id="blabliblablo" version="any" order="1">
    <Date>2023-08-01</Date>
    <DayTypeRef ref="ch:1:DayType:Bundesfeier"></DayTypeRef>
  </DayTypeAssignment>
</dayTypeAssignments>

```

## 9.6 Timeband

(NeTEx-1, 7.7.5.5.6)

A period in a day, significant for some aspect of public transport, e.g. similar traffic conditions or fare category.

### 9.6.1 Business Requirements

Currently used for InterchangeRuleTimings, later also used for the opening hours in Stop-Place models.

### 9.6.2 Structure

Element	Usage	Structure	Description
Attribute: <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		DataManagedObject	TIME BAND inherits from DATA MANAGED OBJECT.
id	1:1	TimebandIdType	Identifier of TIME BAND.

			Technical ID is artificially generated by the converter.
StartTime	1:1	xsd:time	Inclusive start time of TIME BAND.  Local time (not Zulu), i.e., without "Z" or "hh:mm:ss" suffix. Seconds are not used
EndTime	1:1	xsd:time	Inclusive end time of TIME BAND.  Local time (not Zulu), i.e., without "Z" or "hh:mm:ss" suffix.  Seconds are not used

### 9.6.1 Example

```
<timebands>
  <Timeband id="ch:1:Timeband:InterchangeValidity:2:0" version="any">
    <StartTime>06:00:00</StartTime>
    <EndTime>06:01:00</EndTime>
  </Timeband>
</timebands>
```

## 9.7 DayTypeAssignment

(NeTEx-1, 7.7.5.5.5)

*This assignment overrides the DAY TYPE which was generally chosen for this OPERATING DAY in the overall DAY TYPE assignment plan..*

### 9.7.1 Business Requirements

Designation of one day or group of days

### 9.7.2 Structure

Element	Usage	Structure	Description
Attribute: <ul style="list-style-type: none"> <li>id</li> <li>version</li> <li>order</li> </ul>		DataManagedObject	DayTypeAssignment inherits from DATA MANAGED OBJECT.
Date	1:1	xsd:date	Date - may be used instead of OPERATING DAY.
DayTypeRef	1:1	DayTypeRef	Reference to DAY TYPE assigned by this DAY TYPE ASSIGNMENT.

### 9.7.3 Example

See 9.5.4 Example

## 10 TimetableFrame

(NeTEx-2, 7.1.1.1.3)

*A set of timetable data (VEHICLE JOURNEYS, etc.) to which the same VALIDITY CONDITIONS have been assigned.*

*The elements of the JOURNEY & JOURNEY TIMES model can be grouped with a TIMETABLE FRAME which holds a coherent set of timetable related elements for data exchange (see VERSION FRAME in the NeTEx Framework section for general concepts relating to version frames).*

*The primary component exchanged by a TIMETABLE FRAME is a SERVICE JOURNEY, which describes an individual journey. This and other components of a TIMETABLE FRAME are described in detail in the following sections.*

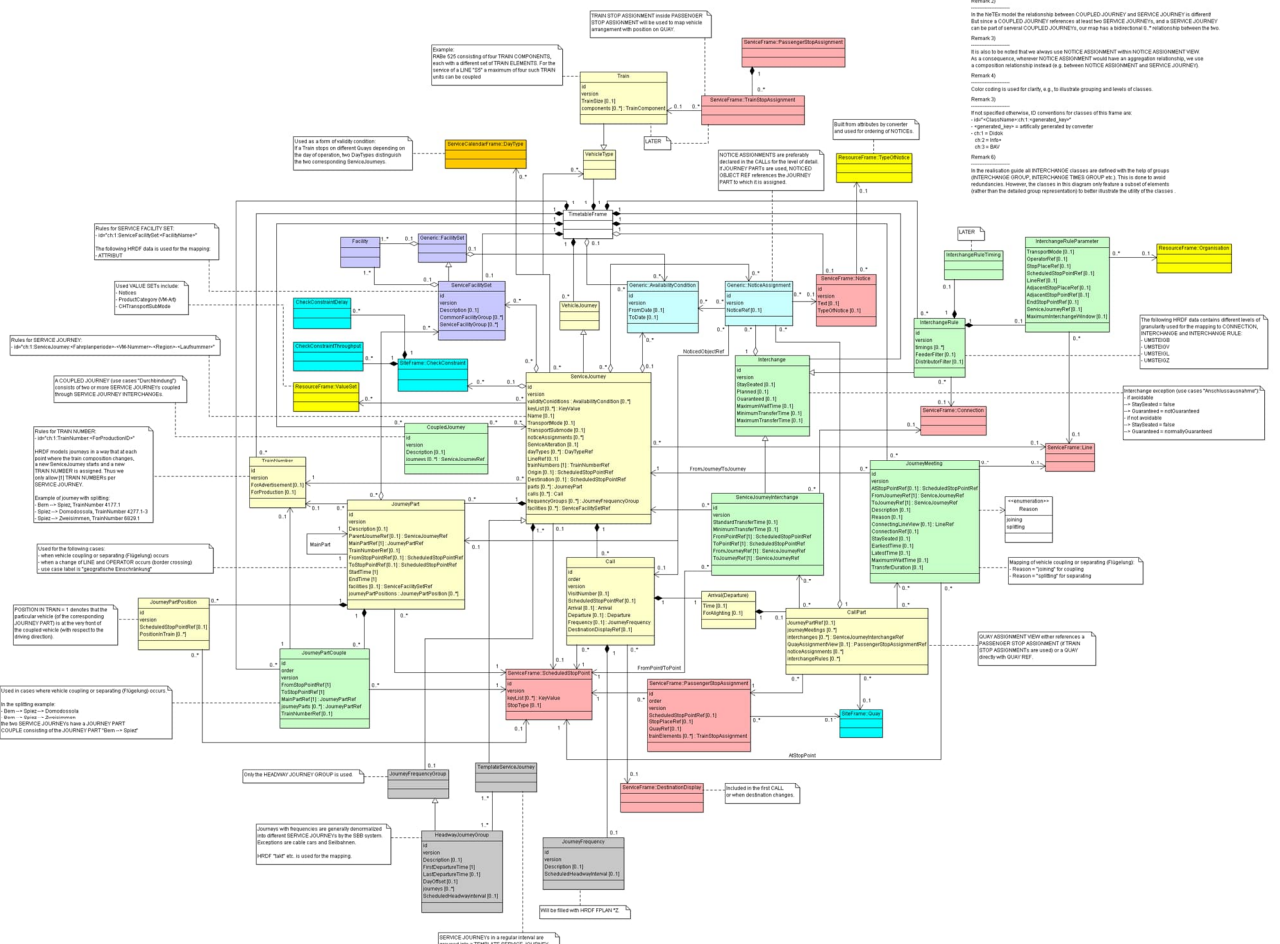
*The TIMETABLE FRAME comprises among other classes:*

- *SERVICE JOURNEY: models the properties of journeys that carry passengers.*
- *CALLs or PASSING TIMEs: describe the times of vehicles at points in their journey.*
- *INTERCHANGEs and INTERCHANGE RULEs: describe interchanges between journeys.*
- *JOURNEY MEETINGs and COUPLED JOURNEYs: describe multipart journeys which join and split.*
- *SERVICE FACILITIES: describe the various services and facilities offered by the vehicles of a journey.*

See the following class diagram for the most important objects of the TIMETABLE FRAME and their relationships to the other frames.



TimetableFrame



10.1.1 Business Requirements

10.1.2 Structure

Element	Usage	Structure	Description
Attribute: <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		VersionFrame	TIMETABLE FRAME inherits from VERSION FRAME.
vehicleJourneys	0:*	Journey	VEHICLE JOURNEYS & SERVICE JOURNEYS s in the frame.  Contains the ServiceJourneys and TemplateServiceJourneys
trainNumbers	0:*	TrainNumber	TRAIN NUMBERS in frame
serviceFacilitySets	0:*	ServiceFacilitySet	SERVICE FACILITY SETs in the frame.
typesOfService	0:*	TypeOfService	TYPEs OF SERVICE in the frame.
JourneyMeeting	0:*	JourneyMeeting	JourneyMeeting in the Frame.

interchangeRules	0:*	InterchangeRule	INTERCHANGE RULEs in the frame.
------------------	-----	-----------------	---------------------------------

### 10.1.3 Example

