SKI

NeTEx
Realisation directive for public transport in Switzerland
On the base of schema 1.08

Authors	Project NeTEx/Siri (SBB)
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Change History

Section	Change	Author	Version
10.6.2 & 10.7.2	Changed usage of *DayOffset* to 0:1	aa	0.8.8.4

1 Preliminary remarks

This document describes the realisation specifications for the data transfer between CFF and SNCF and in future thepublic 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 and are the result of the agreement process regarding consistent handling of VDV documents within public transport in Switzerland.

The realisation specifications will be officially released by the management board.

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 1.08 of the XSD of the NeTEx norm. The written NeTEx documents are from 2014. The referenced VDV 462 norm is in the version from 2017.

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. This document **is not a replacement** for the official NeTEx standard within public transport in Switzerland, therefore does not contain all the information required for implementing or understanding the NeTEx interface.

Beside this document there will be an agreement with each partner about more details of the delivery and the subscription. In general there are no differences in the implementation to this reference document. Any necessary technical changes need to be discussed with SKI or later with the working group “Solldaten”.

1.2.2 Description of usage of the document

This document shows all elements of the norm that are deemed necessary for data exchange. Each description is based on the text in the standard. However, we tried to enrich the information to simplify implementation. We use four 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
- Hints: Hints and further explanations regarding the implementation and/or examples.

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.

Additionally we use the following information in the business requirement row (following each elment 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
- IGNORED AT IMPORT: This element or field may be provided, but it will not be loaded and removed from the data.
- LATER: This element or field is ignored during import, but in may be included in a future version.
- SNCF: SNCF specific aspects.

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,
VDV-462	VDV 462 NeTEx document (1/2017): Standardisierter Austausch von Liniennetz und Fahrplandaten mit der europäischen Norm CEN-TS 16441 'NeTEx'
VDV-462_M	VDV 462 NeTEx mapping table (Excel)
HRDF	HAFAS-Rohdatenformat-5.20.39_d
HRDF-CH	INFO+ HRDF export interface 5.20.39. Spezifikation der nach HRDF 5.20.39 exportierten Datei- und Zeilenty-pen in INFO+ (Version 1.2, 29.9.2017)
Didok	Haltestellen des öffentlichen Verkehrs (ID 98.2)
CE-Directive	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-wei-ter Echtzeit-Verkehrsinformationsdienste
CEN-Profil	NeTEx-Profile by the CE
Neptune	NeTEx Profle by SNCF for Île de France
DELFI+	DELFIplus - Erweiterung von DELFI unter besonderer Berücksichtigung mobilitätseingeschränkter Verkehrs-teilnehmer, Forschungsbericht FE-Nr.: 70.0854/2012
Accessibility France	NF_Profil NeTEx pour l'accessibilité(F) - v1.0.doc
ID-01	Excel file with the structure of the ID used in NeTEx.

2 Introduction

2.1 General task definition

The task performed by the NeTEx interface 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, plane) 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 Use Cases

This document is primarily used for the data interchange between SNCF and SBB in the context of Léman Express.

2.3 Requirements for data exchange

A delivery is always required to be complete. This means that a new delivery completely overwrites the data from the preceding delivery (in accordance with the subscription of course). There are no incremental updates allowed, e.g., a complete LINE is delivered (with all of its journeys, each containing a complete stop sequence) if a LINE is requested (for a certain ValidityPeriod or data horizon).

2.3.1 Transmission of updated scheduling and operational data

Certain reference data is maintained by SBB. Such data is referenced by ID, and used (by SBB) whenever available. Moreover, if such reference data is used, SBB won’t load the basic data from the timetable files, even if it exists there.

The relevant reference data is:

- Organisations
- StopPlaces and the whole physical model
- Notices
- TypeOfValues
- ValueSets
- ScheduledStopPoints

Currently a delivery schedule is being agreed upon with each partner. This will mean that timetables must be delivered or fetched only during given intervals. Currently we produce the timetable once a week, but this may change in the future.

2.3.2 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. The department of transport defines the necessary data and quality.

For the data exchange with SNCF, Switzerland provides data for some cantons only. SNCF on the other hand also provides data for three departments only.

2.4 Estimating the currentness of data

The current process allows for the production of a complete timetable file once a week. However, the system will eventually be ready to provide a new timetable every day, i.e., daily delivery will be possible in the future.

2.5 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'.

2.6 Protocols

The data willl be provided by secure FTP. Export from SBB will also be provided via opentransportdata.swiss as HTTP.

The data will be obtained by secure FTP.

SBB will make sure that the file is complete before it is downloaded (e.g. with a control file).

2.7 Recognition of the server (Extension)

The URL should contain an id for the sender already.

Beside the sender of the message (system), participants must also identify the environment from wich the message is sent. Both parts are concatenated by a “_”. All parts should be lower case. Example:

- <partner system >_<environment>.

The name of the partner system can be arbitrary with the exception that the separating character “_” is not allowed. We suggest that the partner name consists of the short name of the partner and necessary additions to identify the system. E.g.: "sbb“, "sbbfpl“, "aags“, "riv“, "zvv“, "zvb“, "svb-lio“, "svb-dss“ .

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

Platform	Platform identifier
Development	entw
Test	test
Integration	int
Production	prod

Table 1: Platform 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.

Examples.: "zvv_test“, "zvv_prod“, "riv_prod“, "sbb_int“, "sbb_prod“, "svb-dds_test“, "svb-dds_prod“.

2.8 Subscription Model

No subscription model is supported. It is always a file of the full timetable presented on an ftp/sftp/ftps-server and fetched from there.

2.9 File-name

Currently we have file names defined for the connection with LEX.
The file will be compressed with the ZIP algorithm.

2.9.1 File sent by SNCF to SBB (sent multiple times per day by ftp or https)

The name is defined by SNCF.

2.9.2 File sent by the converter to Info+ (sent multiple times per day by HRDF)

The file is written by the NeTEx conversion process and the name consists of:

- Producer: e.g. LEX
- Validity: From … To (YYYYMMDD_YYYYMMDD)
- Technical date and time of the creation of the file (YYYYMMDD_HHMMSS)

Example: "LEX_20200522_20200809_20200522_161149.zip"

2.10 Content

- In general, a full timetable should be delivered. The exchange with SNCF will only contain a part of oeV-CH as was agreed upon (Geneva, Waadt, Neuchâtel, Jura, Basel Stadt (maybe Basel Land)
- In general, the timetable with validity of a full year should be delivered. If the file has different content, it should be visible from the name.

In the future it could be decided that it is necessary to split a timetable file into different networks and partial networks (according to Operator and/or Line). There may also be different network versions, each with their own set of data.

2.11 Character coding

The NeTEx files are always UTF-8 without BOM.

Be aware that HRDF files are always Latin-1.

2.12 Web services

Web services are currently not supported.

3 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**
	CompositeFrame	Frame to group other VERSION FRAMEs
	GeneralFrame *NOT TO BE USED*	Any ENTITY or ENTITY IN VERSION
	ResourceFrame	General purpose components such as ORGANISATIONSs VEHICLE TYPEs and code values. VEHICLE TYPE is not used.
Part1	*InfrastructureFrame* *NOT TO BE USED*	INFRASTRUCTURE POINTs, LINKs, & RESTRICTIONs
	SiteFrame	SITEs, STOP PLACEs. POINTS OF INTEREST and other fixed objects.
	ServiceFrame	Network description elements such as LINEs, ROUTEs, etc. Tactical Planning elements such as SCHEDULED STOP POINTs, JOURNEY PATTTERNs, etc. pattern.
	ServiceCalendarFrame	
Part2	*TimetableFrame*	Timetable elements: SERVICE JOURNEYs with timings.
	VehicleScheduleFrame *NOT TO BE USED*	VEHICLE SCHEDULEs: BLOCKs and BLOCK PARTs
	DriverScheduleFrame *NOT TO BE USED*	DRIVER SCHEDULESs: DuTies and DUTY plans.
Part3	*FareFrame* *NOT TO BE USED*	Fare related elements: TARIFF STRUCTUREs, FARE PRODUCTs, FARE PRICEs, etc.

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

3.1 Main body of Response

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

3.1.1 Business Requirements

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3.1.2 Structure

Element	Usage	Structure	Description	Example
PublicationDelivery	1:1	PublicationDeliveryStructure	Root element of a NeTEx delivery.	
PublicationTimestamp	1:1	xsd:dateTime	Time of output of data.	2004-12-17T09:30:46-05:00
ParticipantRef	1:1	ParticipantCodeType	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.	INFOP_prod
Must point to the value defined in section 2.9. This will be used to identify the provider of the data. The SBB system will be INFOP				
PublicationRequest	0:1	PublicationRequestStructure (P) PublicationDelivery	Echo Request used to create bulk response.	PublicationRequest
IGNORED AT IMPORT				
PublicationRefreshInterval	0:1	xsd:duration	How often data in publication is normally refreshed. This is only relevant for regular period batch exports, for example a weekly timetable update.	
IGNORED AT IMPORT				
Description	0:1	xsd:normalizedString	Description of contents.	
IGNORED AT IMPORT				
dataObjects	1:1	+Structure	NeTEx VERSION FRAMES making up publication.	
classes	0:1	ClassInRepository	Information about classes included in the publication.	
NOT TO BE USED				

CompositeFrame	1:1	+Structure (P) dataObjects	A set of VERSION FRAMEs to which the same VALIDITY CONDITIONs have been assigned.	
id	1:1	VersionFrameIdType (P) CompositeFrame	Identifier of COMPOSITE FRAME.	
ValidBetween	0:1	+Structure (P) 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.).	
Must be a full timetable year.				
FromDate	1:1	xsd:dateTime (P) AvailabilityCondition	Inclusive start date for validity of AVAIL-ABILITY CONDITION.	2010-12-12T00:00:00Z
Always the beginning of the time table period				
ToDate	1:1	xsd:dateTime (P) AvailabilityCondition	Inclusive End date for validity of AVAIL-ABILITY CONDITION.	2011-07-02T00:00:00Z
Always the end of the time table period				
Name	0:1	MultilingualString (P) CompositeFrame	Description of VERSION FRAME.	
LATER				
codespaces	0:1	+Structure (P) CompositeFrame	CODESPACES used in this frame. Nor-mally there will be at least one. A default may be specified in the Frame defaults.	
NOT TO BE USED				
FrameDefaults	0:1	+Structure (P) CompositeFrame	Set of default values to assume for val-ues in frame if not explicitly stated on in-dividual elements.	
See chapter 4.6.				
frames	0:1	+Structure (P) CompositeFrame	Structure to contain all frames.	

ResourceFrame	1:1	+Structure (P) frames	General purpose components such as ORGANISATIONs, VEHICLE TYPEs and code values.	
See chapter 5.				
SiteFrame	1:1	+Structure (P) frames	SITESs, STOP PLACEs, POINTS OF INTEREST and other fixed objects.	
See chapter 7.				
ServiceFrame	1:1	+Structure (P) frames	Network description elements such as LINEs, ROUTEs, etc. Tactical Planning elements such as SCHEDULED STOP POINTs, JOURNEY PATTERNs, etc. pattern.	
See chapter 8.				
ServiceCalendarFrame	1:1	+Structure (P) frames	The calendar is modelled in the NeTEx standard by the ServiceCalendar element.	
See chapter 9.				
TimetableFrame	1:1	+Structure (P) frames	Timetable elements: SERVICE JOURNEYs with timings.	
See chapter 10.				
FareFrame	0:1	+Structure (P) frames	Fare related elements: TARIFF STRUCTUREs, FARE PRODUCTs, FARE PRICEs, etc.	
See chapter 12. The FareFrame is solely used for the definition of technical BorderPoints.				

3.1.3 Example

```xml
<?xml version="1.0" encoding="utf-8"?>
<PublicationDelivery xmlns="http://www.netex.org.uk/netex" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:siri="http://www.siri.org.uk/siri" xsi:schemaLoca-
tion="http://www.netex.org.uk/netex     C:\xxx\netex2\xsd_1.08\xsd\NeTEx_publication.xsd" version="1.08">
```

```
    <PublicationTimestamp>2018-04-09T10:23:00</PublicationTimestamp>
    <ParticipantRef>INFOP_prod</ParticipantRef>
    <Description lang="en">Line export in NeTEx Format with fplan 2018-02-25T03:15:02 version 5.20.39 INFO+</Descrip-
tion>
    <dataObjects>
        <CompositeFrame id="ch:1:CompositeFrame:j18" version="any">
            <ValidBetween>
                <!--version="CH_OeV_Sammlung_CH__2018_20180513_031503.zip"-->
                <FromDate>2017-12-10T00:00:00Z</FromDate>
                <ToDate>2018-12-08T00:00:00Z</ToDate>
            </ValidBetween>
            <frames>
                <!--frames-->
            </frames>
        </CompositeFrame>
    </dataObjects>
</PublicationDelivery>
```

3.1.4 Hints

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4 General elements

4.1 Versions and other attributes

(NeTEx 1, 7.3.4.3.1)
SBB will not use version attributes with different versions. The version is always set to “any” during export for SBB.
SNCF, on the other hand, uses versions for the SiteFrame.

The attributes
- created (xsd:dateTime)
- changed (xsd:dateTime)
- modification (new | revise | delte)

are also not used by SBB, but SNCF will use them heavily. The other common attributes are not used (exception will be apparent in the structure tables of the respective elements).

4.2 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 4.12 and 4.13.

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

For conversions from HRDF to NeTEx the language is not known and, as a result, we use AlternativeName's of type 'official' and 'alias' only. AlternativeName is generally used for the Name and ShortName of various elements, e.g. Organisation, StopPlace, Line etc..

4.3 Delayed elements

The following elements, among others, are NOT TO BE USED in this document:
- Route
- Projection

- StopPointJourneyRef
- RouteSequence

Where necessary, some parts can be inserted into other elements by the use of “View” sub-elements.