```

<TimetableFrame id="ch:1:TimetableFrame:j23" version="any">
  <vehicleJourneys>
    <!-- content of vehicleJourneys -- >
  </vehicleJourneys>
  <trainNumbers>
    <!-- content of trainNumbes -- >
  </trainNumbers>
  <serviceFacilitySets>
    <!-- content of serviceFacilitySets -- >
  </serviceFacilitySets>
  <typesOfService>
    <!-- content of TypesOfService -- >
  </typesOfService>
  <journeyMeetings>
    <!-- content of JourneyMeetings -- >
  </journeyMeetings>
  <interchangeRules>
    <!-- content of interchangeRules -- >
  </interchangeRules>
</TimetableFrame>

```

## 10.2 VehicleJourney

(NeTeX-2, 7.2.1)

We use the VehicleJourney as a container for the ServiceJourney and TemplateServiceJourney.

The ServiceJourney is used for common Journey

The TemplateServiceJourney is only to use, for which a frequency is specified.

In Switzerland a (TEMPLATE) SERVICE JOURNEY is always mapped with exactly one TRAIN NUMBER because it is the basic model für all types of transport.

### 10.2.1 Business Requirements

### 10.2.2 Structure

Element	Usage	Structure	Description
		Journey	VEHICLE JOURNEY inherits from JOURNEY
ServiceJourney	0:*	ServiceJourney	
TemplateServiceJourney	0:*	TemplateServiceJourney	

## 10.3 ServiceJourney

(NeTEx-2, 7.2.2.1)

A *SERVICE JOURNEY* is a *VEHICLE JOURNEY* on which passengers will be allowed to board or alight from vehicles at stops. It describes the service between an origin and a destination, as advertised to the public.

### 10.3.1 Business Requirements

The public transport services are operated in a classical way, along which passengers may board or alight at fixed stop points, paying fares according to the fare system in use.

### 10.3.2 Structure

Element	Usage	Structure	Description
Attribute: <ul style="list-style-type: none"> <li>id</li> <li>version</li> <li>responsibilitySetRef</li> </ul>		Journey	SERVICE JOURNEY inherits from JOURNEY. It includes elements from VEHICLE JOURNEY.
validityConditions	0:*	AvailabilityConditionRef  See 10.3.3 Substructure	A specific type of VALIDITY CONDITION used to specify a set of temporal conditions that can be associated with the SERVICE JOURNEY, for example that the corresponding journey only applies on particular days of a period (indicated by ValidDayBits "Verkehrstagebitfeld").
keyList	0:1	KeyValue  See 10.3.3 Substructure	KEY LIST with the KEY VALUES belonging to the SERVICE JOURNEY. Will contain the SJYID.
PrivateCode	0:1	PrivateCodeType	Private code of SERVICE JOURNEY.
TransportMode	0:1	VehicleModeEnumeration	Transport MODE of JOURNEY
TypeOfProductCategoryRef Attribute: <ul style="list-style-type: none"> <li>ref</li> <li>version</li> </ul>	0:1	TypeOfProductCategoryRef	PRODUCT CATEGORY of a JOURNEY.
TypeOfServiceRef Attribute: <ul style="list-style-type: none"> <li>ref</li> <li>version</li> </ul>	0:1	TypeOfServiceRef	TYPE OF SERVICE of JOURNEY.
noticeAssignments	0:*	NoticeAssignment  See 10.3.3 Substructure	NOTICE ASSIGNMENTS that apply to JOURNEY.

ServiceAlteration	0:1	ServiceAlterationEnum	Status to journey - planned, cancelled, extraJourney  Only the value planned is allowed
DepartureTime	0:1	xsd:time	Time of departure.  DepartureTime from first Call
DepartureDayOffset	0:1	DayOffsetType	Day offset if day of departure time of VEHICLE JOURNEY differs from the current OPERATING DAY.
LineRef Attribute: <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	0:1	LineRefStructure	Reference to a LINE or more detailed LINE VIEW.
DirectionType	1:1	DirectionTypeEnum	A fixed value e.g. 'Outbound', 'Inbound', 'Clockwise', associated with this direction.  Allowed Values from DirectionTypeEnum: <ul style="list-style-type: none"> <li>• outbound</li> <li>• inbound</li> </ul>
trainNumbers	1:1	TrainNumberRefStructure  <i>See 10.3.3 Substructure</i>	Reference to the TRAIN NUMBER of the SERVICE JOURNEY.  We strictly map one TRAIN NUMBER per SERVICE JOURNEY.
Destination	0:1	JourneyEndpoint  <i>See 10.3.3 Substructure</i>	Destination of SERVICE JOURNEY.
calls	0:*	Call  <i>See 10.5 Call</i>	CALLs made by SERVICE JOURNEY.
Extensions	0:*	ExtensionStructure  <i>See 10.3.3 Substructure</i>	Used for Facility changes.

### 10.3.3 Substructure

#### ValidityConditions

Element	Usage	Structure	Description
AvailabilityCondition-Ref Attribute: <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	1:*	AvailabilityCondition-Ref	Reference to AvailabilityCondition

#### KeyList

Element	Usage	Structure	Description
KEY LIST with the KEY VALUES related to the ServiceJourney.			
KeyValue	0:*	KeyValue	

#### KeyValue

Element	Usage	Structure	Description
Key	1:1	String	Key : SJYID
Value	1:1	String	BusinessValue : SJYID

#### Extensions

Element	Usage	Structure	Description
facilities	1:1	Facility	See 10.13 ServiceFacilitySet

#### Facilities

Element	Usage	Structure	Description
Facility	1:*		See 10.13 ServiceFacilitySet

#### Facility

Element	Usage	Structure	Description
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 Substructure Section ValidityConditions	
ServiceFacilitySetRef	1:1	ServiceFacilitySetRef	See 10.13 ServiceFacilitySet

#### ServiceFacilitySetRef

Element	Usage	Structure	Description
ServiceFacilitySetRef Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	1:*	ServiceFacilitySet	See 10.13 ServiceFacilitySet

### TrainNumberRef

Element	Usage	Structure	Description
TrainNumberRef Attribute <ul style="list-style-type: none"><li>• ref</li><li>• version</li></ul>	1:1	TrainNumberRef	See 10.11 <i>TrainNumber</i>

### NoticeAssignment

Element	Usage	Structure	Description
NoticeAssignment Attribute <ul style="list-style-type: none"><li>• ref</li><li>• version</li><li>• order</li></ul>	0:*	NoticeAssignment	See 8.9 <i>Notice</i>
validityConditions	0:1	AvailabilityCondition- Ref  See 10.3.3 <i>Substruc- ture</i> Section <i>ValidityCon- ditions</i>	
NoticeRef	0:1	NoticeRef	

### NoticeRef

Element	Usage	Structure	Description
NoticeRef Attribute <ul style="list-style-type: none"><li>• ref</li><li>• version</li></ul>	0:1	NoticeRef	See 8.9 <i>Notice</i>

### Destination

Element	Usage	Structure	Description
ScheduledStop- PointRef  Attribute <ul style="list-style-type: none"><li>• ref</li><li>• version</li></ul>	0:1	ScheduledStop- PointRef	See 8.5 <i>ScheduledStopPoint</i>
DestinationDis- playRef  Attribute <ul style="list-style-type: none"><li>• ref</li></ul> version	0:1	DestinationDis- playRef	See 8.4 <i>DestinationDisplay</i>

### 10.3.1 Example

```
<ServiceJourney id="ch:1:ServiceJourney:ch:1:sjyid:100001:71707-003_1"
version="any" responsibilitySetRef="ch:1:ResponsibilitySet:SBB_11_SBB">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:c2" ver-
sion="any" />
  </validityConditions>
  <Extensions>
    <facilities>
      <Facility id="ch:1:facility:f1" version="any" order="1">
        <validityConditions>
          <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:c3"
version="any" />
        </validityConditions>
        <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:A__1" ver-
sion="any" />
      </Facility>
    </facilities>
  </Extensions>
  <keyList>
    <KeyValue>
      <Key>SJYID</Key>
      <Value>ch:1:sjyid:100001:71707-003</Value>
    </KeyValue>
  </keyList>
  <PrivateCode>1</PrivateCode>
  <TransportMode>rail</TransportMode>
  <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:IR" ver-
sion="any" />
  <TypeOfServiceRef ref="ch:1:TypeOfService:1" version="any" />
  <noticeAssignments>
    <NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJour-
ney_ch_1_sjyid_100001_71707-003_1_0" version="any" order="1">
      <validityConditions>
        <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:c3"
version="any" />
      </validityConditions>
      <NoticeRef ref="ch:1:Notice:A__1" version="any" />
    </NoticeAssignment>
    <NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJour-
ney_ch_1_sjyid_100001_71707-003_1_0" version="any" order="2">
      <NoticeRef ref="ch:1:Notice:I_00d" version="any" />
    </NoticeAssignment>
  </noticeAssignments>
  <ServiceAlteration>planned</ServiceAlteration>
  <DepartureTime>06:21:00</DepartureTime>
  <LineRef ref="ch:2:Line:11.IR.90" version="any" />
  <DirectionType>inbound</DirectionType>
  <trainNumbers>
    <TrainNumberRef ref="ch:1:TrainNumber:71707" version="any" />
  </trainNumbers>
  <calls>
    <Call id="ch:1:Call:ch:1:ServiceJourney:ch:1:sjyid:100001:71707-
003_1_1" version="any" order="1">
      <!--contents of Call>
    </Call>
    <Call id="ch:1:Call:ch:1:ServiceJourney:ch:1:sjyid:100001:71707-
003_1_2" version="any" order="2">
```

```

    <!--contents of Call>
  </Call>
  ...
  <Call id="ch:1:Call:ch:1:ServiceJourney:ch:1:sjyid:100001:71707-
003_1_8" version="any" order="8">
    <!--contents of Call>
  </Call>
</calls>
</ServiceJourney>

```

## 10.4 TemplateServiceJourney

(NeTEx-2, 7.2.2.1)

A *TEMPLATE SERVICE JOURNEY* is a *VEHICLE JOURNEY* on which passengers will be allowed to board or alight from vehicles at stops. It describes the service between an origin and a destination, as advertised to the public. This Model is only to use, wenn a frequency hat been specified for the *JOURNEY*.

### 10.4.1 Business Requirements

A *TEMPLATE SERVICE JOURNEY* is always defined with a Frequency.

### 10.4.2 Structure

Element	Usage	Structure	Description
Attribute: <ul style="list-style-type: none"> <li>id</li> <li>version</li> <li>responsibilitySetRef</li> </ul>		Journey	<i>SERVICE JOURNEY</i> inherits from <i>JOURNEY</i> . It includes elements from <i>VEHICLE JOURNEY</i> .
validityConditions	0:*	AvailabilityCondition-Ref  See 10.3.3 Substructure	A specific type of <i>VALIDITY CONDITION</i> used to specify a set of temporal conditions that can be associated with the <i>SERVICE JOURNEY</i> , for example that the corresponding journey only applies on particular days of a period (indicated by ValidDay-Bits "Verkehrstagesbitfeld").
keyList	0:1	KeyValue  See 10.3.3 Substructure	<i>KEY LIST</i> with the <i>KEY VALUES</i> belonging to the <i>SERVICE JOURNEY</i> . Will contain the <i>SJYID</i> .
PrivateCode	0:1	PrivateCodeType	Private code of <i>SERVICE JOURNEY</i> .
TransportMode	0:1	VehicleModeEnumeration	Transport <i>MODE</i> of <i>JOURNEY</i>



TypeOfProductCategoryRef Attribute: <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	0:1	TypeOfProductCategoryRef	PRODUCT CATEGORY of a JOURNEY.
TypeOfServiceRef Attribute: <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	0:1	TypeOfServiceRef	TYPE OF SERVICE of JOURNEY.
noticeAssignments	0:*	NoticeAssignment  See 10.3.3 Substructure	NOTICE ASSIGNMENTS that apply to JOURNEY.
ServiceAlteration	0:1	ServiceAlterationEnum	Status to journey - planned, cancelled, extraJourney  Only the value planned is allowed
DepartureTime	0:1	xsd:time	Time of departure.  DepartureTime from first Call
DepartureDayOffset	0:1	DayOffsetType	Day offset if day of departure time of VEHICLE JOURNEY differs from the current OPERATING DAY.
LineRef Attribute: <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	0:1	LineRefStructure	Reference to a LINE or more detailed LINE VIEW.
DirectionType	1:1	DirectionTypeEnum	A fixed value e.g. 'Outbound', 'Inbound', 'Clockwise', associated with this direction.  Allowed Values from DirectionTypeEnum: <ul style="list-style-type: none"> <li>• outbound</li> <li>• inbound</li> </ul>
trainNumbers	1:1	TrainNumberRefStructure  See 10.3.3 Substructure	Reference to the TRAIN NUMBER of the SERVICE JOURNEY.  We strictly map one TRAIN NUMBER per SERVICE JOURNEY.
Destination	0:1	JourneyEndpoint  See 10.3.3 Substructure	Destination of SERVICE JOURNEY.

calls	0:*	Call See 10.5 Call	CALLs made by SERVICE JOURNEY.
Extensions	0:*	ExtensionStructure See 10.3.3 Substructure	Used for Facility changes.
frequencyGroups	1:1	JourneyFrequencyGroup See 10.10 HeadwayJourneyGroup	FREQUENCY GROUP of VEHICLE JOURNEY.  We strictly map one JOURNEY-FREQUENCY per SERVICE JOURNEY.

### 10.4.3 Example

```

<TemplateServiceJourney id="ch:1:ServiceJourney:93005Y-LRR-37-1-54900:tsi00" version="any" responsibilitySetRef="ch:1:ResponsibilitySet:LRR_276_LRR">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:tsi00" version="any" />
  </validityConditions>
  <keyList>
    <KeyValue>
      <Key>SJYID</Key>
      <Value>ch:1:sjyid:100001:71707-001</Value>
    </KeyValue>
  </keyList>
  <PrivateCode>37</PrivateCode>
  <TransportMode>cableway</TransportMode>
  <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:GB" version="any" />
  <TypeOfServiceRef ref="ch:1:TypeOfService:1" version="any" />
  <DepartureTime>15:15:00</DepartureTime>
  <LineRef ref="ch:2:Line:276.GB.NoLine398" version="any" />
  <trainNumbers>
    <!-- content of trainNumbers -- >
  </trainNumbers>
  <Destination>
    <!-- content of Destination -- >
  </Destination>
  <calls>
    <!-- content of calls -- >
  </calls>
  <frequencyGroups>
    <HeadwayJourneyGroup id="ch:1:HeadwayJourneyGroup:443" version="any">
      <Name>443</Name>
      <FirstDepartureTime>15:15:00</FirstDepartureTime>
    </HeadwayJourneyGroup>
  </frequencyGroups>

```

```

<FirstDayOffset>54900</FirstDayOffset>
<LastDepartureTime>18:15:00</LastDepartureTime>
<LastDayOffset>65700</LastDayOffset>
<ScheduledHeadwayInterval>PT1M</ScheduledHeadwayInterval>
<HeadwayDisplay>DisplayPassingTimesOnly</HeadwayDisplay>
</HeadwayJourneyGroup>
</frequencyGroups>
</TemplateServiceJourney>

```

## 10.5 Call

(NeTex-2, 7.2.14)

A visit to a SCHEDULED STOP POINT (or other POINT IN JOURNEY PATTERN) as part of a SERVICE JOURNEY. The CALL is a view that brings together data relating to the individual visit. Ordered collections of CALLs may be included in SERVICE JOURNEYS exchanged with NeTex.

The use of a CALL simplifies the manipulation of data for passenger information delivery. The concept of a CALL is shared with SIRI.

### 10.5.1 Business Requirements

For StopPoints where no passenger boarding takes place but only, for example, a JourneyInterchange or JourneyMeeting (“Saglians” is such an example), we use STOP USE = “InterchangeOnly” in the CALL referencing the StopPoint in question.

### 10.5.2 Structure

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"> <li>id</li> <li>order</li> <li>version</li> </ul>		VersionedChild	CALL inherits from VERSIONED CHILD
Extensions	0:1	ExtensionStructure	Used for Facility changes.
VisitNumber	0:1	xsd:positiveInteger	Repeat count of visit to the same stop with the journey. Default is 1. Will be higher for routes that visit the same stop twice.
ScheduledStop-PointRef Attribute: <ul style="list-style-type: none"> <li>ref</li> <li>version</li> </ul>	0:1	ScheduledStop-PointRefStructure	Reference to the SCHEDULED STOP POINT visited by CALL. May include derived data.  SKI always uses a ScheduledStopPointRef here.
Arrival	0:1	Arrival  See 10.6 Arrival	Arrival part of CALL.
Departure	0:1	Departure  See 10.7 Departure	Departure part of CALL.

noticeAssignments	0:*	NoticeAssignment  See <i>10.5.3 Sub-structure</i>	NOTICE ASSIGNMENTS that apply to JOURNEY.
DestinationDisplayRef Attribute: <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	0:1	DestinationDisplayRefStructure	DESTINATION DISPLAY associated with the CALL. To be used from this point onwards.  We will always have a DestinationDisplayRef (all DestinationDisplays are stored in the ServiceFrame). The first call has the information and if the Destination changes a new value must be provided. Otherwise it is “copied” from the one before.
RequestStop	0:1	xsd:boolean	Whether the stop is a Request Stop.
StopUse	0:1	StopUseEnum	Activity at stop. Used for special StopPoints like “Saglians” in which case the vehicle only stops for a vehicle interchange and no passenger boarding.  Allowed values <ul style="list-style-type: none"> <li>• access- alighting and boarding allowed.</li> <li>• interchangeOnly - only interchanging allowed</li> <li>• passthrough - does not halt at stop.</li> <li>• Noboarding - halts at stop but no access.</li> </ul>

### 10.5.3 Substructure

#### Extensions

Element	Usage	Structure	Description
facilities	1:1	Facility	See <i>10.13 ServiceFacilitySet</i>

#### Facilities

Element	Usage	Structure	Description
Facility	1:*		See <i>10.13 ServiceFacilitySet</i>

#### Facility

Element	Usage	Structure	Description
validityConditions	0:1	AvailabilityCondition-Ref	

		See 10.3.3 Substructure Section ValidityConditions	
ServiceFacilitySetRef	1:1	ServiceFacilitySetRef	See 10.13 ServiceFacilitySet

### ServiceFacilitySetRef

Element	Usage	Structure	Description
ServiceFacilitySetRef Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	1:*	ServiceFacilitySet	See 10.13 ServiceFacilitySet

### NoticeAssignment

Element	Usage	Structure	Description
NoticeAssignment Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> <li>• order</li> </ul>	0:*	NoticeAssignment	See 8.9 Notice
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 Substructure Section ValidityConditions	
NoticeRef	0:1	NoticeRef	

### NoticeRef

Element	Usage	Structure	Description
NoticeRef Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	0:1	NoticeRef	See 8.9 Notice

### 10.5.4 Example

```
<Call id="ch:1:Call:ch:1:ServiceJourney:ch:1:sjyid:10001:71707-003_1_3"
version="any" order="3">
  <Extensions>
    <facilities>
      <Facility id="ch:1:facility:f1" version="any" order="1">
        <validityConditions>
```

```

        <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:c3"
version="any" />
    </validityConditions>
    <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:A__R" ver-
sion="any" />
</Facility>
    <Facility id="ch:1:facility:f2" version="any" order="1">
    <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:A__VR" ver-
sion="any" />
    </Facility>
</facilities>
</Extensions>
<ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501300-0-Gen" ver-
sion="any" />
<Arrival>
    <Time>06:41:00</Time>
    <ForAlighting>true</ForAlighting>
    <IsFlexible>false</IsFlexible>
    <CheckConstraint id="ch:1:CheckConstraint:2" version="any" order="1">
    <delays id="ch:1:delays:1">
    <CheckConstraintDelay id="ch:1:CheckConstraintDelay:1" ver-
sion="any" order="1">
    <MinimumLikelyDelay>PT3M</MinimumLikelyDelay>
    </CheckConstraintDelay>
    </delays>
    </CheckConstraint>
</Arrival>
<Departure>
    <Time>06:43:00</Time>
    <ForBoarding>true</ForBoarding>
    <IsFlexible>false</IsFlexible>
    <DynamicStopAssignment id="ch:1:DynamicStopAssignment:1" ver-
sion="any" order="1">
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501300-0-
2"/>
    </DynamicStopAssignment>
    <CheckConstraint id="ch:1:CheckConstraint:4" version="any" order="3">
    <delays id="ch:1:delays:2">
    <CheckConstraintDelay id="ch:1:CheckConstraintDelay:2" ver-
sion="any" order="2">
    <MinimumLikelyDelay>PT3M</MinimumLikelyDelay>
    </CheckConstraintDelay>
    </delays>
    </CheckConstraint>
</Departure>
<noticeAssignments>
    <NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJour-
ney_ch_1_sjyid_100001_71707-003_1_3" version="any" order="1">
    <NoticeRef ref="ch:1:Notice:I_02i" version="any" />
    </NoticeAssignment>
    <NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJour-
ney_ch_1_sjyid_100001_71707-003_1_3" version="any" order="2">
    <NoticeRef ref="ch:1:Notice:A__2" version="any" />
    </NoticeAssignment>
    <NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJour-
ney_ch_1_sjyid_100001_71707-003_1_3" version="any" order="3">
    <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:c3"
version="any" />

```