4.4 IDs

It is important to note that internal or artificially generated IDs should, in general, 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 business keys and attributes to build the technical IDs.
- The class of the object is the beginning of the technical ID in general.
- When there is an overhelming need for global stability, the ID will be that global ID (plus class, country and admin org where these are missing.

The ID structure of objects is the following:

<Country>:<Authority>:<Object_name/ID_name>:[<AdminOrg>:]<Technical_ID>[:<ID_provider_for_shared_IDs>]	
Country	ISO 3166-1 code of the country (2 characters). "ch" in case of Switzerland.
Authority	A code uniquely identifying the locality or the provider (authority) within the country (may be a region code like the European NUTS code, an authority code, etc.). The Europen NUTS code is recommended here. However, this code is not mandatory if the other elements make the code unique (but surrounding ":" must be present). SKI ("Systemaufgaben Kundeninformation") is the primary authority in Switzerland, i.e., <Authority>="1".
Object name	The NeTEx object name (for example "ServiceJourney" or "Line" etc., using the exact tag format in UpperCamelCase and no spaces) corresponding to the XML tag is provided to avoid any collision of identifiers being used for different types of objects. However, the object name will, in some cases, be replaced by an ID name eventually. The primary ID names include SLOID, SBOID, SJYID and SLNID.

AdminOrg	If the <Technical_ID> is not assigned nationally by the <Authority>, but, for example, by a transport company, then <AdminOrg> is also required for differentiation. It corresponds to the Swiss Administration ID (SAID). SBB, for example, has the SAID "100001".
Technical identifier	A technical identifier for the object, it can be whatever code the system defines (built of upper-case or lower case non-accented characters, numbers, ":", "-" and "_") but shall be unique for the object, and durable (a single object can't change its identifier).
ID provider for shared IDs	Used to provide a reference to the ID provider (reference data system) when there is one. When this non-mandatory field is present, it ensures by itself the uniqueness and stability of the <Technical_ID>.

The ":" separating characters are mandatory (even if a field is empty) except the ones of the optional fields.

The technical ID, as well as the ID provider for shared IDs, may contain additional ":" separating characters.

Table 2: NeTEx and SIRI general ID conventions.

In an extension the technical part can also be created from attributes (not separated by “:”, but with “-“ (hyphen)). A counter or unique element may be added as well. However, it is not allowed to use these technical attributes for analysis of content. The ID may not be kept through in the internal representation of the data in the systems. ID should be globally unique during importation. The ID only needs to be be unique within the same class.

IDs may also be partially or completely artificially generated (e.g. in most XXXAssignment elements). 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). There are some id’s that need to be stable. These are marked in the detailed information (NeTEx-id). Because many users might use HRDF as the underlying timetable. The relevant ids must be buildable from HRDF attributes as well.

4.4.1 Special Swiss IDs

With the introduction of gobally unique new business identifiers like SLOID, the structure of the id may change in Switzerland. We might reference these business identifiers instead of the technical objects. Business identifiers that will be used, or replace id conventions of important elements, in NeTEx, and therefore be referenced in SIRI, include:

- **Swiss Administration ID (SAID):**
  The SAID is used as <AdminOrg>. As an object it corresponds to the SBOID described below. For clarification:
  The Zurich public transport (VBZ) has the SAID "100648". If the VBZ wants to assign the SJYID "ABCD", the SAID is used as <AdminOrg>, thus resulting in "ch:1:sjyid:100648:ABCD". However, if the VBZ is named as operator in an interface, then the SAID is used as <Technical_identifier> within the SBOID, resulting in "ch:1:sboid:100648".

- **Swiss Location ID (SLOID):**
  The SLOID identifies the stop place, meta stop place, stop area and quay or quay sector. It is also possible to identify other objects at and around the stop place. However, this is currently not specified. The assignment of the ID currently has two stages. Due to the national control of the stop name, the allocation authority is always SKI (and therefore <Authority> = "1"), i.e. stop place and meta stop place are always allocated nationally. Sub-structures of the stop place, explicitly the stop area and the quay are assigned by the transport company responsible for the stop place. However, since the stop place or meta stop place are always a part of the <Technical_identifier>, the additional specification of the <AdminOrg> is not required.

- **Swiss Business Organisation ID (SBOID):**
  The SBOID is used if, for example, the operator, concessionaire etc. must be identified. Since the allocation is carried out centrally by SKI, <AdminOrg> is not necessary in the ID. But since the <InternalID> exkat corresponds to the SAID, one could think that it is the <AdminOrg>.

- **Swiss Line (and direction) ID (SLNID):**
  The SLNID has not yet been defined. The SLNID is used to identify all lines (possibly also partial lines) and line directions in public transport in Switzerland. The SLNID may also be used to differentiate between licensed lines and technical lines.

- **Swiss Journey ID (SJYID):**
  The SJYID is used to identify the journeys (ServiceJourney in NeTEx) and thus determine which journeys are coupled with each other over the entire planning period, and if a journey is an extra journey or is cancelled. The allocation is done by an <AdminOrg>, thus making its specification in the ID mandatory. The <AdminOrg> is free in the allocation of the <Technical_identifier>. Depending on the latter, the syntax may be structured even further.

Special Swiss IDs	
said	'The "Swiss Administration ID" or SAID is exactly the value of <AdminOrg> which is an optional part in the ID definition above. The SAID will replace the GO number in DiDok. Some examples: SBB has the SAID "100001" and SKI has the SAID "1".
ch:1:sloid:<Technical_ID>	'The "Swiss Location ID" or SLOID will replace the IDs of the NeTEx objects "StopPlace" and "Quay" (others are being discussed). <Technical_ID> will contain the DiDok number of the location and, if present, the Quay code (and quay sector etc.) separated by ":".
ch:1:sboid:<AdminOrg>	'The "Swiss Business Organisation ID" or SBOID will replace the IDs of the NeTEx objects "Organisation", "Operator" and "OrganisationPart". <AdminOrg> corresponds to the Swiss Administration ID (SAID). SBB, for example, has the SAID "100001".
ch:1:sjyid:<AdminOrg>:<Technical_ID>	'The "Swiss Journey ID" or SJYID will replace the ID of the NeTEx object "ServiceJourney". <Technical_ID> is still under discussion.
ch:1:slnid:<AdminOrg>:<Technical_ID>	'The "Swiss Line ID" or SLNID will replace the IDs of the NeTEx objects "Line" and "Direction". <Technical_ID> is still under discussion.
ch:1:sccid:<AdminOrg>:<Technical_ID>	'The "Swiss Connection ID" or SCCID will possibly replace the IDs of the NeTEx objects "InterchangeRule", "ServiceJourneyInterchange" and "Connection". The <Technical_ID> is still under discussion.

Table 3: NeTEx and SIRI ID conventions for special Swiss IDs.

4.4.2 Generation of IDs

The European profile (CEN-Profile, 10.2) has an idea on how to build the technical id for the elements: “When exchanging information, it is of high importance to make sure that identifiers are stable and unique. In order to ease interoperability and ensure uniqueness, the European passenger information profile provides some rules to built identifiers. These rules are defined so they can easily be applied on internal identifiers of a system at export time, and processed at import time. They also take advantage of the codespace mechanism proposed by NeTEx.

SBB is aware that, for example in VDV 462, the ID are considered immutable.

A complete list of the relevant objects and their ID rules, as well as examples, Is given in [ID-01]. This document also outlines the relation of the objects to the Swiss IDs and how the ID's of these objects are built.

The Business Requirement sections in this document will contain excerpts from [ID-01] whenever the <Technical_ID> is **not** artificially generated but built from certain attributes. On the other hand, whenever the ID is not specifically defined in those sections, it can be assumed that the <Technical_ID> is artificially generated by the converter (and the ID follows the general rules defined in this chapter.

4.4.3 ServiceJourney, Line, Partial Line and Id

One important thing are global ServiceJourneyIDs (global in the sense that they are not coupled to ResponsibilitySets). When the ServiceJourneys of a Line are provided by different organisations, it must be ensured that the ServiceJourneys have different IDs. In VDV 433, for example, partial lines were introduced for this reason.

The ID of a partial line is:

- **LineID**:
  ch:<Authority>:Line:<GO_code/TU_code>:<Technical_ID>[:<Partial_Line_code>]
- **ServiceJourneyID**:
  ch:<Authority>:ServiceJourney:<Technical_Line_ID>[:<Partial_Line_code>]:<Technical_ServiceJourney_ID>

The term "partial line" does not exist in NeTEx. In planning systems a line, that is operated by different operators, is handled differently:

- Sometimes these are internally two lines, that have the same external line numbers and externally are represented as a single line.
- Assigning the operator could be done by ServiceJourney

In VDV 462 it was decided to do the NeTEx ServiceJourneyID in the same way VDV 433 proposed, and to fill the field “partial line” with the key of the responsible Organisation. In the case of multiple partial lines, there are not multiple lines being generated. This means that the NeTEx Line is associated with the VDV 433 line and not the partial line, e.g. for the NeTEx european profile the ID looks like:
"de:mvv:ServiceJourney:23054-swm-123"

In the current version the ServiceJourney's are generated from HRDF data. So we have to built the ID's with the following data:

- Timetable period
- VM-Number

- TU/TU-part
- Sequential number.

The line number is currently optional in HRDF.

What we have is “**ch:1:ServiceJourney:801:0175:7731:123**”, i.e., **<Organisation_code>:<OrganisationPart_code>:<Journey_number>:<Variant_number>:<Artificial_part>** (where <artificial-part> is done by the converter due to the fact that Call's might have different validities.

Partial line information is currently not available for the conversions. They will, at least in the VDV standards, be introduced LATER. Partial lines resemble namespaces. The partial line part is empty and we will also not use the dash (“-“).

4.5 Validity

(VDV-462 section 6.2, NeTEx-1 7.3.7)
An ENTITY, a VERSION or a VERSION FRAME may be associated with VALIDITY CONDITION, detailing when an entity or version is active or available.

Each VALIDITY CONDITION can consist of:

- *a parameter (e.g. a start date)*
- *a type of application of this parameter (“for”, “from”, “until”, etc.)*

A VALIDITY CONDITION parameter may be:

- *a time-related parameter, which will be in general an instance of an entity: OPERATING DAY, PERIOD (with a start date and possibly an end date), PROPERTY OF DAY, DAY TYPE, TIME BAND, TYPE OF TIME BAND, etc.*
- *a VALIDITY TRIGGER (road works, rainy weather, until further advice, etc.), which will be activated thanks to a mechanism, an external output or a manual entry*
- *any other VALIDITY RULE PARAMETER*
- *to simplify implementation, a condition with standardised temporal attributes is provided in the form of AVAILABILITY CONDITION*

See the following screenshot with a selection of NeTEx classes for which a VALIDITY CONDITION may be declared.

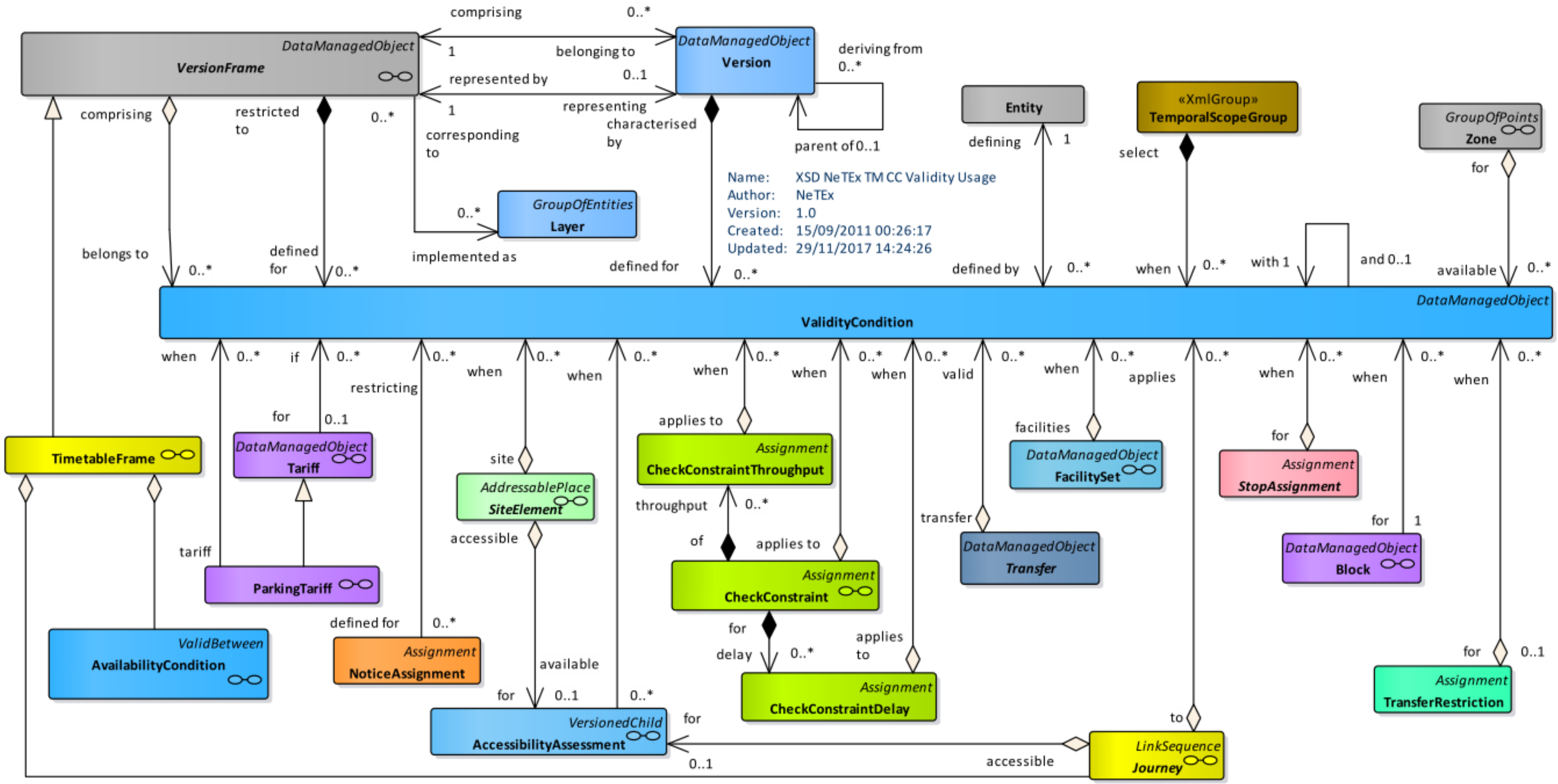

Figure 1: A selection of classes that may use of a VALIDITY CONDITION

Note that VALIDITY CONDITIONs could be combined and ANDed (all the condition mus be fullfiled at the same time) thanks to the WITH CONDITION REF attribute. **We will work with FromDate/ToDate and ValidDayBits of AvailabilityCondition only.**

4.5.1 Business Requirements

- Only the comparison of time ranges is valid in ValidityConditions.