```

</validityConditions>
<NoticeRef ref="ch:1:Notice:A_AT" version="any" />
</NoticeAssignment>
<NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJourney_ch_1_sjyid_100001_71707-003_1_3" version="any" order="4">
  <NoticeRef ref="ch:1:Notice:I_0bv" version="any" />
</NoticeAssignment>
</noticeAssignments>
<RequestStop>false</RequestStop>
<StopUse>access</StopUse>
</Call>

```

## 10.6 Arrival

(NeTeX-2, 7.2.14.3)

The ARRIVAL of a SERVICE JOURNEY to make a CALL at a SCHEDULED STOP POINT.

### 10.6.1 Business Requirements

-

### 10.6.2 Structure

Element	Usage	Structure	Description
Time	1:1	xsd:time	Latest Time of Arrival.
DayOffset	0:1	xsd:integer	Day offset from SERVICE JOURNEY start day. 0 = Same day. Element can be omitted when its value is equals zero.
ForAlighting	1:1	xsd:boolean	Whether alighting is allowed for CALL.
IsFlexible	1:1	xsd:boolean	Whether use of stop is flexible.  Whether use of stop is flexible, i.e. requires phoning to arrange. Must be a FLEXIBLE LINE. Default is false.
CheckConstraint	0:1	CheckConstraintStructure	Characteristics of the CALL representing a process, such as check-in, security screening, ticket control or immigration, that may potentially incur a time penalty that should be allowed for when journey planning. Used to mark PATH LINKs to determine transit routes through interchanges.

### 10.6.3 Example

See 10.5.3 Substructure

### Extensions

Element	Usage	Structure	Description
facilities	1:1	Facility	See 10.13 ServiceFacilitySet

### Facilities

Element	Usage	Structure	Description
Facility	1:*		See 10.13 ServiceFacilitySet

### Facility

Element	Usage	Structure	Description
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 Substructure Section ValidityConditions	
ServiceFacilitySetRef	1:1	ServiceFacilitySetRef	See 10.13 ServiceFacilitySet

### ServiceFacilitySetRef

Element	Usage	Structure	Description
ServiceFacilitySetRef Attribute <ul style="list-style-type: none"><li>ref</li><li>version</li></ul>	1:*	ServiceFacilitySet	See 10.13 ServiceFacilitySet

### NoticeAssignment

Element	Usage	Structure	Description
NoticeAssignment Attribute <ul style="list-style-type: none"><li>ref</li><li>version</li><li>order</li></ul>	0:*	NoticeAssignment	See 8.9 Notice
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 Substructure Section ValidityConditions	
NoticeRef	0:1	NoticeRef	

### NoticeRef

Element	Usage	Structure	Description
NoticeRef	0:1	NoticeRef	See 8.9 Notice



Attribute			
<ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>			

Example

## 10.7 Departure

(NeTEx-2, 7.2.14.4)

The *DEPARTURE* of a *SERVICE JOURNEY* from making a *CALL* at a *SCHEDULED STOP POINT*.

### 10.7.1 Business Requirements

-

### 10.7.2 Structure

Element	Usage	Structure	Description
Time	1:1	xsd:time	Earliest time of departure.
DayOffset	0:1	xsd:integer	Day offset from <i>SERVICE JOURNEY</i> start day. 0 = Same day. Element can be omitted when its value is equals zero.  It is possible that a journey already starts with an offset > 0.
ForBoarding	1:1	xsd:boolean	Whether boarding is allowed for <i>CALL</i> .
IsFlexible	1:1	xsd:boolean	Whether use of stop is flexible.  Whether use of stop is flexible, i.e. requires phoning to arrange. Must be a <i>FLEXIBLE LINE</i> . Default is false.
DynamicStopAssignment	0:1		This Element is present, wenn the departure Quay is different from the arrival Quay.  Common elements, e.g. <i>CheckConstraint</i>
CheckConstraint	0:1	CheckConstraintStructure	Characteristics of the <i>CALL</i> representing a process, such as check-in, security screening, ticket control or immigration, that may potentially incur a time penalty that should be allowed for when journey planning. Used to mark <i>PATH LINKs</i> to determine

			transit routes through interchanges.
--	--	--	--------------------------------------

### 10.7.3 Example

See 10.5.4 *Substructure*

#### Extensions

Element	Usage	Structure	Description
facilities	1:1	Facility	See 10.13 <i>ServiceFacilitySet</i>

#### Facilities

Element	Usage	Structure	Description
Facility	1:*		See 10.13 <i>ServiceFacilitySet</i>

#### Facility

Element	Usage	Structure	Description
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 <i>Substructure</i> Section ValidityConditions	
ServiceFacilitySetRef	1:1	ServiceFacilitySetRef	See 10.13 <i>ServiceFacilitySet</i>

#### ServiceFacilitySetRef

Element	Usage	Structure	Description
ServiceFacilitySetRef Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	1:*	ServiceFacilitySet	See 10.13 <i>ServiceFacilitySet</i>

#### NoticeAssignment

Element	Usage	Structure	Description
NoticeAssignment Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> <li>• order</li> </ul>	0:*	NoticeAssignment	See 8.9 <i>Notice</i>
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 <i>Substructure</i>	

		Section ValidityCon- ditions	
NoticeRef	0:1	NoticeRef	

### NoticeRef

Element	Usage	Structure	Description
NoticeRef Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	0:1	NoticeRef	See 8.9 Notice

Example

## 10.8 CheckConstraint

(NeTEx-1, 8.5.11)

*There may be points in the STOP PLACE that incur delays either always or at certain times of day – for example, pass through a ticket barrier or security check. NeTEx allows one or more CHECK CONSTRAINTs to be associated with STOP PLACE COMPONENTs and JOURNEYs, each specifying a process type and a delay. There may be different CHECK CONSTRAINT DELAYs for different times of day.*

### 10.8.1 Business Requirements

CheckConstraints can be used for different purposes. E.g. in case of with TGV it is mandatory to be at the quay a given amount before the departure. This can be modeled with CheckConstraint. Also if due to the topology some quays have different necessary times to be used for an connection

### 10.8.2 Structure

Element	Usage	Structure	Description
Attributes <ul style="list-style-type: none"> <li>• id</li> <li>• order</li> <li>• version</li> </ul>		DataManagedObject	CHECK CONSTRAINT inherits from DATA MANAGED OBJECT
delays	0:*	CheckCon- straintDelay	Durations needed to pass through CHECK CONSTRAINT.

### 10.8.3 Example

See 10.5.3 Substructure

### Extensions

Element	Usage	Structure	Description
facilities	1:1	Facility	See 10.13 <i>ServiceFacilitySet</i>

### Facilities

Element	Usage	Structure	Description
Facility	1:*		See 10.13 <i>ServiceFacilitySet</i>

### Facility

Element	Usage	Structure	Description
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 <i>Substructure</i> Section <i>ValidityConditions</i>	
ServiceFacilitySetRef	1:1	ServiceFacilitySetRef	See 10.13 <i>ServiceFacilitySet</i>

### ServiceFacilitySetRef

Element	Usage	Structure	Description
ServiceFacilitySetRef Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>	1:*	ServiceFacilitySet	See 10.13 <i>ServiceFacilitySet</i>

### NoticeAssignment

Element	Usage	Structure	Description
NoticeAssignment Attribute <ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> <li>• order</li> </ul>	0:*	NoticeAssignment	See 8.9 <i>Notice</i>
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 <i>Substructure</i> Section <i>ValidityConditions</i>	
NoticeRef	0:1	NoticeRef	

### NoticeRef

Element	Usage	Structure	Description
NoticeRef Attribute	0:1	NoticeRef	See 8.9 <i>Notice</i>

<ul style="list-style-type: none"> <li>• ref</li> <li>• version</li> </ul>			
--	--	--	--

Example

## 10.9 CheckConstraintDelay

(NeTEx-1, 8.5.11.2.3)

*Time penalty associated with a CHECK CONSTRAINT*

### 10.9.1 Business Requirement

-

### 10.9.2 Structure

Element	Usage	Structure	Description
Attributes <ul style="list-style-type: none"> <li>• id</li> <li>• version</li> <li>• order</li> </ul>		VersionedChild	CHECK CONSTRAINT DELAY inherits from versioned child
MinimumLikelyDelay	0:1	xsd:duration	Minimum expected duration of delay of CHECK CONSTRAINT DELAY.

### 10.9.3 Example

See 10.5.4 Example

## 10.10 HeadwayJourneyGroup

(NeTEx-2, 7.2.6.5.2)

*A group of VEHICLE JOURNEYS following the same JOURNEY PATTERN and having the same headway.interval between a specified start and end time (for example, 'every 10 minutes'). This is especially useful for presenting passenger information.*

### 10.10.1 Business Requirements

JOURNEY FREQUENCY GROUP is not used directly. Instead we use the HEADWAY JOURNEY GROUP which inherits from JOURNEY FREQUENCY GROUP.

A ServiceJourney which is serviced at a given frequency is defined as a TemplateServiceJourney (see example below). Such a TemplateServiceJourney has the same elements as a regular ServiceJourney, but also defines a single HeadwayJourneyGroups. This Group holds all the frequency-based information of the journey, as for example when the Calls of the journey are serviced the first/last time and in what interval (or with what frequency respectively).

### 10.10.1 Structure

Element	Usage	Structure	Description
frequencyGroups		-structure	
Attributes: <ul style="list-style-type: none"> <li>id</li> <li>version</li> </ul>		JourneyFrequencyGroup	HEADWAY JOURNEY GROUP inherits from JOURNEY FREQUENCY GROUP.
Name	0:1	xsd:MultilingualString	Name of the FREQUENCY GROUP.
FirstDepartureTime	1:1	xsd:time	Time of first departure in FREQUENCY GROUP.
LastDepartureTime	1:1	xsd:time	Time of last departure in FREQUENCY GROUP.
FirstDayOffset	0:1	xsd:integer	Offset of end time day from start time.
LastDayOffset	0:1	xsd:integer	Offset of end time day from Destination time.
ScheduledHeadwayInterval	1:1	xsd:duration	Scheduled HEADWAY INTERVAL
HeadwayDisplay	0:1	HeadwayUseEnum	How headway is to be displayed to passengers.  Allowed Values <ul style="list-style-type: none"> <li>displayInsteadOfPassingTimes</li> <li>displayAsWellAsPassingTimes</li> <li>displayPassingTimesOnly</li> </ul> We only export displayPassingTimesOnly.

### 10.10.1 Example

Example on how to construct a frequency based TemplateServiceJourney with a HeadwayJourneyGroup:

```

<TemplateServiceJourney version="any" id="hde:tvjh_24o_01">
  ...
  <calls>
    ...
  </calls>
  <frequencyGroups>
    <HeadwayJourneyGroup version="any" id="hde:hjg_24o_01">
      <Name>Regular Interval service between 10am and 12:00
      pm</Name>
      <FirstDepartureTime>10:00:00</FirstDepartureTime>
      <LastDepartureTime>12:00:00</LastDepartureTime>
      <ScheduledHeadwayInterval>PT12M</ScheduledHeadwayInterval>
      <HeadwayDisplay>DisplayInsteadOfPassingTimes</HeadwayDisplay>
    </HeadwayJourneyGroup>
  </frequencyGroups>
</TemplateServiceJourney>

```

## 10.11 TrainNumber

(NeTEx- 2, 7.2.1.3.7)

Specification of codes assigned to particular VEHICLE JOURNEYS when operated by TRAINs of COMPOUND TRAINs according to a functional purpose (passenger information, operation follow-up, etc.).

### 10.11.1 Business Requirements

The train numbers are currently a maximum of 6 digits long.

ServiceJourneys can in principle have multiple different TrainNumbers whereas a Journey-Part can only reference a single one. In Switzerland there is no difference between the Advertisement und Production Trainnumber.

### 10.11.2 Structure

Element	Usage	Structure	Description
Attributes: <ul style="list-style-type: none"><li>• id</li><li>• version</li></ul>	1:1	TrainNumberIdType	Identifier of TRAIN NUMBER
ForAvertisement	0:1	xsd.normalizedString	TRAIN NUMBER to use for advertisement to public if different from ID.
ForProduction	0:1	xsd.normalizedString	TRAIN NUMBER to use for production purposes, for instance towards technical systems that require an odd or even value according to safety regulations, if different from ID.
Description	0:1	MultilingualString	Description of TRAIN NUMBER.

### 10.11.3 Example

See 10.3.1 Example

## 10.12 TypeOfService

(NeTEx-2, 7.2.1.2.6)

A classification for VEHICLE JOURNEYS and SPECIAL SERVICES to express some common properties of journeys to be taken into account in the scheduling and/or operations control process.

Not to be confused with TYPE OF SERVICE (FEATURE) of the LOCAL SERVICE and FACILITY model in NeTEx-1 which determines if a LOCAL SERVICE or FACILITY is, for example, a RETAIL SERVICE or TICKETING FACILITY.

### 10.12.1 Business Requirements

TypeOfService indicates the purpose of a ServiceJourney, for example, whether if it is a passenger transport or a garage run-in. The following types are currently used:

TypeOfService	Description
PublicJourney	A public passenger transport
GarageRunOut	A garage run-out
GarageRunIn	A garage run-in
ThroughCoach	A special type of public passenger transport that is used if a ServiceJourney is comprised of JourneyParts of other ServiceJourneys because of coupling.

**Table 2: TypeOfService – Allowed values.**

Only the PublicJourney are to be exchanged.

### 10.12.2 Structure

Element	Usage	Structure	Description
Attribute <ul style="list-style-type: none"> <li>• Id</li> <li>• version</li> </ul>	::>	TypeOfEntity	TYPE OF SERVICE inherits from TYPE OF ENTITY.
Name	0:1	MultilingualString	Name of TypeofService
ShortName	0:1	MultilingualString	ShortName of TypeofService
PrivateCode	0:1	xsd:normal-izedString	PrivateCode of TypeofService

### 10.12.3 Example

```
<typesOfService>
  <TypeOfService id="ch:1:TypeOfService:1" version="any">
    <Name lang="en">PublicJourney</Name>
    <ShortName lang="en">N</ShortName>
    <PrivateCode>1</PrivateCode>
  </TypeOfService>
</typesOfService>
```

## 10.13 ServiceFacilitySet

(NeTEx-1, 7.7.14.3.2)

*Set of ServiceFacilitySet objects available for a ServiceJourney. The set may be available only for a specific VEHICLE TYPE within the SERVICE (e.g. carriage equipped with low floor). ServiceFacilitySets are listed in the TimetableFrame (between trainNumbers and notices). They are referenced in the facilities object of a ServiceJourney. In the following table are listed only the elements we currently use in the example.*

### 10.13.1 Business Requirements

The assignment of facilities to ServiceJourney or JourneyPart is made by using FacilitySet elements. SKI uses the following groups to classify facilities:

- Accommodation facility
- Catering facility
- Fare classes
- Group booking facility
- Luggage carriage facility
- Mobility facility
- Nuisance facility



- Passenger communications facility
- Service reservation facility
- Ticketing facility
- Uic train rate

If necessary, this list can be revised. In case of additions, this can be done, as long as the desired category is defined in the NeTeX specifications. On <https://oev-info.ch> a mapping will be published.

This means that a given Facility (e.g. restaurant or diaper changing table) is shown in the appropriate sub category MealFacilityList or FamilyFacilityList and a passenger information system can show these categories in a reasonable order. The categories themselves are from type "xsd:list", meaning that the values of a category are a separated list of elements.

### 10.13.2 Structure

Element	Usage	Structure	Description
ServiceFacilitySet Attributes: <ul style="list-style-type: none"> <li>• Id</li> <li>• version</li> </ul>		DataManagedObject	SERVICE FACILITY SET inherits from FACILITY SET.
AlternativeTexts	0:*	List of AlternativeText See 10.13.3 Substructure	
Extensions	0:1	ExtensionStructure See Substructure	Extensions of the STOP PLACE. <ul style="list-style-type: none"> <li>• HafasPriority</li> <li>• HafasKMLInfo</li> </ul>
Description Attribute: <ul style="list-style-type: none"> <li>• lang</li> </ul>	0:1	MultilingualString	Description of Service Facility in German
FacilitySetGroup**	0:1		Element from the FACILITY SET GROUP. Multiplicity counts for each element of the Group.

\*\* for each FacilitySetGroup a separate Tag will be defined. It is a value, which is described in the 10.13.1 Business Requirements, e.g. FareClasses

### 10.13.3 Substructure

#### AlternativeText

Element	Usage	Structure	Description
Text Attribute: <ul style="list-style-type: none"> <li>• lang</li> </ul>	0:1	MultilingualString	Description of the FacilitySet in the defined language

#### Extensions

Element	Usage	Structure	Description
KEY LIST with the KEY VALUES related to the FacilitySet			

Priority	0:1	Number	Priority
Condition	0:1	Number	Condition

### 10.13.4 Example

```
<ServiceFacilitySet id="ch:1:ServiceFacilitySet:A___2" version="any">
  <alternativeTexts>
    <AlternativeText attributeName="Description">
      <Text lang="en">2nd class only</Text>
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="fr">Seulement 2e classe</Text>
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="it">Solo 2a classe</Text>
    </AlternativeText>
  </alternativeTexts>
  <Extensions>
    <Priority>1</Priority>
    <Condition>4</Condition>
  </Extensions>
  <Description lang="de">Nur 2. Klasse</Description>
  <FareClasses>secondClass</FareClasses>
</ServiceFacilitySet>
```

### 10.14 NoticeAssignment

(NeTeX-1, 7.7.18)

The NoticeAssignment is used in the ServiceJourney. In this case the notice is valid for the whole journey. If a notice is valid for a part of the ServiceJourney, the assignment is defined in all calls concerned.

#### 10.14.1 Business Requirements

The Notice element is used to transfer general textual information..

The Notice element has no part that is in correspondance with the fields "Ausgabepriorität", "Feinsortierung" in HRDF and " Haltestellenzugehörigkeit". Will be implemented with extensions of these elements.

These HRDF fields have the following intentions:

- Most important notices first
- Suppressing unimportant notices when the output device can not show all
- Grouping the hints in a meaningful way

#### 10.14.2 Structure

Element	Usage	Structure	Description
Attributes: • id • version	::>	Assignment	NOTICE ASSIGNMENT inherits from ASSIGNMENT

• order			
validityConditions	0:1	AvailabilityCondition-Ref  See 10.3.3 Substructure Section ValidityConditions	
NoticeRef	0:1	VersionOfObjectRefStructure	Reference to a Notice element

### 10.14.3 Example

See 10.3.1 Example

## 10.15 JourneyMeeting

(NeTEx-2, 7.2.7.3.5)

A *JOURNEY MEETING* describes the possibility to plan the schedules according to various interchange possibilities:

- *Interchange with another service, of which only the arrival or departure time is known.*
- *More generally, service scheduled according to the time fixed for an external event, which will feed, or be fed by, this service.*
- *Organisation of a meeting (hub) between several services, during a defined time band; this is a simplified specification of several interchanges. If needed this could be described in detail using several INTERCHANGE RULEs or SERVICE JOURNEY INTERCHANGEs.*
- *Specification of a rendez-vous (time and place) for any journey that can meet the appointment.*

*A JOURNEY MEETING may be related to one or several SERVICE JOURNEYS, which are planned according to this JOURNEY MEETING. It may be timed by an earliest time (e.g. the arrival time of a feeder line, plus the duration of a possible transfer) or by a latest time (e.g. the opening hour of the school served by the journey), or both (e.g. the time band of a hub).*

*A JOURNEY MEETING is located at one or several STOP POINTs, which shall be also classified as TIMING POINTs. It is planned in principle for VEHICLE JOURNEYS specified for the same DAY TYPE. The timing reference of these VEHICLE JOURNEYS will probably be chosen according to the JOURNEY MEETING specified.*

*In NeTEx consequences of any DEFAULT INTERCHANGE or JOURNEY MEETING used in the planning phase that needs to be exchanged should be expressed as the resulting SERVICE JOURNEY timings, INTERCHANGE RULEs and/or SERVICE JOURNEY INTERCHANGEs.*

### 10.15.1 BusinessRequirements

InterchangeRules are used to connect different ServiceJourney

### 10.15.2 Structure

Element	Usage	Structure	Description
Attributes: • id • version	::>	JourneyMeeting	JOURNEY MEETING inherits from DATA MANAGED OBJECT.
validityConditions	0:*	AvailabilityCondition-Ref	A specific type of VALIDITY CONDITION used to specify a set of temporal conditions that can be associated with the JOURNEY MEETING, for example that the corresponding connections only apply on particular days of a period (indicated by ValidDayBits "Verkehrstagebitfeld").
AtStopPointRef	1:1	ScheduledStop-PointRef	Reference to SCHEDULED STOP POINT where JOURNEY MEETING takes place.
FromJourneyRef	1:1	VehicleJourneyRef	VEHICLE JOURNEY that feeds JOURNEY MEETING.
ToJourneyRef	1:1	VehicleJourneyRef	VEHICLE JOURNEY that distributes from JOURNEY MEETING.
EarliestTime	0:1	xsd:time	Earliest time for JOURNEY MEETING.
LatestTime	0:1	xsd:time	Latest time for JOURNEY MEETING.
Reason	0:1	ReasonForMeetingEnum	Reason for JOURNEY MEETING.

### 10.15.3 Example

```
<JourneyMeeting id="ch:1:JourneyMeeting:96884-PAG-25-1-63480_96884-PAG-5-1-64320_68918933_68918913_64320_64320" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:1mh00" version="any" />
  </validityConditions>
  <AtStopPointRef ref="ch:1:ScheduledStopPoint:8583440-0-Gen" version="any" />
  <FromJourneyRef ref="ch:1:ServiceJourney:801-54147-1-1_96884_.j23_25" version="any" />
  <ToJourneyRef ref="ch:1:ServiceJourney:801-54150-1-1_96884_.j23_5" version="any" />
  <EarliestTime>17:52:00</EarliestTime>
  <LatestTime>17:52:00</LatestTime>
</JourneyMeeting>
```

## 10.16 InterchangeRule

An *INTERCHANGE RULE* allows an intended interchange to be recorded in the schedule without having to specify the exact details of both *SERVICE JOURNEYS* involved in the interchange.

A *SERVICE JOURNEY INTERCHANGE* involves two different *SERVICE JOURNEYS*. The passenger has the possibility to transfer from a feeder *SERVICE JOURNEY* at a *SCHEDULED STOP.POINT* to a distributor *SERVICE JOURNEY* at the same *SCHEDULED STOP POINT*.

The *INTERCHANGE RULE* specifies criteria that a candidate *SERVICE JOURNEY* shall fulfil to be considered. Examples of such criteria are working on a certain *MODE* or *LINE* in a specific *DIRECTION*.

In the same way it is possible to filter on which *SCHEDULED STOP POINTS* the *INTERCHANGE RULE* applies. The *SCHEDULED STOP POINT* of the feeder and distributor *SERVICE JOURNEY* are defined separately.

### 10.16.1 BusinessRequirements

InterchangeRules are used for different constellations:

For more details see 11.2 Connection Time

### 10.16.2 Structure

Element	Usage	Structure	Description
Attributes: • id • version		DataManagedObject	INTERCHANGE RULE inherits from Data Managed Object
validityConditions	0:1	ValidityCondition	Validity from the InterchangeRule
StaySeated	0:1	xsd:boolean	Inherits from Interchange
Planned	0:1	xsd:boolean	
Guranteed	0:1	xsd:boolean	
MaximumAutomatic-WaitTime	0:1	xsd:duration	Maximum window for holding DISTRIBUTOR will wait.
MinimumTransfer-Time	0:1	xsd:duration	Minimum Time needed for Transfer
MaximumTransfer-Time	0:1	xsd:duration	Maximum Time needed for Transfer
timings	0:1	InterchangeRuleTiming See 10.18.2 Sub-structure	Timings for INTERCHANGE RULE.
FeederFilter	0:1	InterchangeRuleParameter See 10.17.2 Sub-structure	Feeder journey INTERCHANGE RULE FILTER associated with INTERCHANGE RULE.

Distributorfilter	0:1	InterchangeRuleParameter See 10.17.2 Substructure	Distributor journey INTERCHANGE RULE FILTER associated with INTERCHANGE RULE.
-------------------	-----	--	---

### 10.16.3 Substructure

#### ValidityCondition

Element	Usage	Structure	Description
AvailabilityConditionRef Attribute: <ul style="list-style-type: none"> <li>ref</li> <li>version</li> </ul>	1:1	AvailabilityConditionRef	Reference to AvailabilityCondition

### 10.16.4 Example