- Only the simple form of FormValidBetween is allowed.
- Validity is always for the whole timetable period.
- The restriction is only allowed for CompositeFrame, TimeTableFrame, VehcileScheduleFrame, ServiceFrame, ServiceCalendar-Frame and Lines. All other inherit the time range.
- The “nature” is always “planned
- The “Duration” is always the full time table period for CFF internally. For the data from SNCF it is a sliding 80 window (no day in the past).
- The “Name” is always the name of the export/configuration. See section 1.

This implies that only AVAILABILITY CONDITIONs are used. The section on AvailabilityCondition was moved to the ServiceCalendarFrame because we will store all the conditions there instead of in each frame.

4.5.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagent Object	MANAGED	
Id	1:1	ValidityConditionIdType	Identifier of VALIDITY CONDITION.	
Name	0:1	MultilingualString	Name of VALIDITY CONDITION.	
IGNORED AT IMPORT				
Description	0:1	MultilingualString	Description of VALIDITY CONDITION.	
IGNORED AT IMPORT				
ConditionedObjectRef	0:1	ObjectRef	Reference to object to which VALIDITY CON-DITION applies.	
We will not use the ConditionedObjectRef as the Validity will always be defined within the object it applies to.				
WithConditionRef	0:1	ValidityConditionRef	CONDITION with which this rule is logically ANDed.	

4.5.3 Example

```
<ServiceTimetableFrame version="any" id="hde:SCF01">
```

```
    <frameValidityConditions>
        <ValidityRuleParameter version="any" id="hde:VC_ntwkf003_002_icy">
            <Description>Use when Icy</Description>
            <ConditionedObjectRef nameOfRefClass="TimetableFrame" ref="abc:Tf01"/>
            <RuleObjectRef  nameOfRefClass="Weather"
            ref="Myobj:Cur001">EXTERNAL</RuleObjectRef>
            <AttributeName>roadCondition</AttributeName>
            <ComparisonOperator>EQ</ComparisonOperator>
            <AttributeValue>icy</AttributeValue>
            <WithConditionRef version="any" ref="hde:rp_02"/>
        </ValidityRuleParameter>
        <ValidityRuleParameter version="any" id="hde::VC_ntwkf003_002_winter">
            <Description>Use when Winter</Description>
            <ConditionedObjectRef nameOfRefClass="TimetableFrame" ref="abc:Tf01"/>
            <RuleObjectRef nameOfRefClass="DayType" ref="Myobj:DT001" version="1"/>
            <isValid>true</isValid>
        </ValidityRuleParameter>
    </frameValidityConditions >
    <contentValidityConditions>
        <ValidityTrigger version="any" id="hde:vt_01">
            <Description>Special event day</Description>
            <ConditionedObjectRef nameOfRefClass="TimetableFrame" ref="abc:Tf01"/>
        </ValidityTrigger>
    </contentValidityConditions>
    <dayTypes>
        <DayType version="any" id="Myobj:DT001">
            <Name>Winter </Name>
            <properties>
            <PropertyOfDay>
            <Name>Winter </Name>
            <Seasons>Winter</Seasons>
            </PropertyOfDay>
            </properties>
        </DayType>
    </dayTypes>
    ...
</ServiceTimetableFrame>
```

4.5.4 Hints

The elements/structures of the frames (TimeTableFrame, ServiceFrame and ServiceCalendarFrame) must always have validities within the validity of the frames. This also applies to the SiteFrame (if it is present). However, we don't rely on the SiteFrame to import data for the time being.

4.6 FrameDefaults

(NeTEx-1, 7.3.6.3.1.1)
The FrameDefault element specifies default values for certain common properties of elements in the frame, such as DATA SOURCE, time-zone etc., to be applied to elements in the frame for which an explicit value has not been specifed. The use of defaults can both simplify export and reduce the size of documents.

4.6.1 Business Requirements

These are default settings for a frame.

4.6.2 Structure

Element	Usage	Structure	Description	Example
DefaultCodespaceRef	0:1	CodeSpaceRef	Default CODESPACE to assume for an identifiers that do not have an explicit CODESPACE specified.	sbbinfoplus
Attributes • ref is always set to "sbbinfoplus".				
DefaultDataSourceRef	0:1	DataSourceRef	DATA SOURCE to use for elements in the frame which do not have a DATA SOURCE specified.	INFOP:DataSource_E01
Attributes: • version: is set to "any" • ref: is always set to "sbbinfoplus:DataSource_E01""				
DefaultResponsibilitySetRef	0:1	DataSourceRef	Default CODESPACE to assume for an identifiers that do not have an explicit CODESPACE specified.	

NOT TO BE USED				
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..	<DefaultLocale> <DefaultLanguage>de</DefaultLanguage> </DefaultLocale>
The default locale is German (de) for CFF and Swiss public transport. For SNCF it is French (fr).				
TimeZoneOffset (P) DefaultLocale	0:1	TimeZoneOffset (xsd:decimal)	Time zone of Entity as offset in hours from GMT, plus or minus. May be decimal for fractional differences.	+1
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.	+2
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.	<DefaultLanguange>de</DefaultLanguage>
Is always set to • "de" for CFF and Swiss public transport • "fr" for SNCF.				
DefaultLocationSystem	0:1	xsd:normalizedString	Default LOCATION SYSTEM to use for locations in the frame which do not have a LOCATION SYSTEM specified.	
NOT TO BE USED The system is always WSG84.				
DefaultSystemOfUnits	0:1	SystemOfUnits	Default LOCATION SYSTEM to use for measurable attributes in the frame for which no units have been specified.	

NOT TO BE USED				
DefaultCurrency	0:1	SystemOfUnits	Default CURRENCY to use for amount attributes in the frame for which a currency has not been specified.	
NOT TO BE USED				

4.6.3 Example

```
<FrameDefaults>
    <DefaultCodespaceRef version="any" ref="sbbinfoplus"/>
    <DefaultDataSourceRef version="any" ref="sbbinfoplus:DataSource_E01"/>
    <DefaultLocale>
        <DefaultLanguage>de</DefaultLanguage>
    </DefaultLocale>
</FrameDefaults>
```

4.6.1 Hints

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4.7 DataSource

(NeTEx-1, 7.4.3.3.4)
The DATA SOURCE identifies the system that has produced the data.
References to a DATA SOURCE are useful in an interoperated computer system to identify the origin of data.

4.7.1 Business Requirements

- The name is always the name in the export/configuration.
- Alternatively the name of the export file can be used.
- The date is the date of the export.
- The export always contains all data of the time period. This includes master data, topology and the timetable information.

The ID is created as follows:

ID	Description	Stability	Construction	Example
ch:1:DataSource:<generated_key>		Yes	Built from Attributes by Converter	Mentz example: “sbbinfoplus:DataSource_E01”

Table 4: DataSource ID definition.

4.7.2 Structure

Element	Usage	Structure	Description	Example
DataSource				Adf
Attributes: • Version • Id				
INFOP:DataSource_E01” for sbb				
Id	1:1	DataSourceIdType	Identifier of DATA SOURCE.	INFOP_prod:DataSource:DS_E01
Name	0:1	MultiLingualString From TypeOfValue	Name of TYPE OF VALUE	INFOP_test
Always refers to the producer and must include the environment. See also section 2.7.				
Email	0:1	EmailAddressType	Contact email address for DATA SOURCE.	
IGNORED AT IMPORT				

4.7.3 Example

```
<dataSources>
    <DataSource version="any" id="INFOP_prod:DataSource:DS_E01">
        <Name>INFOP_prod</Name>
    </DataSource>
</dataSources>
```

4.7.1 Hints

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4.8 CodeSpace

(NeTEx-1 7.3.3.3.2)
NOT TO BE USED
A CODESPACE defines the context within which an identifier of an object in a document is unique. The use of CODESPACEs in NeTEx also allows an economical encoding of identifiers in an XML document so that a common prefix does not have to be repeated on each element in the document.

One or more CODESPACEs can also be associated with each ADMINISTRATIVE ZONE to reserve their use of that namespacae and a prefix or range value for the allocation of identifiers to new entities within that zone.

A CODESPACE is specified as a path expression by using internet domains, through IANA (Internet Assigned Numbers Authority), which provides a mechanism for registering global uniqueness. For example tfl.gov.uk, bahn.de, ratp.fr, foo.com, or sbb.ch. These can be declared in a Codespace element :xxx=”path”
Each Codespace has an identifier which may be used in the document using a Codespace declaration on a VERSION FRAME.

4.9 TypeOfValue

(NeTEx-1, 7.4.3.3.3)
It is useful to be able to define arbitrary code values as categories to classify various entities in various ways. For example, TYPE OF POINT, TYPE OF LINK, PURPOSE OF GROUPING, etc. are all examples of such classifications. TYPE OF VALUE provides an abstract class with common properties such as a Name, Description and URL that can be used to define code values and to exchange them. It is specialized to create specific named types of codes. Thus for example, TYPE OF POINT is a subclass of TYPE OF VALUE. If appropriate additional attributes may be added to the specialisation. Other concrete Examples are TYPE OF POINT, TYPE OF LINK, TYPE OF SER-VICE, etc.

For the purposes of data exchange, sets of instances of the same type of TYPE OF VALUE may be grouped in a named VALUE SET. See example below.

VALUE SET & TYPEs OF VALUEs are DATAMANAGED OBJECTs and so can be versioned so that updates to the code set can be made from time to time.

See the following figure for a summary of the TYPE OF VALUE descendants in NeTEx.

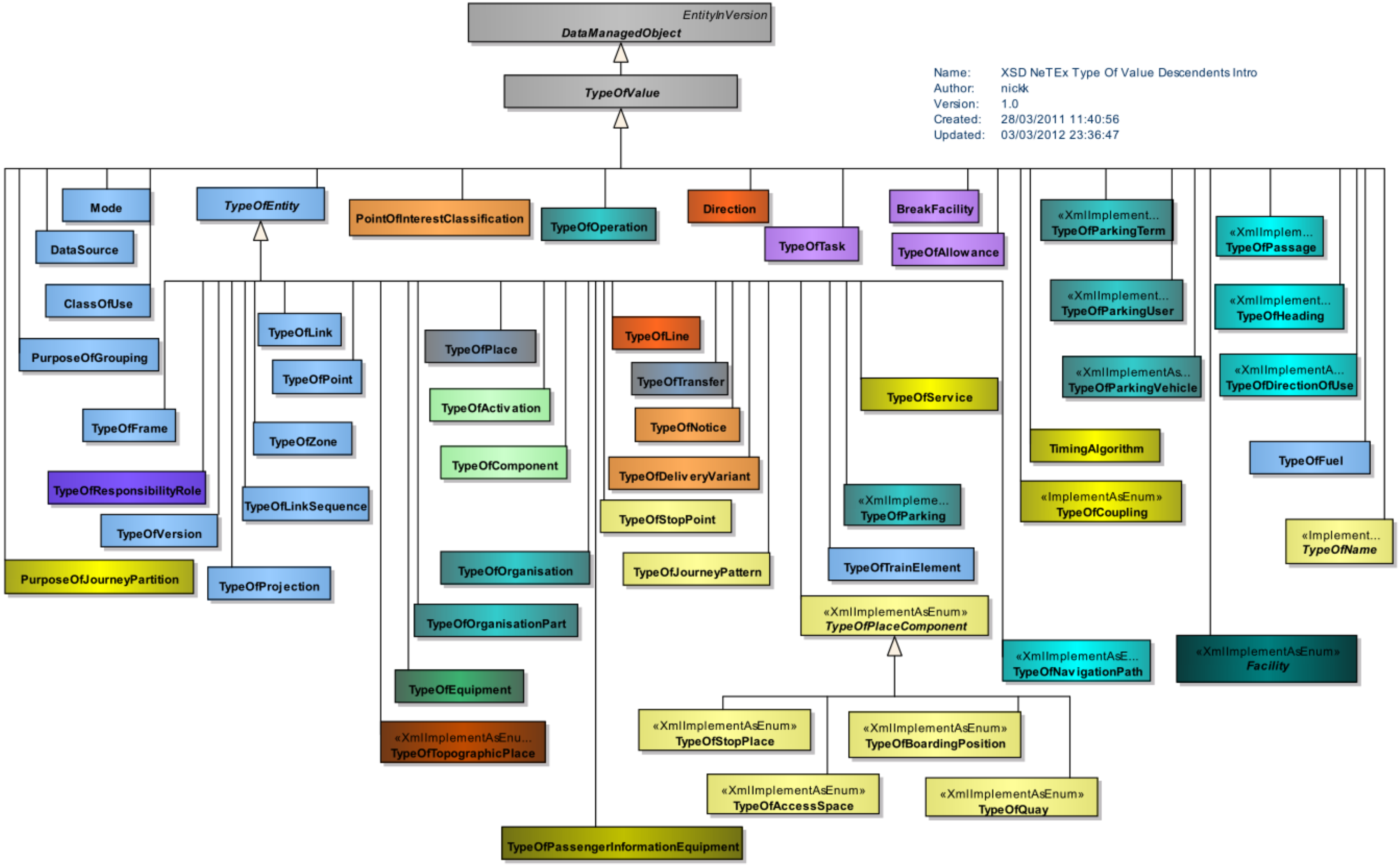

Figure 2: TYPE OF VALUE is abstract. There are concrete subtypes for each type of code used in NeTEx.

4.9.1 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
- Quay: references TypeOfPlace
- ServiceJourney: references TypeOfProductCategory
- JourneyPart: references PurposeOfJourneyPartition

Be aware that the HRDF data is sometimes in a different place than expected. In the future, other types will be needed for various accessibility relevant objects.

The ID is created as follows:

ID	Description	Stability	Construction	Example
ch:1:TypeOfValue:<TypeOfValue_code>	From a list of enumerations related to the ValueSets (to be defined). As TypeOfValue code we either use the ShortName or PrivateCode (whichever is available).	Yes	Built from Attributes by Converter	• ch:1:TypeOfNotice:6 • ch:1:TypeOfProductCategory:RE • ch:1:PurposeOfJourneyPartition:couplin • ch:1:TypeOfPlace:quaySector

Table 5: TypeOfValue ID definition.

4.9.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	TYPE OF VALUE inherits from DATA MANAGED OBJECT.	
• id • version				
id	1:1	TypeOfValueIdType	Identifier of TYPE OF VALUE.	
See Table 5: TypeOfValue ID definition.				
Name	0:1	xsd:MultilingualString	Name of TYPE OF VALUE.	

ShortName	0:1	xsd:MultilingualString	Short Name of TYPE OF VALUE.	
Description	0:1	xsd:MultilingualString	Description of TYPE OF VALUE.	
NOT TO BE USED				
Image	0:1	xsd:anyURI	Default image for TYPE OF VALUE.	
LATER				
Url	0:1	xsd:anyURI	URL associated with of TYPE OF VALUE.	
LATER				
PrivateCode	0:1	PrivateCode	Private Code associated with TYPE OF VALUE.	
Usually not used. There might be possible uses in the future.				

4.9.1 Example

```
<typesOfValue>
    <TypeOfPlace id="ch:1:TypeOfPlace:quay" version="any">
        <Name>Bahnsteig</Name>
    </TypeOfPlace>
    <TypeOfPlace id="ch:1:TypeOfPlace:quaySector" version="any">
        <Name>Bahnsteig-Sektor</Name>
    </TypeOfPlace>
</typesOfValue>
```

```
<typesOfValue>
    <ValueSet id="ch:1:ValueSet:notices" version="any">
        <values>
            <TypeOfNotice id="ch:1:TypeOfNotice:1" version="any">
                <Name>Allgemeiner Hinweis</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:2" version="any">
                <Name>Zugname</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:3" version="any">
                <Name>Gleis-Angabe</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:4" version="any">
```

```
                <Name>Buchungsinformation</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:5" version="any">
                <Name>Fahradmitnahme erlaubt</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:6" version="any">
                <Name>Ansagetext</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:7" version="any">
                <Name>Fahrertext</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:TC" version="any">
                <Name>TarifCode</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:ZO" version="any">
                <Name>Zugnummer Original</Name>
            </TypeOfNotice>
            <TypeOfNotice id="ch:1:TypeOfNotice:RT" version="any">
                <Name>Betriebliche Zugnummer EVAPlus</Name>
            </TypeOfNotice>
        </values>
    </ValueSet>
</typesOfValue>
```

4.9.2 Hints

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4.10 ValueSet

(NeTEx-1 7.4.3.3.5)
A grouping of instances of a specific TYPE OF VALUE for the purposes of exchange (i.e. a list of codes).

4.10.1 Business Requirements

Examples are:

- TypeOfNotice

- TypeOfProductCategory for VM-Art. mapping
- PurposeOfJourneyPartition for reference in JourneyPart's
- TypeOfPlace used to differentiate Quay's ("Perron" or QuaySector etc.)
- TypeOfPoint used to differentiate PathJunctions. In Switzerland we will have waypoints that are associated with dropped kerbs for wheelchair access or tactile strips marking points of assistance in local public transport. However, we will most likely have artificially generated / arbitrarily chosen waypoints as well.

The ID is created as follows:

ID	Description	Stability	Construction	Example
ch:1:ValueSet:<ValueSet_name>	Only the defined ValueSets are to be used with the ValueSet Name as its code. For currently used ValueSets see the examples.	Yes	Built from Attributes by Converter	• ch:1:ValueSet:TypeOfNotice • ch:1:ValueSet:TypeOfProductCategory • ch:1:ValueSet:PurposeOfJourneyPartition • ch:1:ValueSet:TypeOfPlace

Table 6: ValueSet ID definition.

4.10.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	VALUE SET inherits from DATA MANAGED OBJECT.	
id	1:1	ValueSetIdType	Identifier of VALUE SET.	
See Table 6: ValueSet ID definition.				
Name	0:1	MultilingualString	Name of VALUE SET.	
values	0:*	TypeOfValue	TYPE OF VALUE in VALUE SET.	

4.10.3 Example

```
<typesOfValue>
    <ValueSet id="ch:1:ValueSet:Service" version="any">
```

```
      <values>
        <TypeOfService id="ts:1" version="any">
          <Name>Velomitnahme verboten</Name>
        </TypeOfService>
        <TypeOfService id="ts:2" version="any">
          <Name>XXX</Name>
        </TypeOfService>
        ...
      </values>
    </ValueSet>
</typesOfValue>
```

```
<typesOfValue>
    <ValueSet id="eos:ValueSet:PurposeOfGrouping" version="any">
        <values>
            <PurposeOfGrouping version="any" id="eos:PurposeOfGrouping:POG_matrix">
                <Name>Timetable bed</Name>
            </PurposeOfGrouping>
            <PurposeOfGrouping version="any" id="eos:PurposeOfGrouping:POG_other">
                <Name>Timetable bed</Name>
            </PurposeOfGrouping>
        </values>
    </ValueSet>
    <ValueSet id="napt:ValueSet:TypeOfPlace" version="any">
        <Name>NaPTAN Stop Place Types</Name>
        <values>
            <TypeOfPlace version="any" responsibilitySetRef="nptg:ResponsibilitySet:000"
id="napt:TypeOfPlace:RLY">
                <Name>NaPTAN Rail Station Stop type</Name>
            </TypeOfPlace>
            <TypeOfPlace version="any" responsibilitySetRef="nptg:ResponsibilitySet:000"
id="napt:TypeOfPlace:RSE">
                <Name>NaPTAN Rail Station Entrance Stop type</Name>
            </TypeOfPlace>
        </values>
    </ValueSet>
    <ValueSet id="nptg:ValueSet:TypeOfZone" version="any">
        <Name>NPTG zone types</Name>
        <values>
```

```
            <TypeOfZone version="any" responsibilitySetRef="nptg:ResponsibilitySet:000"
id="napt:TypeOfZone:Plusbus">
                <Name>Plusbus Traiff zone for combined rail and bus fare</Name>
            </TypeOfZone>
            <TypeOfZone version="any" responsibilitySetRef="nptg:ResponsibilitySet:000"
id="napt:TypeOfZone:GRLS">
                <Name>Rail Station Stiop Area</Name>
            </TypeOfZone>
        </values>
    </ValueSet>
    <ValueSet id="eos:ValueSet:ClassOfUse" version="any">
        <values>
            <ClassOfUse version="any" responsibilitySetRef="eos:ResponsibilitySet:000"
id="eos:ClassOfUse:COU_First">
                <Name>Plusbus Tariff zones for combined rail and bus fare</Name>
            </ClassOfUse>
            <ClassOfUse version="any" responsibilitySetRef="eos:ResponsibilitySet:000"
id="eos:ClassOfUse:COU_Second">
                <Name>Second Class</Name>
            </ClassOfUse>
        </values>
    </ValueSet>
</typesOfValue>
```

4.10.1 Hints

-

4.11 Centroid

(NeTEx-1, 7.6.3.2)

The Location Physical model defines LOCATION and LOCATING system and a number of base types.
The NeTEx encoding has special support for an encoding of LOCATION as separate Longitude and Latitude coordinates using the widely used WGS84 geodetic location system (as used by the Global Positioning System, GPS), which can specify a location anywhere on earth. This allows values to be validated using an XML data type and the built-in capabilities of any XML validator.

4.11.1 Business Requirements

- 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. In thr future, INFO+ will use the data of foreign places. That information will be forwarded to Didok.

4.11.2 Structure

Element	Usage	Structure	Description	Example
srsName (P) Location	0:1	LocatingSystemNameType	GML id of Type of LOCATING SYSTEM used.	
NOT TO BE USED The system is always WSG84, so we don’t have to mention it here.				
Longitude (P) Location	1:1	LongitudeType	Longitude of Location.	<Longi-tude>0.3209230516</Longi-tude>
Latitude (P) Location	1:1	LatitudeType	Latitude of Location.	<Lati-tude>51.4429749673</Lati-tude>
Altitude (P) Location	0:1	AltitudeType	Altitude of Location.	<Altitude>257</Altitude>
In Meter				
Coordinates (P) Location	0:1	CoordinateString gml:pos	GML coordinates providing location in a specified Location system.	<gml:pos srs-Name="CHTRS95">300122 400112</gml:pos>
We use this element for Swiss coordinates in our data (swisstopo link). This String is only provided during export by CFF.				

Precision (P) Location	0:1	xsd:decimal	Precision of coordinates.	
NOT TO BE USED				

4.11.3 Example

```
<Centroid>
    <Location>
        <Longitude>0.3209230516</Longitude>
        <Latitude>51.4429749673</Latitude>
        <Altitude>257</Altituede>
        <gml:pos srsName="CHTRS95">300122 400112</gml:pos>
    </Location>
</Centroid>
```

4.11.1 Hints

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4.12 AlternativeName

(NeTEx-1, 7.4.6)
The ALTERNATIVE NAME Model defines reusable For example we use it to distinguish between two places with the same name in different counties. It complements the ALTERNATIVE TEXT entity which is used to provide translations for individual text attribues of elements.

4.12.1 Business Requirements

Used for HRDF aliases and translations of, for example, ORGANISATIONs and STOP PLACEs.

HRDF names look like this:

- “8507000 Bern$<1>$BN$<3>”
- “8507002 Ostermundigen$<1>”

The types in triangular clauses are:

- 1: name (max. 30 characters) (is used to fill the name)

- 2: long (max. 50 characters) (translates to NameType alias)
- 3: abbreviation (translates to NameType label)
- 4: synonym (translates to NameType alias

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.

AlternativeName is better suited for the HRDF mapping since AlternativeText needs an attribute "UseForLanguage" which is not provided by HRDF (as it doesn't have a language code). AlternativeName, on the other hand, provides an element "NameType" to specify whether it describes a translation (without the need of a language).

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

4.12.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	VersionedChild	ALTERNATIVE NAME inherits from VERSIONED CHILD	
id	1:1	AliasIdType	Identifier of ALTERNATIVE NAME.	
NamedObjectRef	0:1	VersionOfObjectRef	Parent PLACE for which this ALTERNATIVE NAME applies.	
Lang	0:1	Language	Language of name	lang="en"
NameType	0:1	NameTypeEnum	Type of ALTERNATIVE NAME.	<NameType>alias</NameType>
Type of Name - fixed value. Default is 'alias'. Allowed values: • alias • translation • copy NOT TO BE USED				

• label NOT TO BE USED • other NOT TO BE USED				
TypeOfName	0:1	NormalizedString	Type of ALTERNATIVE NAME.	<TypeOfName>label</TypeOfName>
TypeOfName='official' denotes that the AlternativeName contains an official Swiss name (of a StopPlace, Organisation etc.)				
Name	1:1	MultilingualString	Text for ALTERNATIVE NAME.	<Name>St Pancras</Name>
ShortName	0:1	MultilingualString	Short version of ALTERNATIVE NAME.	
Abbreviation	0:1	MultilingualString	Abbreviation associated with ALTERNATIVE NAME.	
QualifierName	0:1	MultilingualString	Name of Qualifier to be used with ALTERNATIVE NAME	

4.12.3 Example

```
<alternativeNames>
  <AlternativeName id="ch:1:AlternativeName:Organisation:11-fr" order="1" version="any">
    <NameType>alias</NameType>
    <TypeOfName>official</TypeOfName>
    <Name>Chemins de fer fédéraux suisses CFF</Name>
    <ShortName>CFF</ShortName>
  </AlternativeName>
</alternativeNames>
```

4.12.1 Hints

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4.13 AlternativeText

(NeTEx-1, 7.4.5)

It is sometime necessary to provide seval 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 bee 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.

4.13.1 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.

4.13.2 Structure

Element	**Usage**	**Structure**	**Description**	**Example**
Attributes: • id • version • attributeName • useForLanguage				
::>	::>	DataManagedObject	ALTERNATIVETEXTS inherits from DATA MANAGED OBJECT.	
id	1:1	AlternativeTextIdType	Identifier of AlternativeText.	AlternativeText:<ofObject>:id
Artifical key				

attributeName	1:1	attributeNameType	Element or Name to which the AlternativeText belongs.	attributeName="Name"
Usually Name or ShortName				
useForLanguage	1:1	languageType	Language of AlternativeText.	useForLanguage="it"
Swiss National Languages and english. However, in many cases we are not able to determine the language when transforming from an HRDF source. In these cases the language is missing.				
Text	0:1	xsd:normalizedString	Alternative Text of referenced element in attributeName.	<Text>Swiss federal railways SFR</Text>

4.13.3 Example

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

5 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 entites 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.