```
<InterchangeRule id="ch:1:InterchangeRule:1846507_bub10_47580_47820" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:bub10" versionRef="any" />
  </validityConditions>
  <StaySeated>false</StaySeated>
  <Planned>true</Planned>
  <Guaranteed>false</Guaranteed>
  <MinimumTransferTime>PT3M</MinimumTransferTime>
  <MaximumTransferTime>PT4M</MaximumTransferTime>
  <timings>
    <InterchangeRuleTiming id="ch:1:InterchangeRuleTiming:1846507:47580:47820" version="any">
      <TimebandRef ref="ch:1:Timeband:47580:47820" version="any" />
    </InterchangeRuleTiming>
  </timings>
  <FeederFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8014413" versionRef="any" />
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:06____.RB.27" versionRef="1" />
      <DirectionRef ref="ch:1:Direction:H" versionRef="any" />
    </LineInDirectionRef>
    <AdjacentStopPlaceRef ref="ch:1:StopPlace:8014411" version="any" />
    <ServiceJourneyRef ref="ch:1:ServiceJourney:6____-17171-1-8" version="any" />
  </FeederFilter>
  <DistributorFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8014413" versionRef="any" />
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:06____.RB.27" versionRef="1" />
      <DirectionRef ref="ch:1:Direction:H" versionRef="any" />
    </LineInDirectionRef>
    <AdjacentStopPlaceRef ref="ch:1:StopPlace:8030446" version="any" />
    <ServiceJourneyRef ref="ch:1:ServiceJourney:6____-17063-2-1" version="any" />
  </DistributorFilter>
</InterchangeRule>
```