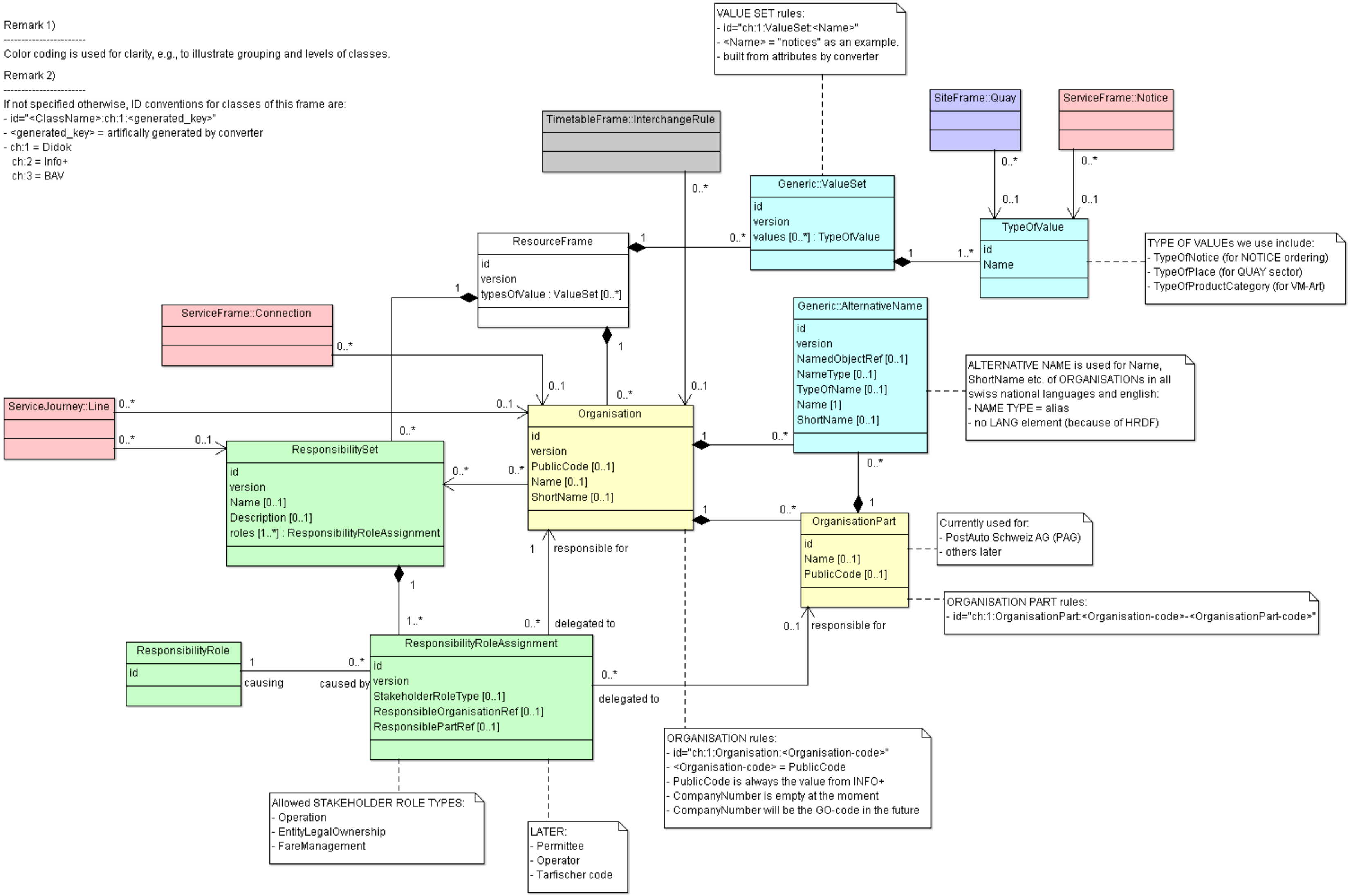
ResourceFrame

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> = artifically generated by converter
- ch:1 = Didok
  ch:2 = Info+
  ch:3 = BAV



5.1.1 Business Requirements

-

5.1.2 Structure

Element	Usage	Structure	Description	Example
::>		VersionFrame	RESOURCE FRAME inherits from VERSION FRAME.	
Attributes: • Version: set to "any" • id: "KIS_ResourceFrame:Profile1"				
id	1:1	ResourceFrameIdType	Identifier of RESOURCE FRAME.	
Artifical Key.				
dataSources	0:*	DataSource	DATA SOURCEs contained in RESOURCE FRAME.	
NOT TO BE USED				
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.				
versions	0:*	Version	VERSIONs contained in RESOURCE FRAME.	
NOT TO BE USED				
typesOfValue	0:*	+ValueSet	Sets of TYPE OF VALUE contained in the RESOURCE FRAME.	
See section 4.10 and 5.2.				
organisations	0:*	Organisation	ORGANISATIONs contained in RESOURCE FRAME.	
Contains the relevant Operators and other Organisations.				
groupsOfOperators	0:*	GroupOfOperator	GROUPS OF OPERATORs contained in RESOURCE FRAME.	
NOT TO BE USED				

operationalContexts	0:*	OperationalContext	OPERATIONAL CONTEXTs contained in the RESOURCE FRAME	
NOT TO BE USED				
controlCentres	0:*	ControlCentre	CONTROL CENTREs contained in RESOURCE FRAME.	
NOT TO BE USED				
equipment	0:*	Equipment	EQUIPMENT contained in the FRAME.	
NOT TO BE USED				
vehicleTypes	0:*	VehicleType	VEHICLE TYPEs contained in RESOURCE FRAME.	
NOT TO BE USED				
vehicleModels	0:*	VehicleModel	VEHICLE MODELs contained in RESOURCE FRAME.	
NOT TO BE USED				
vehicleEquipmentProfiles	0:*	VehicleEquipmentProfile	VEHICLE EQUIPMENT PROFILEs contained in RESOURCE FRAME.	
NOT TO BE USED				
vehicles	0:*	Vehicle	VEHICLEs contained in RESOURCE FRAME.	
NOT TO BE USED				
schematicMaps	0:*	SchematicMap	SCHEMATIC MAPs contained in the FRAME	
NOT TO BE USED				
groupsOfEntities	0:*	GeneralGroupOfEntities	GENERAL GROUPs of ENTITies contained in the RESOURCE FRAME.	
NOT TO BE USED				

5.2 TypeOfValue

The ResourceFrame contains all the ValueSets and TypeOfValues – with their structure introduced in chapters 4.9 and 4.10 – that are used for classification of NeTEx entities like Notice, ServiceJourney, JourneyPart etc.

5.2.1 PurposeOfJourneyPartition

JourneyPartition is used to indicate the reason of a JourneyPart. Every ServiceJourney must have a unique geography and VP, which means that:

- A JourneyPart is generated for each journey-based ***A** line and geographical characteristic in HRDF.
- A JourneyPart is generated for each relevant journey-based ***I** line and geographical characteristic in HRDF.
- If a journey has more than one ***G** line, a JourneyPart is generated.
- If a journey has an alternative VM number stored on the ticker line, this is mapped to the relevant partition using JourneyPart.
- A corresponding ServiceJourney must be generated for a through coach. This through coach journey references different Journey-Parts of the coupled ServiceJourneys (different ***Z** lines).

The primary reasons for the partitioning of a ServiceJourney are the following:

PurposeOfJourneyPartition	Description
Coupling	A JourneyPart is needed where two vehicles of different journeys meet and a through coach ServiceJourney is formed.
FacilityChange	A ServiceJourney has not the same Facilities or Notices (***A** attributes) across its geography. See the example below.

Table 7: PurposeOfJourneyPartition – Allowed values.

For an example of journey partitioning because of FacilityChange consider the following situation:
A ServiceJourney across ScheduledStopPoints **A-B-C-D-E**

- with a Facility (Attribute) “WR” on partition **A-B-C**
- with a Facility or Notice (Attribute) “Minibar” on partition **B-C-D-E**

will be partitioned into the following JourneyPart's

- JourneyPartition for geography **A-B** with “WR”
- JourneyPartition for geography **B-C** with “WR” and “Minibar”
- JourneyPartition for geography **C-D-E** with “Minibar”

Resulting in three JourneyParts, each with PurposeOfJourneyPartition='FacilityChange'.

XML example of PurposeOfJourneyPartition defined in typesOfValue:

```
<ValueSet id="ch:1:ValueSet:JourneyPartition" version="any" nameOfClass="PurposeOfJourneyPartition">
    <Name>PurposesOfJourneyPartitions</Name>
    <values>
```

```xml
        <PurposeOfJourneyPartition id="ch:1:PurposeOfJourneyPartition:Coupling" version="any"/>
        <PurposeOfJourneyPartition id="ch:1:PurposeOfJourneyPartition:FacilityChange" version="any"/>
    </values>
</ValueSet>
```

5.2.2 TypeOfNotice

(NeTEx-1, 7.7.18.4.3)
TypeOfNotice is used to group and hence introduce an ordering to the Notice objects. TypeOfNotice is incorporated in the ResourceFrame through a ValueSet (see chapter 4.10 and 4.9) and referenced by Notice's (in the ServiceFrame) and NoticeAssignments (Service- and TimetableFrame). See also section 10.28 and 10.29 for the Business discussion.

Nr.	Name	ShortName	Usage	Description
1	Allgemeiner Hinweis	AH	1:1	General infotext.
2	Zugname	ZN	1:1	Is not used, as it is stored in the ServiceJourney Name.
3	Gleis-Angabe	GA	NOT TO BE USED	Quay and quaysection information.
4	Buchungsinformation (TarifCode)	TC	1:1	Postauto, for example, has services in different towns. Within these towns different pricing schemes apply. This reference helps them to organize the tariffs. It is added to ServiceJourney.
5	Fahrradmitnahme erlaubt		NOT TO BE USED	Traveling with bicycles permitted
6	Ansagetext	AT	1:1	Announcement infotext for passengers.
7	Fahrertext	FT	NOT TO BE USED	Infotext for conductors.
8	Zugname Original (OriginalTrainNumber)	ZO	LATER	In some cases in Switzerland, the old train number is given in that way.
9	OperationalTrainNumber	RT	LATER	Operational train number from EVAPlus.
10	Angebot	A	1:n	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 spe-cial cases as Notices we need an additional TypeOfNotice.
11	Region	RN	0:1	Postauto is divided into several regions. Currently the region code in HRDF is transmitted as *I RN attribute.

Table 8: TypeOfNotice – Allowed values (VDV 462, 8.4) (we keep the German values).

Regarding HRDF mapping: every line of FPLAN with attributes ***Z**, ***I** or ***N** would correspond to a Notice with TypeOfNotice "2: Zugname".

- ch:1:TypeOfNotice:3 "Gleisangabe" is not used in Switzerland.
- In the future we might move most of these new elements back to other more appropriate elements in NeTEx. This is an intermediate step as we do transformations from and to the HRDF format.
- If in a HRDF export a new ***I** XX line is encountered containing a new code, then a new TypeOfNotice ch:XX is automatically created in the output. SBB will make sure that the semantic behavior is clear.
- Most types will not be advertised (by setting "CanBeAdvertised" in the Notice to 'false').

TypeOfNotice XML example:

```
<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:6" version="any">
      <Name>Ansagetext</Name>
      <PrivateCode>6</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>Allgemeiner Hinweis</Name>
      <PrivateCode>3</PrivateCode>
    </TypeOfNotice>
    <TypeOfNotice id="ch:1:TypeOfNotice:2" version="any">
      <Name>Allgemeiner Hinweis</Name>
      <PrivateCode>2</PrivateCode>
    </TypeOfNotice>
  </values>
```

```
</ValueSet>
```

5.2.3 TypeOfPlace

(NeTEx-1, 7.6.10.3.5)
LATER
TypeOfPlace is used as an identifier for the sector of a QUAY (for example “Gleis 2, Sektor C”). See section “Quay” for the Business discussion.

```
<ValueSet id="ch:1:ValueSet:TypeOfPlace" version="any" nameOfClass="TypeOfPlace">
    <Name>TypeOfPlace</Name>
    <values>
        <TypeOfPlace id="ch:1:TypeOfPlace:quay" version="any">
            <Name>Bahnsteig</Name>
        </TypeOfPlace>
        <TypeOfPlace id="ch:1:TypeOfPlace:quaySector" version="any">
            <Name>Bahnsteig-Sektor</Name>
        </TypeOfPlace>
    </values>
</ValueSet>
```

Currently we only intend to use TypeOfPlace for the formation of trains (classified as LATER).

5.2.4 TypeOfProductCategory

(NeTEx-2, 7.2.1.3.6)
TypeOfProductCategory is the container for the unmodified VMArt from Swiss public transport. A complete list of all the ProductCategories is found in the auxiliary mapping tables to this

XML example of TypeOfProductCategory (not a complete list):

```
<ValueSet id="ch:1:ValueSet:ProductCategory" version="any" nameOfClass="TypeOfProductCategory">
  <Name>ProductCategories</Name>
  <values>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:RE" version="any">
      <Name lang="de">RegioExpress</Name>
      <ShortName lang="de">RE</ShortName>
    </TypeOfProductCategory>
```

```xml
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:S" version="any">
      <Name lang="de">S-Bahn</Name>
      <ShortName lang="de">S</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:IR" version="any">
      <Name lang="de">InterRegio</Name>
      <ShortName lang="de">IR</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:T" version="any">
      <Name lang="de">Tram</Name>
      <ShortName lang="de">T</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:FUN" version="any">
      <Name lang="de">Standseilbahn</Name>
      <ShortName lang="de">FUN</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:IC" version="any">
      <Name lang="de">InterCity</Name>
      <ShortName lang="de">IC</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:BAT" version="any">
      <Name lang="de">Schiff</Name>
      <ShortName lang="de">BAT</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:EXT" version="any">
      <Name lang="de">Extrazug</Name>
      <ShortName lang="de">EXT</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:M" version="any">
      <Name lang="de">Metro</Name>
      <ShortName lang="de">M</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:TE2" version="any">
      <Name lang="de">TER200</Name>
      <ShortName lang="de">TE2</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:SL" version="any">
      <Name lang="de">Sesselbahn</Name>
      <ShortName lang="de">SL</ShortName>
```

```xml
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:EC" version="any">
      <Name lang="de">EuroCity</Name>
      <ShortName lang="de">EC</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:ICB" version="any">
      <Name lang="de">InterCity-Bus</Name>
      <ShortName lang="de">ICB</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:EN" version="any">
      <Name lang="de">EuroNight</Name>
      <ShortName lang="de">EN</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:ICE" version="any">
      <Name lang="de">InterCityExpress</Name>
      <ShortName lang="de">ICE</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:RJ" version="any">
      <Name lang="de">Railjet</Name>
      <ShortName lang="de">RJ</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:SN" version="any">
      <Name lang="de">Nacht-S-Bahn</Name>
      <ShortName lang="de">SN</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:R" version="any">
      <Name lang="de">Regio</Name>
      <ShortName lang="de">R</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:TER" version="any">
      <Name lang="de">Train Express Regional</Name>
      <ShortName lang="de">TER</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:RB" version="any">
      <Name lang="de">Regionalbahn</Name>
      <ShortName lang="de">RB</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:D" version="any">
      <Name lang="de">Schnellzug</Name>
```

```
      <ShortName lang="de">D</ShortName>
    </TypeOfProductCategory>
    <TypeOfProductCategory id="ch:1:TypeOfProductCategory:IRE" version="any">
      <Name lang="de">Interregio-Express</Name>
      <ShortName lang="de">IRE</ShortName>
    </TypeOfProductCategory>
  </values>
</ValueSet>
```

5.3 Organisation

(NeTEx-1, 7.4.5)
The entity ORGANISATION represents an organisation that is involved in the planning, collecting or provision of PT information. For example, a company providing a public transport information service, an authority, an operator, or a company providing an information collection service.

Many organisations break down their operations in different organisation parts. This may be important not only from the operational point of view, but also for data administration, as such units may have different responsibilities. Some common data will be shared between them whereas some other will be managed by a specific part. The RESPONSIBILITY ROLE ASSIGNMENT can be used to describe these responsibilities.

An ORGANISATION can consist of several DEPARTMENTs or ORGANISATIONAL UNITs. Those departments or units are modelled in the ORGANISATION PART.

A DEPARTMENT can consist of one or more ORGANISATIONAL UNITs, which are in charge of operational functions. In a PTO context, a DEPARTMENT could comprise all ORGANISATIONAL UNITs responsible for the lines served by the same transport mode, or using the same type of operation (e.g. regular service, night service).

The generic term OPERATOR expresses a rather general responsibility for a CONCESSIONARY CONTRACT for public transport, where the operational responsibility for the execution of this contract maybe handed to a specific OPERATING DEPARTMENT of the ORGANISATIONAL UNIT. The OPERATOR acts as an alias for the ORGANISATIONAL UNIT.

An ORGANISATION PART of an ORGANISATION acts as a ORGANISATIONAL UNIT responsible for the determination of the PT Services, that need to be delivered in an OPERATIONAL CONTEXT often defined or limited to one TRANSPORT MODE or even to one VEHICLE MODE or SUBMODE of one of it's DEPARTMENTs. This defines the actual involved OPERATING DEPARTMENT that will acts as the serving OPERATOR for the ordered services by the public transport AUTHORITY. The serving OPERATORs can be combined for executing this service in a GROUP OF OPERATORS.

5.3.1 Business Requirements

The list contains all transport enterprises for which timetable information is delivered. There exists a difference between Operator and GeneralOrganisation. GeneralOrganisations are NOT TO BE USED.

The Organisations are identified by their GO-number in Switzerland (see the [DiDok list in OpenTransportData.swiss]). the TU-Code is to be used for operators of other countries.Be aware that it might be difficult to identify the country from the code. The PrivateCode is always the value from Info+. CompanyNumber is, for the time being, empty but will be the GO-code in the future. We will switch to the SBOID (Swiss Business Organisation ID) in the future.

The operators must be set.

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:Organisation:<GO_num-ber/TU_code>	• May be alphanumerical. • “ch:1” is used (SKI). “ch:2” (BAZL) may be used for some in future. • Leading zeros are omitted. • As long as there is not a single authorithy, the ch:x: is needed. Otherwise the organisations may use their own coding.	Yes	Built from Attributes by Converter	• “ch:1:Organisation:11” or in the fu-ture “ch:1:sboid:100001” (SBB) • ch:1:Organisation:80_____ • ch:1:Organisation:80 • ch:1:Organisation:80bus___ • ch:1:Organisation:DB____ • Gantrisch Wander: ch:1:Organisation:1020318283818 399djrjk3k399a

ch:1:Operator:<GO_num-ber/TU_code>				• “ch:1:Operator:11” or in the future “ch:1:sboid:100001” (SBB) • ch:1:Operator:80_____ • ch:1:Operator:80 • ch:1:Operator:80bus___ • ch:1:Operator:DB____ • Gantrisch Wander: ch:1:Opera-tor:1020318283818399djrjk3k399a
ch:1:sboid:<AdminOrg>	• We will switch to the SBOID (Swiss Business Organisation ID) as soon as possible. Meaning that <Object_name>="Organisation" or ”Operator” will be replaced with <ID_name>="sboid" in the future. • The SBOID uses the SAID (Swiss Administration ID) as its <Technical_ID>, which is equivalent to <AdminOrg>.	Yes	Built from Attributes by Converter	ch:1:sboid:100001 (SBB)

Table 9: Organisation and Operator ID definition.

5.3.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	ORGANISATION inherits from DATA MANAGED OBJECT.	
Attributes: • id • version • responsibilitySetRef				
id	1:1	OrganisationIdType	Identifier of ORGANISATION.	ch:1:Operator:11

<table>
<tr><td colspan="5">In Switzerland the organisations are responsible for their GO codes. That's why we have an exception to the rule that we always have the AdminOrg code in the ID:
• ch:1:Organisation:11 corresponds to SBB
• ch:1:Organisation:80 or ch:1:Organisation:DB or ch:1:Organisation:80____ may be Deutsche Bahn.

The id will be replaced with the SBOID (Swiss Business Organisation ID) in the future. And the technical part of the code will be 32 characters. See Table 9: Organisation and Operator ID definition.</td></tr>
<tr><td>keyList</td><td>0:1</td><td>+KeyValue</td><td>KEY LIST with the KEY VALUEs belonging to the Organisation. Will contain the SBOID of the Organisation or Operator.</td><td></td></tr>
<tr><td colspan="5">We will use a single KeyValue with the SBOID (Swiss Business Organisation ID).</td></tr>
<tr><td>PublicCode</td><td>0:1</td><td>xsd:normalizedString</td><td>Alternative public identifier of ORGANISATION.</td><td></td></tr>
<tr><td colspan="5">NOT TO BE USED
We switched from PublicCode to PrivateCode.</td></tr>
<tr><td>PrivateCode</td><td>0:1</td><td>PrivateCode</td><td>Alternative identifier of ORGANISATION.</td><td>11</td></tr>
<tr><td colspan="5">For Switzerland this will be the GO-Number or the TU-Code (from EVAPlus for foreign operators) for SBB exports. We will use the UIC code in the beginning. Later a new OrganisationID might be used.</td></tr>
<tr><td>CompanyNumber</td><td>0:1</td><td>xsd:normalizedString</td><td>Registration number of ORGANISATION a legally incorporated body.</td><td>85:11</td></tr>
<tr><td colspan="5">LATER
Should be the GO-Number or the TU-Code (for foreign operators), prefixed by the UIC country code.</td></tr>
<tr><td>ExternalOrganisationRef</td><td>0:1</td><td>ExternalObjectRef</td><td>An alternative code that uniquely identifies the ORGANISATION.specifically for use in AVMS systems. For VDV compatibility.</td><td></td></tr>
<tr><td colspan="5">NOT TO BE USED</td></tr>
<tr><td>Name</td><td>0:1</td><td>xsd:normalizedString</td><td>Name of ORGANISATION.</td><td>Name>Societe Nationale des Chemins de fer</Name></td></tr>
<tr><td colspan="5">Name from Didok (operator with Swiss approval or concession) or Info+ (other operators).</td></tr>
</table>

ShortName	0:1	MultilingualString	Short name of ORGANISATION.	<ShortName>SNCF</ShortName>
Abbreviation from Didok (operator with Swiss approval or concession) or Info+ (other operators).				
LegalName	0:1	MultilingualString	Legal name of ORGANISATION.	
NOT TO BE USED				
TradingName	0:1	MultilingualString	Trading name of ORGANISATION.	
NOT TO BE USED				
alternativeNames	0:*	AlternativeName	Alternative names for ORGANISATION. +V1.1	See example in the following section.
Description	0:1	MultilingualString	Further description of ORGANISATION.	
NOT TO BE USED				
Remarks	0:1	MultilingualString	Further remarks about ORGANISATION,	
IGNORED AT IMPORT				
Locale	0:1	Locale	Locale of ORGANISATION specifying time zone, language, etc.	
NOT TO BE USED				
ContactDetails	0:1	ContactDetails	Contact details for ORGANISATION for	
NOT TO BE USED				
Email (P) ContactDetails	0:1	EmailAddressType	Email address in ISO format.	
LATER				
Phone (P) ContactDetails	0:1	PhoneNumberType	Phone number.	
LATER				
URL (P) ContactDetails	0:1	xsd:anyURI	Contact web site URL.	
LATER				

PrivateContactDetails	0:1	ContactDetails	Contact details for ORGANISATION for privileged use, for example for immediate access to control centres.	
NOT TO BE USED				
OrganisationType	0:1	TypeOfOrganisationEnum	Type of ORGANISATION.	railOperator
NOT TO BE USED				

Table 10: Allowed values for OrganisationType.

Name	Description
authority	ORGANISATION is a Transport Authority or Agency.
operator	ORGANISATION is a Public Transport OPERATOR.
railOperator	ORGANISATION is a Rail OPERATOR.
railFreightOperator	ORGANISATION is a rail freight OPERATOR.
facilityOperator	ORGANISATION operates a facility such as a station.
statutoryBody	ORGANISATION is a statutory body or government department.
travelAgent	ORGANISATION is a Travel Agent.
servicedOrganisation	ORGANISATION is a business or organisation served by public transport.
other	Other type of ORGANISATION.

typesOfOrganisation	0:*	TypeOfOrganisationRef	References to a TYPE of ORGANISATION that classifies it.	
NOT TO BE USED				
Status	0:1	*xsd:boolean*	Whether the organisation is active. Default is '*true*'.	
NOT TO BE USED				
ValidityPeriod	0:1	SimpleValidityCondition	VALIDITY Condition for organisation.	
NOT TO BE USED				
FromDate (P) ValidityPeriod	0:1	xsd:date	Start of period for which ORGANISATION is active.	
NOT TO BE USED				
ToDate (P) ValidityPeriod	0:1	xsd:date	End date up to which ORGANISATION is active.	

NOT TO BE USED				
parts	0:*	OrganisationPart	Any component parts of an ORGANISATION, that is, OPERATIONAL UNITs or DEPARTMENTs.	
LATER				
OwnResponsibilitySets	0:*	ResponsibilitySet	Owned RESPONSIBILITY SETs.	
DelegatedResponsibilitySets	0:*	ResponsibilitySet	Delegated responsibility SETS.	
delegatedFrom	0:1	OrganisationRef	Other Organisations that delegate to this ORGANISATION.	

5.3.1 Example

```
<organisations>
  <RetailConsortium id="ch:1:RetailConsortium:SwissTicket" version="any">
    <Name>SwissTicket</Name>
  </RetailConsortium>
  <Operator id="ch:1:Operator:11" version="any">
    <PrivateCode>11</PrivateCode>
    <CompanyNumber>85:11</PrivateCode>
    <Name>Schweizerische Bundesbahnen SBB</Name>
    <ShortName>SBB</ShortName>
    <alternativeNames>
      <AlternativeName id="ch:1:AlternativeName:Operator:11-fr" order="1" version="any">
        <NameType>alias</NameType>
        <TypeOfName>official</TypeOfName>
        <Name>Chemins de fer fédéraux suisses CFF</Name>
        <ShortName>CFF</ShortName>
      </AlternativeName>
      <AlternativeName id="ch:1:AlternativeName:Operator:11-it" order="1" version="any">
        <NameType>alias</NameType>
        <TypeOfName>official</TypeOfName>
        <Name>Ferrovie federali svizzere FFS</Name>
        <ShortName>FFS</ShortName>
      </AlternativeName>
```

```xml
      <AlternativeName id="ch:1:AlternativeName:Operator:11-en" order="1" version="any">
        <NameType>alias</NameType>
        <TypeOfName>official</TypeOfName>
        <Name>Swiss federal railways SFR</Name>
        <ShortName>SFR</ShortName>
      </AlternativeName>
    </alternativeNames>
  </Operator>
  <Operator id="ch:1:Operator:801" version="any">
    <PrivateCode>801</PrivateCode>
    <CompanyNumber>85:801</PrivateCode>
    <Name>PostAuto Schweiz</Name>
    <ShortName>PAG</ShortName>
    <alternativeNames>
      <AlternativeName id="ch:1:AlternativeName:Operator:801-fr" order="1" version="any">
        <NameType>alias</NameType>
        <TypeOfName>official</TypeOfName>
        <Name>CarPostal Suisse</Name>
      </AlternativeName>
      <AlternativeName id="ch:1:AlternativeName:Operator:801-it" order="1" version="any">
        <NameType>alias</NameType>
        <TypeOfName>official</TypeOfName>
        <Name>AutoPostale Svizzera</Name>
      </AlternativeName>
      <AlternativeName id="ch:1:AlternativeName:Operator:801-en" order="1" version="any">
        <NameType>alias</NameType>
        <TypeOfName>official</TypeOfName>
        <Name>PostBus Switzerland</Name>
      </AlternativeName>
    </alternativeNames>
    <parts>
      <OrganisationPart id="ch:1:OrganisationPart:801:41" version="any">
        <PrivateCode>801:41</PrivateCode>
        <CompanyNumber>85:801:41</PrivateCode>
        <Name>Postauto Zürich</Name>
        <ShortName>PAZ</ShortName>
        <alternativeNames>
          <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:41-fr" order="1" version="any">
            <NameType>alias</NameType>
```

```xml
          <Name>CarPostal Zurich</Name>
        </AlternativeName>
        <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:41-it" order="1" version="any">
          <NameType>alias</NameType>
          <Name>AutoPostale zurigo</Name>
        </AlternativeName>
        <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:41-en" order="1" version="any">
          <NameType>alias</NameType>
          <Name>PostBus Zurich</Name>
        </AlternativeName>
      </alternativeNames>
    </OrganisationPart>
    <OrganisationPart id="ch:1:OrganisationPart:801:42" version="any">
      <PrivateCode>801:42</PrivateCode>
      <CompanyNumber>85:801:42</PrivateCode>
      <Name>Postauto Basel</Name>
      <ShortName>PAB</ShortName>
      <alternativeNames>
        <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:42-fr" order="1" version="any">
          <NameType>alias</NameType>
          <Name>CarPostal Bâle</Name>
        </AlternativeName>
        <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:42-it" order="1" version="any">
          <NameType>alias</NameType>
          <Name>AutoPostale Basilea</Name>
        </AlternativeName>
        <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:42-en" order="1" version="any">
          <NameType>alias</NameType>
          <Name>PostBus Basel</Name>
        </AlternativeName>
      </alternativeNames>
    </OrganisationPart>
  </parts>
 </Operator>
</organisations>
```

5.3.1 Hints

The Organisation we set will always be the code from the Info+ database. Be aware that a transformation to TU-Code or GO number might be necessary. Usually the numbers contain the UIC countrycode and an organisational number. It may be that for foreign Organisations the code does not have a country-specific part for the time being.