```

</DistributorFilter>
</InterchangeRule>

```

## 10.17 InterchangeRuleParameter

(NeTEx-2, 7.2.8.3.2)

Type for INTERCHANGE RULE PARAMETER of the InterchangeRuleFilteringGroup.

### 10.17.1 Business Requirements

-

### 10.17.2 Structure

Element	Usage	Structure	Description
TransportMode	0:1	AllVehicleModesOfTransportEnumeration	Identifier of MODE of end Point of TRANSFER . Default is all modes.
StopPlaceRef	0:1	StopPlaceRefStructure	STOP PLACE feeding or distributing JOURNEY to which INTERCHANGE RULE applies.
LineInDirectionRef	0:1	See Substructure	Line filter Elements for an INTERCHANGE RULE PARAMETER.
AdjacentStopPlaceRef	0:1	StopPlaceRefStructure	Prior (feeder) or onwards (distributor) STOP PLACE before of journeys to which INTERCHANGE RULE applies.
ServiceJourneyRef	0:1	ServiceJourneyRefStructure	Reference to a connecting VEHICLE JOURNEY to whom INTERCHANGE RULE applies. If absent applies to all journeys.

### 10.17.3 Substructure

LineInDirectionRef

Element	Usage	Structure	Description
LineRef	0:1	LineRef	Reference to Line
Attribute:			
• ref			
• version			
DirectionRef	0:1	DirectionRef	Reference to Direction
Attribute:			
• ref			
version			

### 10.17.4 Example

See 10.16.4 Example

## 10.18 InterchangeRuleTiming

(NeTEx-2, 7.2.8.3.3)

Conditions for considering JOURNEYS to meet or not to meet, specified indirectly: by a particular MODE, DIRECTION or LINE. Such conditions may alternatively be specified directly, indicating the corresponding services. In this case they are either a SERVICE JOURNEY PATTERN INTERCHANGE or a SERVICE JOURNEY INTERCHANGE.

### 10.18.1 Business Requirements

-

### 10.18.2 Structure

Element	Usage	Structure	Description	Example
Inter-changeRuleTiming Attribute <ul style="list-style-type: none"><li>• Id</li><li>• version</li></ul>				
TimebandRef	0:1	TimebandRef-Structure	Reference to Timeband of the INTERCHANGE RULE	

### 10.18.3 Example

See 10.16.4 Example



## 11 Appendix

### 11.1 TransportMode and -Submode

NeTEx defines the Physical Model for reusable transport mode normally implements the TRANSPORT MODE and SUB-MODE as enumerated values so that the value used are standardised.

#### 11.1.1 TransportMode

NeTEx allows those values

Name	Description
air	Air
bus	Bus
coach	Coach
funicular	Funicular
metro	Metro
rail	Rail
trolleyBus	Trolley Bus
tram	Tram
water	Water
cableway	Cableway
other	Other mode

#### 11.1.2 TransportSubMode

See in the NeTEx-Definition. A mapping table between TransportSubMode and V.580 is provided on <https://oev-info.ch>.

## 11.2 Connection Time

The following elements are transmitted in the NeTEx.file, which have a direct influence on the calculation of transport chains:

- The rules for the connection time.
- The connections between 2 services.
- Transfer times.

Type of rules and connection for determining the connecting time of two services

#	Rule	Comment	NeTEx representation																				
1	<p>Rule for the overall connecting time</p> <table border="1"> <thead> <tr> <th>Criteria</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>StopPlace</td> <td>No</td> </tr> <tr> <td>Operator-1</td> <td>No</td> </tr> <tr> <td>ProductCategory-1</td> <td>No</td> </tr> <tr> <td>Line/Direction-1</td> <td>No</td> </tr> <tr> <td>ServiceJourney-1</td> <td>No</td> </tr> <tr> <td>Operator-2</td> <td>No</td> </tr> <tr> <td>ProductCategory-2</td> <td>No</td> </tr> <tr> <td>Line/Direction-2</td> <td>No</td> </tr> <tr> <td>ServiceJourney-2</td> <td>No</td> </tr> </tbody> </table>	Criteria	Input	StopPlace	No	Operator-1	No	ProductCategory-1	No	Line/Direction-1	No	ServiceJourney-1	No	Operator-2	No	ProductCategory-2	No	Line/Direction-2	No	ServiceJourney-2	No	<p>Implicitly, these connecting time is to be used when services serve the same StopPlace</p> <p>This rule is to be used when no other rule with a higher priority applies.</p>	<p>This rule is represented by a series of <i>DefaultConnection</i> between <i>TransportMode</i>.</p>
Criteria	Input																						
StopPlace	No																						
Operator-1	No																						
ProductCategory-1	No																						
Line/Direction-1	No																						
ServiceJourney-1	No																						
Operator-2	No																						
ProductCategory-2	No																						
Line/Direction-2	No																						
ServiceJourney-2	No																						
<pre> &lt;DefaultConnection id="ch:1:DefaultConnection:9999999-1" version="any"&gt;   &lt;TransferDuration&gt;     &lt;DefaultDuration&gt;PT2M&lt;/DefaultDuration&gt;   &lt;/TransferDuration&gt;   &lt;From&gt;     &lt;TransportMode&gt;tram&lt;/TransportMode&gt;   &lt;/From&gt;   &lt;To&gt;     &lt;TransportMode&gt;tram&lt;/TransportMode&gt;   &lt;/To&gt; &lt;/DefaultConnection&gt; &lt;DefaultConnection id="ch:1:DefaultConnection:9999999-9" version="any"&gt; </pre>																							

	<pre> &lt;TransferDuration&gt;   &lt;DefaultDuration&gt;PT2M&lt;/DefaultDuration&gt; &lt;/TransferDuration&gt; &lt;BothWays&gt;true&lt;/BothWays&gt; &lt;From&gt;   &lt;TransportMode&gt;metro&lt;/TransportMode&gt; &lt;/From&gt; &lt;To&gt;   &lt;TransportMode&gt;rail&lt;/TransportMode&gt; &lt;/To&gt; &lt;/DefaultConnection&gt; </pre>																						
<p>2</p>	<p>Rule for the specific connecting time between 2 <i>Operators</i>, without specifying a specific <i>StopPlace</i></p> <table border="1" data-bbox="324 715 741 1034"> <thead> <tr> <th>Criteria</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>StopPlace</td> <td>No</td> </tr> <tr> <td>Operator-1</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-1</td> <td>No</td> </tr> <tr> <td>Line/Direction-1</td> <td>No</td> </tr> <tr> <td>ServiceJourney-1</td> <td>No</td> </tr> <tr> <td>Operator-2</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-2</td> <td>No</td> </tr> <tr> <td>Line/Direction-2</td> <td>No</td> </tr> <tr> <td>ServiceJourney-2</td> <td>No</td> </tr> </tbody> </table>	Criteria	Input	StopPlace	No	Operator-1	Yes	ProductCategory-1	No	Line/Direction-1	No	ServiceJourney-1	No	Operator-2	Yes	ProductCategory-2	No	Line/Direction-2	No	ServiceJourney-2	No	<p>This element is to be used when the originating service is managed by the first Operator of the rule and the destination service is managed by the second Operator of the rule.</p> <p>Implicitly, these connection times are to be used when the services serve the same stop point.</p> <p>This rule is to be used when no other rule with a higher priority applies.</p>	<p>This rule is represented by <i>DefaultConnection</i> elements between the two <i>Operators</i></p>
Criteria	Input																						
StopPlace	No																						
Operator-1	Yes																						
ProductCategory-1	No																						
Line/Direction-1	No																						
ServiceJourney-1	No																						
Operator-2	Yes																						
ProductCategory-2	No																						
Line/Direction-2	No																						
ServiceJourney-2	No																						
	<pre> &lt;DefaultConnection id="11-11" version="any"&gt;   &lt;TransferDuration&gt;     &lt;DefaultDuration&gt;PT2M&lt;/DefaultDuration&gt;   &lt;/TransferDuration&gt;   &lt;From&gt;     &lt;OperatorView&gt;       &lt;OperatorRef ref="ch:1:Operator:11" version="any" /&gt;     &lt;/OperatorView&gt;   &lt;/From&gt;   &lt;To&gt;     &lt;OperatorView&gt;       &lt;OperatorRef ref="ch:1:Operator:11" version="any" /&gt;     &lt;/OperatorView&gt;   &lt;/To&gt; &lt;/DefaultConnection&gt; </pre>																						

	<code>&lt;/To&gt;</code> <code>&lt;/DefaultConnection&gt;</code>																						
3	<p>Rule for the specific connecting time between two Operators and ProductCategory, without specifying a particular StopPlace.</p> <table border="1"> <thead> <tr> <th>Criteria</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>StopPlace</td> <td>No</td> </tr> <tr> <td>Operator-1</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-1</td> <td>Yes</td> </tr> <tr> <td>Line/Direction-1</td> <td>No</td> </tr> <tr> <td>ServiceJourney-1</td> <td>No</td> </tr> <tr> <td>Operator-2</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-2</td> <td>Yes</td> </tr> <tr> <td>Line/Direction-2</td> <td>No</td> </tr> <tr> <td>ServiceJourney-2</td> <td>No</td> </tr> </tbody> </table>	Criteria	Input	StopPlace	No	Operator-1	Yes	ProductCategory-1	Yes	Line/Direction-1	No	ServiceJourney-1	No	Operator-2	Yes	ProductCategory-2	Yes	Line/Direction-2	No	ServiceJourney-2	No	<p>This element is to be used when</p> <ol style="list-style-type: none"> <li>a. for the original service: <ul style="list-style-type: none"> <li>○ the Operator of the service corresponds to that of the rule</li> <li>○ the ProductCategory of the service corresponds to that of the rule</li> </ul> </li> <li>b. concerning the original service: <ul style="list-style-type: none"> <li>○ the Operator of the service corresponds to that of the rule</li> <li>○ the ProductCategory of the service corresponds to that of the rule</li> </ul> </li> </ol> <p>Implicitly, these connecting times are to be used when the services serve the same stop point.</p> <p>This rule is to be used when no other rule with a higher priority applies.</p>	<p>This rule is represented by <i>DefaultConnection</i> elements between both <i>Operators</i> and <i>ProductCategory</i></p>
Criteria	Input																						
StopPlace	No																						
Operator-1	Yes																						
ProductCategory-1	Yes																						
Line/Direction-1	No																						
ServiceJourney-1	No																						
Operator-2	Yes																						
ProductCategory-2	Yes																						
Line/Direction-2	No																						
ServiceJourney-2	No																						
	Example not yet available																						
4	<p>Rule for the specific connecting time between two Operators, ProductCategory, Line and Direction without specifying a particular StopPlace.</p> <table border="1"> <thead> <tr> <th>Criteria</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>StopPlace</td> <td>No</td> </tr> <tr> <td>Operator-1</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-1</td> <td>Yes</td> </tr> </tbody> </table>	Criteria	Input	StopPlace	No	Operator-1	Yes	ProductCategory-1	Yes	<p>This element is to be used when</p> <ol style="list-style-type: none"> <li>a. for the original service: <ul style="list-style-type: none"> <li>○ the Operator of the service corresponds to that of the rule</li> <li>○ the ProductCategory of the service corresponds to that of the rule</li> <li>○ the Line/Direction of the service corresponds to that of the rule</li> </ul> </li> </ol>	<p>Cette règle est représentée par des éléments <i>InterchangeRule</i> entre des deux <i>Operator</i> et <i>ProductCategory</i></p> <p>This rule is represented by <i>InterchangeRule</i> elements between both <i>Operator</i>, <i>ProductCategory</i> and <i>Line/Direction</i></p>												
Criteria	Input																						
StopPlace	No																						
Operator-1	Yes																						
ProductCategory-1	Yes																						

	<table border="1"> <tr><td>Line/Direction-1</td><td>Yes</td></tr> <tr><td>ServiceJourney-1</td><td>No</td></tr> <tr><td>Operator-2</td><td>Yes</td></tr> <tr><td>ProductCategory-2</td><td>Yes</td></tr> <tr><td>Line/Direction-2</td><td>Yes</td></tr> <tr><td>ServiceJourney-2</td><td>No</td></tr> </table>	Line/Direction-1	Yes	ServiceJourney-1	No	Operator-2	Yes	ProductCategory-2	Yes	Line/Direction-2	Yes	ServiceJourney-2	No	<p>b. concerning the original service:</p> <ul style="list-style-type: none"> <li>○ the Operator of the service corresponds to that of the rule</li> <li>○ the ProductCategory of the service corresponds to that of the rule</li> <li>○ the Line/Direction of the service corresponds to that of the rule</li> </ul> <p>The <i>direction</i> information is optional. If this information is not specified, the value is valid for both directions.</p> <p>Implicitly, these connecting times are to be used when the services serve the same stop point.</p> <p>This rule is to be used when no other rule applies.</p>									
Line/Direction-1	Yes																						
ServiceJourney-1	No																						
Operator-2	Yes																						
ProductCategory-2	Yes																						
Line/Direction-2	Yes																						
ServiceJourney-2	No																						
<p>Example not yet available</p>																							
<p>5</p>	<p>Rule for the specific connecting for a particular StopPlace</p> <table border="1"> <thead> <tr><th>Criteria</th><th>Input</th></tr> </thead> <tbody> <tr><td>StopPlace</td><td>Yes</td></tr> <tr><td>Operator-1</td><td>No</td></tr> <tr><td>ProductCategory-1</td><td>No</td></tr> <tr><td>Line/Direction-1</td><td>No</td></tr> <tr><td>ServiceJourney-1</td><td>No</td></tr> <tr><td>Operator-2</td><td>No</td></tr> <tr><td>ProductCategory-2</td><td>No</td></tr> <tr><td>Line/Direction-2</td><td>No</td></tr> <tr><td>ServiceJourney-2</td><td>No</td></tr> </tbody> </table>	Criteria	Input	StopPlace	Yes	Operator-1	No	ProductCategory-1	No	Line/Direction-1	No	ServiceJourney-1	No	Operator-2	No	ProductCategory-2	No	Line/Direction-2	No	ServiceJourney-2	No	<p>Implicitly, these connecting times are to be used when the services serve the same StopPlace.</p> <p>This rule is to be used when no other rule applies.</p>	<p>This rule is represented twice (!)</p> <ul style="list-style-type: none"> <li>- via a <i>DefaultConnection</i></li> <li>- via a <i>SiteConnection</i> when the 2 <i>StopPlaceRef</i> are identical</li> </ul>
Criteria	Input																						
StopPlace	Yes																						
Operator-1	No																						
ProductCategory-1	No																						
Line/Direction-1	No																						
ServiceJourney-1	No																						
Operator-2	No																						
ProductCategory-2	No																						
Line/Direction-2	No																						
ServiceJourney-2	No																						

	<p>DefaultConnection</p> <pre>&lt;DefaultConnection id="ch:1:DefaultConnection:8500010" version="any"&gt;   &lt;TransferDuration&gt;     &lt;DefaultDuration&gt;PT5M&lt;/DefaultDuration&gt;   &lt;/TransferDuration&gt;   &lt;StopPlaceRef ref="ch:1:StopPlace:8500010" version="any" /&gt; &lt;/DefaultConnection&gt;</pre> <p>SiteConnection</p> <pre>&lt;SiteConnection id="ch:1:SiteConnection:8500010-8500010" version="any"&gt;   &lt;WalkTransferDuration&gt;     &lt;DefaultDuration&gt;PT5M&lt;/DefaultDuration&gt;   &lt;/WalkTransferDuration&gt;   &lt;BothWays&gt;false&lt;/BothWays&gt;   &lt;From&gt;     &lt;StopPlaceRef ref="ch:1:StopPlace:8500010" version="any" /&gt;   &lt;/From&gt;   &lt;To&gt;     &lt;StopPlaceRef ref="ch:1:StopPlace:8500010" version="any" /&gt;   &lt;/To&gt; &lt;/SiteConnection&gt;</pre>																						
6	<p>Rule for the specific connecting time between two Operators, with a particular StopPlace specified</p> <table border="1" data-bbox="324 1109 739 1428"> <thead> <tr> <th>Criteria</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>StopPlace</td> <td>Yes</td> </tr> <tr> <td>Operator-1</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-1</td> <td>No</td> </tr> <tr> <td>Line/Direction-1</td> <td>No</td> </tr> <tr> <td>ServiceJourney-1</td> <td>No</td> </tr> <tr> <td>Operator-2</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-2</td> <td>No</td> </tr> <tr> <td>Line/Direction-2</td> <td>No</td> </tr> <tr> <td>ServiceJourney-2</td> <td>No</td> </tr> </tbody> </table>	Criteria	Input	StopPlace	Yes	Operator-1	Yes	ProductCategory-1	No	Line/Direction-1	No	ServiceJourney-1	No	Operator-2	Yes	ProductCategory-2	No	Line/Direction-2	No	ServiceJourney-2	No	<p>This element is to be used when</p> <ul style="list-style-type: none"> <li>• the change of service takes place at the point defined</li> <li>• for the original service:             <ul style="list-style-type: none"> <li>○ the Operator information of the service corresponds to that of the rule</li> </ul> </li> <li>• for the original service             <ul style="list-style-type: none"> <li>○ the Operator information of the service corresponds to that of the rule</li> </ul> </li> </ul>	<p>This rule is represented by <i>DefaultConnection</i> elements between the two <i>Operator</i></p>
Criteria	Input																						
StopPlace	Yes																						
Operator-1	Yes																						
ProductCategory-1	No																						
Line/Direction-1	No																						
ServiceJourney-1	No																						
Operator-2	Yes																						
ProductCategory-2	No																						
Line/Direction-2	No																						
ServiceJourney-2	No																						

		<p>This rule is to be used when no other rule applies.</p>																			
	<pre>&lt;DefaultConnection id="ch:1:DefaultConnection:850010-10" version="any"&gt;   &lt;Extensions&gt;     &lt;FromProductCategoryRef ref="ch:1:TypeOfProductCategory:ICE" version="any" /&gt;     &lt;ToProductCategoryRef ref="ch:1:TypeOfProductCategory:TE2" version="any" /&gt;   &lt;/Extensions&gt;   &lt;TransferDuration&gt;     &lt;DefaultDuration&gt;PT11M&lt;/DefaultDuration&gt;   &lt;/TransferDuration&gt;   &lt;From&gt;     &lt;OperatorView&gt;       &lt;OperatorRef ref="ch:1:Operator:11" version="any" /&gt;     &lt;/OperatorView&gt;   &lt;/From&gt;   &lt;To&gt;     &lt;OperatorView&gt;       &lt;OperatorRef ref="ch:1:Operator:11" version="any" /&gt;     &lt;/OperatorView&gt;   &lt;/To&gt;   &lt;StopPlaceRef ref="ch:1:StopPlace:850010" version="any" /&gt; &lt;/DefaultConnection&gt;</pre>																				
7	<p>Rule for the specific connecting time between two Operators and ProductCategory, specifying a particular StopPlace.</p> <table border="1" data-bbox="324 1133 739 1428"> <thead> <tr> <th>Criteria</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>StopPlace</td> <td>Yes</td> </tr> <tr> <td>Operator-1</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-1</td> <td>Yes</td> </tr> <tr> <td>Line/Direction-1</td> <td>No</td> </tr> <tr> <td>ServiceJourney-1</td> <td>No</td> </tr> <tr> <td>Operator-2</td> <td>Yes</td> </tr> <tr> <td>ProductCategory-2</td> <td>Yes</td> </tr> <tr> <td>Line/Direction-2</td> <td>No</td> </tr> </tbody> </table>	Criteria	Input	StopPlace	Yes	Operator-1	Yes	ProductCategory-1	Yes	Line/Direction-1	No	ServiceJourney-1	No	Operator-2	Yes	ProductCategory-2	Yes	Line/Direction-2	No	<p>This element should be used when</p> <ul style="list-style-type: none"> <li>• the change of service takes place at the point defined</li> <li>• for the original service:             <ul style="list-style-type: none"> <li>○ the Operator of the service corresponds to that of the rule</li> <li>○ the ProductCategory of the service corresponds to that of the rule</li> </ul> </li> <li>• concerning the original service             <ul style="list-style-type: none"> <li>○ the Operator of the service corresponds to that of the rule</li> </ul> </li> </ul>	<p>This rule is represented by <i>DefaultConnection</i> elements between both <i>Operators</i> and <i>ProductCategory</i></p>
Criteria	Input																				
StopPlace	Yes																				
Operator-1	Yes																				
ProductCategory-1	Yes																				
Line/Direction-1	No																				
ServiceJourney-1	No																				
Operator-2	Yes																				
ProductCategory-2	Yes																				
Line/Direction-2	No																				

	<table border="1"> <tr> <td>ServiceJourney-2</td> <td>No</td> </tr> </table>	ServiceJourney-2	No	<ul style="list-style-type: none"> <li>○ the ProductCategory of the service corresponds to that of the rule</li> </ul> <p>This rule is to be used when no other rule applies.</p>			
ServiceJourney-2	No						
<pre>&lt;DefaultConnection id="ch:1:DefaultConnection:850010-10" version="any"&gt;   &lt;Extensions&gt;     &lt;FromProductCategoryRef ref="ch:1:TypeOfProductCategory:ICE" version="any" /&gt;     &lt;ToProductCategoryRef ref="ch:1:TypeOfProductCategory:TE2" version="any" /&gt;   &lt;/Extensions&gt;   &lt;TransferDuration&gt;     &lt;DefaultDuration&gt;PT11M&lt;/DefaultDuration&gt;   &lt;/TransferDuration&gt;   &lt;From&gt;     &lt;OperatorView&gt;       &lt;OperatorRef ref="ch:1:Operator:11" version="any" /&gt;     &lt;/OperatorView&gt;   &lt;/From&gt;   &lt;To&gt;     &lt;OperatorView&gt;       &lt;OperatorRef ref="ch:1:Operator:11" version="any" /&gt;     &lt;/OperatorView&gt;   &lt;/To&gt;   &lt;StopPlaceRef ref="ch:1:StopPlace:850010" version="any" /&gt; &lt;/DefaultConnection&gt;</pre>							
8	<p>Rule for the specific connecting time between two Operators, ProductCategory and Line/Direction specifying a particular StopPlace.</p> <table border="1"> <thead> <tr> <th>Criteria</th> <th>Input</th> </tr> </thead> <tbody> <tr> <td>StopPlace</td> <td>Yes</td> </tr> </tbody> </table>	Criteria	Input	StopPlace	Yes	<p>This element should be used when</p> <ul style="list-style-type: none"> <li>● the change of service takes place at the point defined</li> <li>● for the original service: <ul style="list-style-type: none"> <li>○ the Operator of the service corresponds to that of the rule</li> </ul> </li> </ul>	<p>This rule is represented with an InterchangeRule</p>
Criteria	Input						
StopPlace	Yes						



Operator-1	Yes
ProductCategory-1	Yes
Line/Direction-1	Yes
ServiceJourney-2	No
Operator-2	Yes
ProductCategory-2	Yes
Line/Direction-2	Yes
ServiceJourney-2	No

- the ProductCategory of the service corresponds to that of the rule
- the Line/Direction of the service corresponds to that of the rule
- concerning the original service
  - the Operator of the service corresponds to that of the rule
  - the ProductCategory of the service corresponds to that of the rule
  - the Line/Direction of the service corresponds to that of the rule

This rule is to be used when no other rule applies.