Code	Description	Example
UIC country code	Countrycode of the transport organisation. Code according of UIC that is running the journey. Maximum 2-digit numerical value.	85
GO number (Organisation number from DoT)	Number of the "Geschäftsorganisation“ of a transport enterprise according to the list of the department of transport. In other countries they use TU-Code. Leading zeros are omitted, and the string must not exceed a length of six alphanumerical characters (allowed are { A-Z, a-z, 0-9, _ }). The GO-number must be identical in different elements of a journey.	37

Table 11: Country code and Organisation number.

5.4 OrganisationPart

(NeTEx-1, 7.4.5.4.2)
An ORGANISATION PART of an ORGANISATION acts as a ORGANISATIONAL UNIT responsible for the determination of the PT Services, that need to be delivered in an OPERATIONAL CONTEXT often defined or limited to one TRANSPORT MODE or even to one VEHICLE MODE or SUBMODE of one of it's DEPARTMENTs. This defines the actual involved OPERATING DEPARTMENT that will acts as the serving OPERATOR for the ordered services by the public transport AUTHORITY. The serving OPERATORs can be combined for executing this service in a GROUP OF OPERATORS.

5.4.1 Business Requirements

We currently generate the information from the HRDF *I RN line and only use OrganisationPart for the Organisation “PostAuto Schweiz AG” (PAG). Others are coming later.

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:Organisation-Part:<GO_code/TU_code>:<Organi-sationPart_code>	It is currently unsure whether OrganisationPart is used. In the only case it is used (Postauto), the technical line ID is put into it. Therefore we will probably prefer to store this als line.	Yes	Built from Attributes by Converter	ch:1:Organisation-Part:801:41
ch:1:sboid:<AdminOrg>	• We will switch to the SBOID (Swiss Business Organisation ID) as soon as possible. Meaning that <Object_name>="OrganisationPart" will be replaced with <ID_name>="sboid" in the future. • The SBOID uses the SAID (Swiss Administration ID) as its <Technical_ID>, which is equivalent to <AdminOrg>.	Yes	Built from Attributes by Converter	

Table 12: OrganisationPart ID definition.

5.4.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	ORGANISATION PART inherits from DATA MANAGED OBJECT.	
id	1:1	OrganisationPartIdType	Identifier of an ORGANISATION PART.	ch:1:OrganisationPart:801:175
See Table 12: OrganisationPart ID definition.				
keyList	0:1	+KeyValue	KEY LIST with the KEY VALUEs be-longing to the ORGANISATION PART. Will contain the SBOID.	
We will use a single KeyValue with the SBOID (Swiss Business Organisation ID).				

Name	0:1	MultilingualString	Name of ORGANISATION PART.	Postauto AG – Region Bern
ShortName	0:1	MultilingualString	SHORT NAME of ORGANISATION PART.	
LATER				
Description	0:1	MultilingualString	Description of the ORGANISATION PART.	
NOT TO BE USED				
PublicCode	0:1	xsd:normalizedString	Public code of the ORGANISATION PART.	
NOT TO BE USED We switched from PublicCode to PrivateCode.				
PrivateCode	0:1	PrivateCode	Private code of the ORGANISATION PART. May be used for inter-operating with other (legacy) systems.	801:175
We use the full GO or TU code including the organisation.				
ContactDetails	0:1	ContactDetails	Contact details for ORGANISATION PART for public use.	
NOT TO BE USED				
Location	0:1	Location	Location of the ORGANISATION PART.	
NOT TO BE USED				

OrganisationRef	0:1	OrganisationRef	Reference to an ORGANISATION to whom the ORGANISATION PART belongs.	ch:1:Operator:801
The reference is always to the main organisation.				
TypeofOrganisationPartRef	0:1	TypeOfOrganisationPartRef	Reference to a TYPE of ORGANISATION PART that classifies this part.	
NOT TO BE USED See Table 10: Allowed values for OrganisationType.				
AdministrativeZones	0:*	AdministrativeZone	ADMINISTRATIVE ZONEs administered by ORGANISATION PART.	
NOT TO BE USED				
OwnResponsibilitySets	0:*	ResponsibilitySet	Other ORGANISATION to which this ORGANISATION PART delegates one or more roles implementation.	
DelegatedResponsibilitySets	0:*	ResponsibilitySet	Other ORGANISATION to which this ORGANISATION PART delegates one or more roles implementation.	
delegatedFrom	0:1	OrganisationRefStructure	Other Organisations that Delegate to this Organisation Part ORGANISATION. (TAP TSI B1.)	

5.4.1 Examples

```xml
<Operator id="ch:1:Operator:801" version="any">
  <PrivateCode>801</PrivateCode>
  <CompanyNumber>85:801</PrivateCode>
  <Name>PostAuto Schweiz</Name>
  <ShortName>PAG</ShortName>
  <alternativeNames>
    <AlternativeName id="ch:1:AlternativeName:Operator:801-fr" order="1" version="any">
      <NameType>alias</NameType>
      <TypeOfName>official</TypeOfName>
      <Name>CarPostal Suisse</Name>
    </AlternativeName>
    <AlternativeName id="ch:1:AlternativeName:Operator:801-it" order="1" version="any">
      <NameType>alias</NameType>
      <TypeOfName>official</TypeOfName>
      <Name>AutoPostale Svizzera</Name>
    </AlternativeName>
    <AlternativeName id="ch:1:AlternativeName:Operator:801-en" order="1" version="any">
      <NameType>alias</NameType>
      <TypeOfName>official</TypeOfName>
      <Name>PostBus Switzerland</Name>
    </AlternativeName>
  </alternativeNames>
  <parts>
    <OrganisationPart id="ch:1:OrganisationPart:801:41" version="any">
      <PrivateCode>801:41</PrivateCode>
      <CompanyNumber>85:801:41</PrivateCode>
      <Name>Postauto Zürich</Name>
      <ShortName>PAZ</ShortName>
      <alternativeNames>
        <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:41-fr" order="1" version="any">
          <NameType>alias</NameType>
          <Name>CarPostal Zurich</Name>
        </AlternativeName>
        <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:41-it" order="1" version="any">
```

```xml
            <NameType>alias</NameType>
            <Name>AutoPostale zurigo</Name>
          </AlternativeName>
          <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:41-en" order="1" version="any">
            <NameType>alias</NameType>
            <Name>PostBus Zurich</Name>
          </AlternativeName>
        </alternativeNames>
      </OrganisationPart>
      <OrganisationPart id="ch:1:OrganisationPart:801:42" version="any">
        <PrivateCode>801:42</PrivateCode>
        <CompanyNumber>85:801:42</PrivateCode>
        <Name>Postauto Basel</Name>
        <ShortName>PAB</ShortName>
        <alternativeNames>
          <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:42-fr" order="1" version="any">
            <NameType>alias</NameType>
            <Name>CarPostal Bâle</Name>
          </AlternativeName>
          <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:42-it" order="1" version="any">
            <NameType>alias</NameType>
            <Name>AutoPostale Basilea</Name>
          </AlternativeName>
          <AlternativeName id="ch:1:AlternativeName:OrganisationPart:801:42-en" order="1" version="any">
            <NameType>alias</NameType>
            <Name>PostBus Basel</Name>
          </AlternativeName>
        </alternativeNames>
      </OrganisationPart>
    </parts>
  </Operator>
```

5.4.2 Hints

-

5.5 Operator

(NeTEx-1, 7.7.8.3.3)
A company providing public transport services.

5.5.1 Business Requirements

The list contains all transport enterprises for which timetable information is delivered. There exists a difference between Operator and GeneralOrganisation. GeneralOrganisations are NOT TO BE USED.

The Organisations are identified by their GO-number in Switzerland (see the DiDok list in OpenTransportData.swiss). the TU-Code is to be used for operators of other countries.Be aware that it might be difficult to identify the country from the code. The PrivateCode is always the value from Info+. CompanyNumber is, for the time being, empty but will be the GO-code in the future. We will switch to the SBOID (Swiss Business Organisation ID) in the future.

The operators must be set.

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:Organisation:<GO_num-ber/TU_code>	• May be alphanumerical. • “ch:1” is used (SKI). “ch:2” (BAZL) may be used for some in future. • Leading zeros are omitted. • As long as there is not a single authorithy, the ch:x: is needed. Otherwise the organisations may use their own coding.	Yes	Built from Attributes by Converter	• “ch:1:Organisation:11” or in the fu-ture “ch:1:sboid:100001” (SBB) • ch:1:Organisation:80_____ • ch:1:Organisation:80 • ch:1:Organisation:80bus___ • ch:1:Organisation:DB____ • Gantrisch Wander: ch:1:Organisation:1020318283818399djrjk3k399a

ch:1:Operator:<GO_number/TU_code>				• “ch:1:Operator:11” or in the future “ch:1:sboid:100001” (SBB) • ch:1:Operator:80______ • ch:1:Operator:80 • ch:1:Operator:80bus___ • ch:1:Operator:DB____ • Gantrisch Wander: ch:1:Operator:1020318283818399djrjk3k399a
ch:1:sboid:<AdminOrg>	• We will switch to the SBOID (Swiss Business Organisation ID) as soon as possible. Meaning that <Object_name>="Organisation" or ”Operator” will be replaced with <ID_name>="sboid" in the future. • The SBOID uses the SAID (Swiss Administration ID) as its <Technical_ID>, which is equivalent to <AdminOrg>.	Yes	Built from Attributes by Converter	ch:1:sboid:100001 (SBB)

Table 13: Organisation and Operator ID definition.

5.5.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	Organisation	OPERATOR inherits from ORGANISATION.	
See the Organisation structure in section 5.3.2. The elements of this table are appended to the Organisation elements (at the end) of an Operator..				
Attributes: • id • version • responsibilitySetRef				
id	1:1	OrganisationIdType	Identifier of ORGANISATION.	ch:1:Operator:11

<table>
<tr><td colspan="5">In Switzerland the organisations are responsible for their GO codes. That's why we have an exception to the rule that we always have the AdminOrg code in the ID:
• ch:1:Organisation:11 corresponds to SBB
• ch:1:Organisation:80 or ch:1:Organisation:DB or ch:1:Organisation:80____ may be Deutsche Bahn.

The id will be replaced with the SBOID (Swiss Business Organisation ID) in the future. And the technical part of the code will be 32 characters. See Table 9: Organisation and Operator ID definition.</td></tr>
<tr><td>CountryRef</td><td>0:1</td><td>CountryCode</td><td>Country code (ISO 3166).</td><td></td></tr>
<tr><td colspan="5">NOT TO BE USED</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>Address</td><td>0:1</td><td>PostalAddress</td><td>Postal ADDRESS of ORGANISATION.</td><td></td></tr>
<tr><td colspan="5">IGNORED AT IMPORT
Attributes:
• id
• version</td></tr>
<tr><td>BuildingName
(P) Address</td><td>0:1</td><td>xsd:normalizedString</td><td>Building name of POSTAL ADDRESS.</td><td></td></tr>
<tr><td colspan="5">IGNORED AT IMPORT</td></tr>
<tr><td>Street
(P) Address</td><td>0:1</td><td>xsd:normalizedString</td><td>Street name of POSTAL ADDRESS.</td><td></td></tr>
<tr><td colspan="5">LATER</td></tr>
<tr><td>Town
(P) Address</td><td>0:1</td><td>xsd:normalizedString</td><td>Town of POSTAL ADDRESS.</td><td></td></tr>
<tr><td colspan="5">LATER</td></tr>
<tr><td>PostCode
(P) Address</td><td>0:1</td><td>PostCodeType</td><td>Post code.</td><td></td></tr>
<tr><td colspan="5">LATER</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>PrimaryMode</td><td>0:1</td><td>VehicleModeEnum</td><td>Primary TRANSPORT MODE of ORGANISATION.</td><td></td></tr>
</table>

<table>
<tr><td colspan="5">NOT TO BE USED</td></tr>
<tr><td>OperatorActivities</td><td>0:*</td><td>OperatorActivitiesEnum</td><td>Activities undertaken by operator.</td><td></td></tr>
<tr><td colspan="5">

Table 14: Allowed values for OperatorActivitiesEnumeration.