```
<InterchangeRule id="ch:1:InterchangeRule:1025891_TA_0_86400" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:TA" version="any" />
  </validityConditions>
  <Name lang="de">1025891</Name>
  <PrivateCode>UMSTEIGL 106</PrivateCode>
  <StaySeated>false</StaySeated>
  <Planned>true</Planned>
  <Guaranteed>false</Guaranteed>
  <MinimumTransferTime>PT7M</MinimumTransferTime>
  <MaximumTransferTime>PT7M</MaximumTransferTime>
  <timings>
    <InterchangeRuleTiming id="ch:1:InterchangeRuleTiming:1025891:0:86400" version="any">
      <TimebandRef ref="ch:1:Timeband:0:0" version="any" />
    </InterchangeRuleTiming>
  </timings>
  <FeederFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8588489" version="any" />
    <LineInDirectionRef>
```

```

        <LineRef ref="ch:1:Line:823.B.30" versionRef="any" />
    </LineInDirectionRef>
    <AdjacentStopPlaceRef ref="ch:1:StopPlace:8588487" version="any" />
</FeederFilter>
<DistributorFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8588489" version="any" />
    <LineInDirectionRef>
        <LineRef ref="ch:1:Line:823.B.34" versionRef="any" />
    </LineInDirectionRef>
    <AdjacentStopPlaceRef ref="ch:1:StopPlace:8588773" version="any" />
</DistributorFilter>
</InterchangeRule>

```

9 Connection between two services

Criteria	Input
StopPlace	Yes
Operator-1	(Yes)
ProductCategory-1	(Yes)
Line/Direction-1	(Yes)
ServiceJourney-2	Yes
Operator-2	(Yes)
ProductCategory-2	(Yes)
Line/Direction-2	(Yes)
ServiceJourney-2	Yes

The following situations exist:

- I. The connection should not take place. (Prohibition)
- II. The connection must take place, and the traveller must change vehicles
- III. The connection has to take place, and the passenger can stay in the vehicle

The differences between the various situations are to be differentiated with the value in some attributes.

For connections that are **not** to take place (Prohibition), the following attributes will be filled in as follows:

Attribute	Value	Can be omitted (default value)
StaySeated	false	Yes
Planned	false	No
Guaranteed	false	Yes
Controlled	true	No

For connections that have to take place, the following attributes will be filled in as follows:

Attribute	Value	Can be omitted (default value)
-----------	-------	--------------------------------

This rule is represented with an InterchangeRule

StaySeated	false	Yes
Planned	false	No
Guaranteed	true	No
Controlled	true	Yes

For connections that are to take place and travelers can stay in the same vehicle, the following attributes will be filled in as follows:

Attribute	Value	Can be omitted (default value)
StaySeated	true	No
Planned	true	Yes
Guaranteed	true	No
Advertised	true	Yes
Controlled	true	Yes

```
<InterchangeRule id="ch:1:InterchangeRule:1024133_otk00_78420_78540" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:otk00" version="any" />
  </validityConditions>
  <Name lang="de">1024133</Name>
  <PrivateCode>UMSTEIGZ 3</PrivateCode>
  <StaySeated>false</StaySeated>
  <Planned>true</Planned>
  <Guaranteed>false</Guaranteed>
  <MinimumTransferTime>PT1M</MinimumTransferTime>
  <MaximumTransferTime>PT2M</MaximumTransferTime>
  <timings>
    <InterchangeRuleTiming id="ch:1:InterchangeRuleTiming:1024133:78420:78540" version="any">
      <TimebandRef ref="ch:1:Timeband:78420:78540" version="any" />
    </InterchangeRuleTiming>
  </timings>
</InterchangeRule>
```

```

<FeederFilter>
  <StopPlaceRef ref="ch:1:StopPlace:8500218" version="any" />
  <LineInDirectionRef>
    <LineRef ref="ch:1:Line:11.IC.NoLine160" versionRef="any" />
    <DirectionRef ref="ch:1:Direction:H" version="any" />
  </LineInDirectionRef>
  <AdjacentStopPlaceRef ref="ch:1:StopPlace:8502113" version="any" />
  <ServiceJourneyRef ref="ch:1:ServiceJourney:11-1260-103-1" version="any" />
</FeederFilter>
<DistributorFilter>
  <StopPlaceRef ref="ch:1:StopPlace:8500218" version="any" />
  <LineInDirectionRef>
    <LineRef ref="ch:1:Line:11.IR.27" versionRef="any" />
    <DirectionRef ref="ch:1:Direction:R" version="any" />
  </LineInDirectionRef>
  <AdjacentStopPlaceRef ref="ch:1:StopPlace:8502001" version="any" />
  <ServiceJourneyRef ref="ch:1:ServiceJourney:11-2489-102-2" version="any" />
</DistributorFilter>
</InterchangeRule>

```

When calculating the transport chain, the hierarchical order of the rules must be taken into consideration. If several rules are applicable, the rule with the highest value in the hierarchy should be used

Hierarchy	Rules
9	Connection between two services
8	Rule for the specific connecting time between two Operators, ProductCategory and Line/Direction specifying a particular StopPlace.
7	Rule for the specific connecting time between two Operators and ProductCategory, specifying a particular StopPlace.
6	Rule for the specific connecting time between two Operators, with a particular StopPlace specified
5	Rule for the specific connecting for a particular StopPlace
4	Rule for the specific connecting time between two Operators, ProductCategory, Line and Direction without specifying a particular StopPlace.
3	Rule for the specific connecting time between two Operators and ProductCategory, without specifying a particular StopPlace.
2	Rule for the specific connecting time between 2 Operators, without specifying a specific StopPlace
1	Rule for the overall connecting time

### 11.3 Transfer Time

This information defines the time needed to move from one StopPlace to another. This element is represented with a SiteConnection. The two references connect different StopPlace

Example

```
<SiteConnection id="ch:1:SiteConnection:8500010-8500146" version="any">
  <WalkTransferDuration>
    <DefaultDuration>PT9M</DefaultDuration>
  </WalkTransferDuration>
  <BothWays>false</BothWays>
  <From>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any" />
  </From>
  <To>
    <StopPlaceRef ref="ch:1:StopPlace:8500146" version="any" />
  </To>
</SiteConnection>
```