<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>passengers</td><td>Operator carries passengers.</td></tr>
<tr><td>freight</td><td>Operator carries freight.</td></tr>
<tr><td>infrastructure</td><td>Operator maintains infrastructure.</td></tr>
<tr><td>other</td><td>Other type of Operator.</td></tr>
</table>

</td></tr>
<tr><td colspan="5">NOT TO BE USED</td></tr>
<tr><td>CustomerServiceContactDetails</td><td></td><td></td><td>Contact details for ORGANISATION's Customer services.</td><td></td></tr>
<tr><td colspan="5">NOT TO BE USED</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>departments</td><td>0:*</td><td></td><td>DEPARTMENTs for Organisation.</td><td></td></tr>
<tr><td colspan="5">NOT TO BE USED</td></tr>
<tr><td colspan="5"></td></tr>
</table>

5.5.3 Example

See example in section 5.3.1 with various Organisations and Operators.

5.5.4 Hints

-

5.6 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

5.6.1 Business Requirements

There exist Lines for which planning and operation are done by different Organisations. A typical use case:

- Organisation A has the concession,
- Organisation B operates a part of the journeys
- Organisation C is responsible for the ticket selling

This results in some challenges for the data exchange, because only a part of a line is imported at any given time. Each organisation is only providing “its” journeys, which could result in the deletion of the journeys of the other operators.SBB deals with that in a way that only ServiceJourneys of the imported organisation are deleted.

We need to model these things in NeTEx. This is done by the Responsbility model which allows us to describe responsibilities of Organisations for all objects of a network in a general way. This is shown in the following example:

- SBB has the concession for IC line 5
- Some journeys are operated by “Schweizerische Südostbahn”
- Ticketing is done by a newly founded consortium “Schweiz Ticket”

A ResponsibilitySet is, at the beginning, an assignement of roles to a given use case (a sort of scenario of responsibilities). The ResponsibilitySet has a name and the normal standard attributes from EntityInVersion and DataManagedObject. The interesting child element is ResponsibilityRoleAssignment.

Here certain roles can be given to each organisation. In “DataRoleType” there are some predefined values for roles in relation to data management, e.g.:

- Creates
- Examines
- Distributes

the data of an object. This types are not currently used.

In StakeholderRoleType there are predefined values for roles in the real world. E.g. who is responsible for:

- Operation
- Calculation
- Control and Monitoring

of an object. By using TypeOfResponsibilityroleRef and ResponsibilityRoleRef also user-defined roles can be created.

However, not all roles need to be filled.

In FrameDefaults for each frame a Standard ResponsibilitySet can be given, which applies to all its objects. The id of ResponsibilitySet is artificial and not persistent between exports.

For all main object of the type DataManagedObject there can be given at most one reference to a ResponsibilitySet, that overwrites the one from FrameDefault. We will not set the ResponsibilitySet for the FrameDefault. Objects of the type ManagedChild can't do that. This means that the responsibility of a ServiceJourney can be changed, but not the responsibility of a single Call of that ServiceJourney.
The restriction to one reference means that all possible combinations of ResponsbilitySets must be modeled. In practice this is not problematic as this can be crated by the exporting software at export time.

5.6.2 Structure

Element	**Usage**	**Structure**	**Description**	**Example**
::>	::>	DataManagedObject	RESPONSIBILITY SET inherits from DATA MANAGED OBJECT.	
id	1:1	ResponsibilitySetIdType	Identifier of RESPONSIBILITY SET.	ch:1:ResponsibilitySet:SBB_SBB
The id of ResponsibilitySet is artificial and not persistent between exports.				
Name	0:1	MultilingualString	Name of RESPONSIBILITY SET.	Schweizerische Bundesbahnen SBB
PrivateCode	0:1	PrivateCode	Alternative identifier of RESPONSIBILITY SET.	SBB
roles	1:*	ResponsibilityRoleAssignment	RESPONSIBILITY ROLE ASSIGNMENTs making up the RESPONSIBILITY SET.	

5.6.3 Example

```xml
<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>
  <ResponsibilitySet id="ch:1:ResponsibilitySet:SBB_SBB" version="any">
    <Name>Schweizerische Bundesbahnen SBB</Name>
    <PrivateCode>SBB</PrivateCode>
    <roles>
      <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:SBB_SBB:1" version="any">
        <StakeholderRoleType>EntityLegalOwnership</StakeholderRoleType>
        <ResponsibleOrganisationRef ref="ch:1:Operator:11" version="any" />
      </ResponsibilityRoleAssignment>
      <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:SBB_SBB:2" version="any">
        <StakeholderRoleType>Operation</StakeholderRoleType>
        <ResponsibleOrganisationRef ref="ch:1:Operator:11" version="any" />
      </ResponsibilityRoleAssignment>
    </roles>
  </ResponsibilitySet>
  <ResponsibilitySet id="ch:1:ResponsibilitySet:BLS_BLS" version="any">
    <Name>BLS AG (bls)</Name>
    <PrivateCode>BLS</PrivateCode>
    <roles>
      <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:BLS_BLS:1" version="any">
        <StakeholderRoleType>EntityLegalOwnership</StakeholderRoleType>
        <ResponsibleOrganisationRef ref="ch:1:Operator:33" version="any" />
      </ResponsibilityRoleAssignment>
      <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:BLS_BLS:2" version="any">
```

```
          <StakeholderRoleType>Operation</StakeholderRoleType>
          <ResponsibleOrganisationRef ref="ch:1:Operator:33" version="any" />
        </ResponsibilityRoleAssignment>
      </roles>
    </ResponsibilitySet>
</responsibilitySets>
```

5.6.1 Hints

The relevant Organisations are defined in the ResourceFrame:

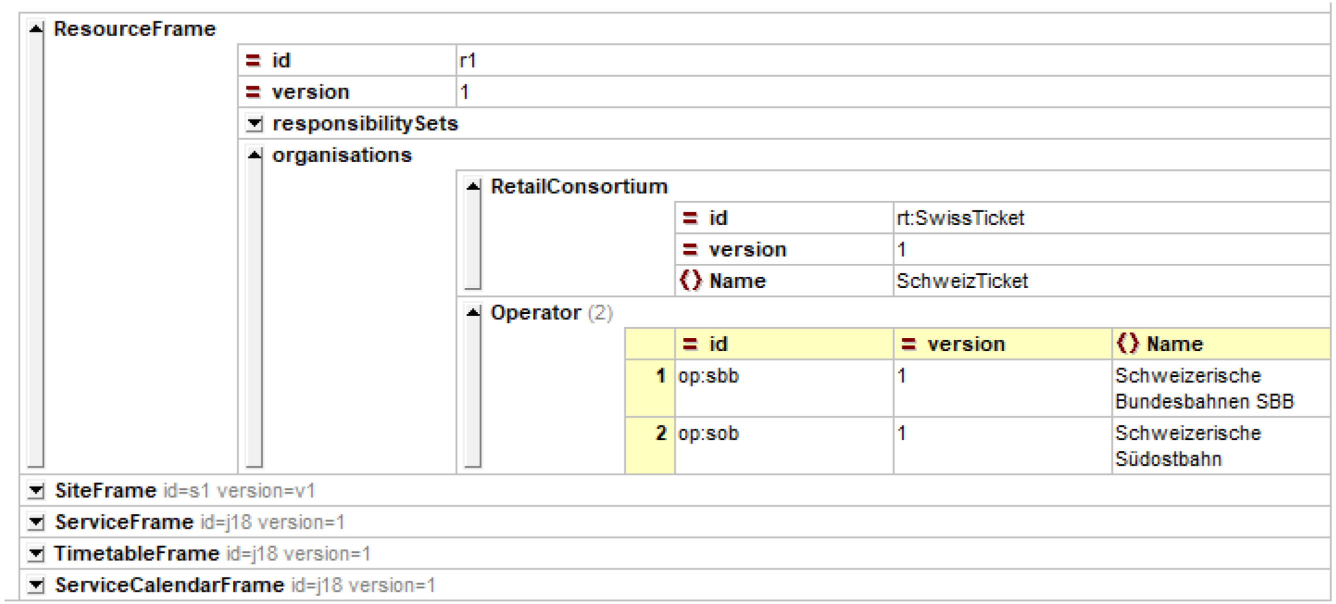


Figure 3: Definititon of Organisations.

There are diffferent types of Organisations (e.g. owner of the concession, operator, tarif organisation) Organisations can have sub-organisations (called OrganisationPart). Currently only “Postauto Schweiz” has different organisation parts for different regions. But this will change. We will see more OrganisationParts:

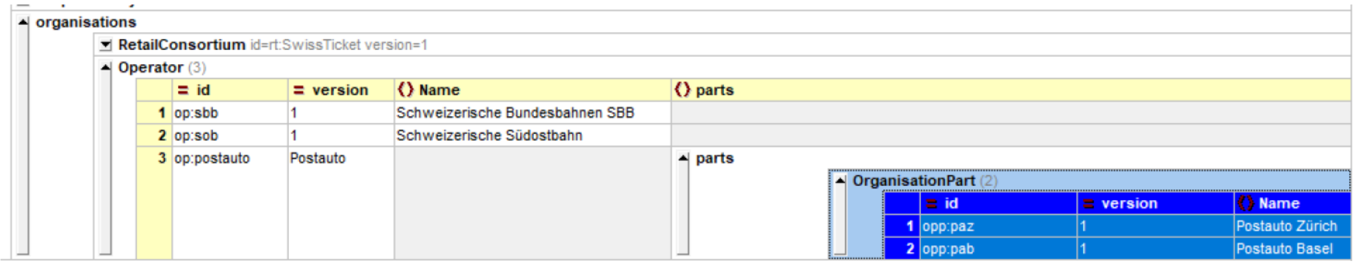


Figure 4: OrganisationParts of a given Organisation.

Example: “Wander Gantrisch” (FRG) where it is the concessionary, PAG is the operator and “Wander Gantrisch” (this time “Wander Gantrisch”) is the tarif organisation with a different id.

The ResponsibilitySets are also to be defined in the ResourceFrame:

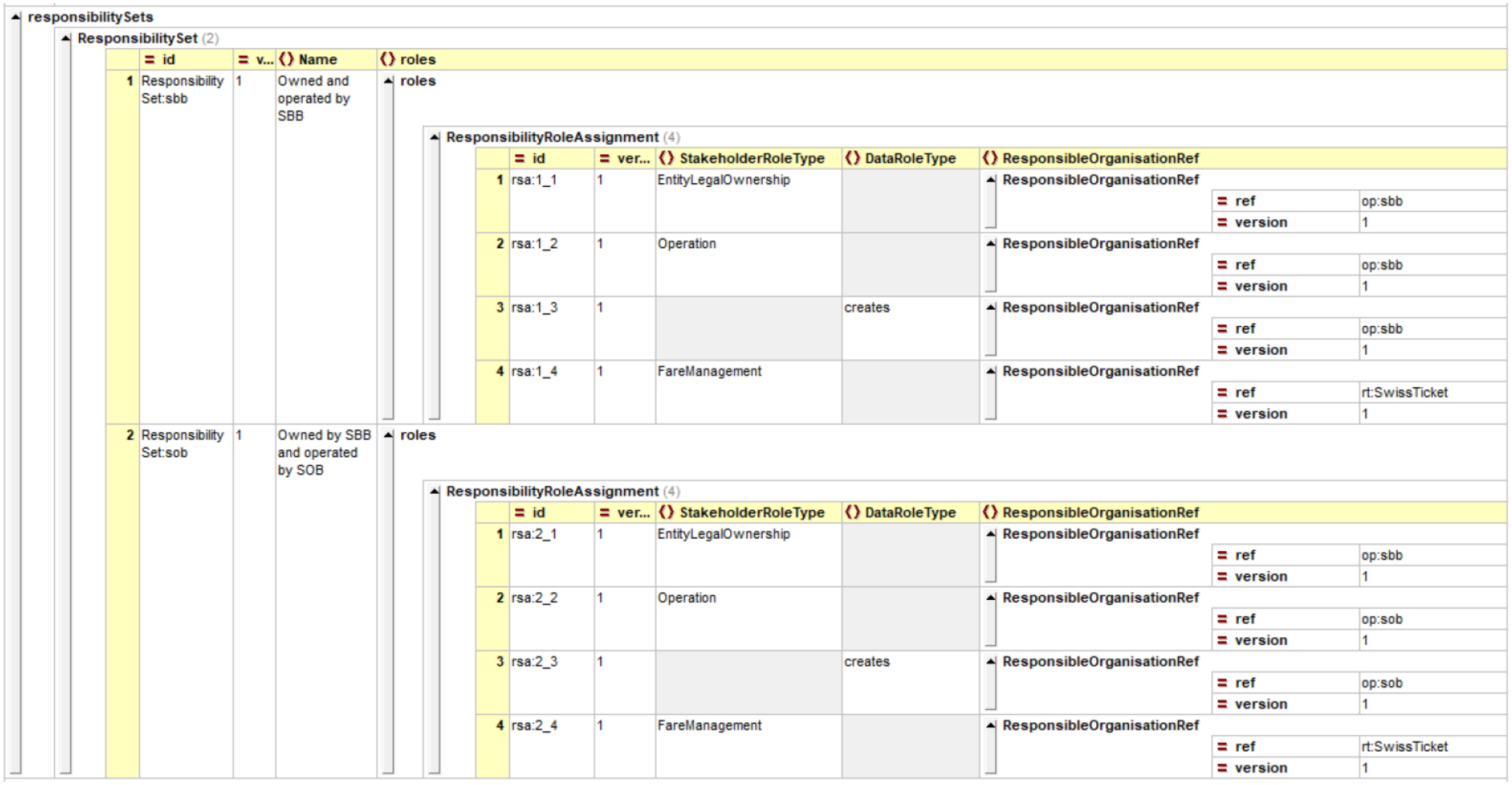


Figure 5: ResponsibilitySets assign defined roles to each organisation.

Each role in a responsibility set has a responsible Organisation. It is also possible to give a reference to an OrganisationPart:

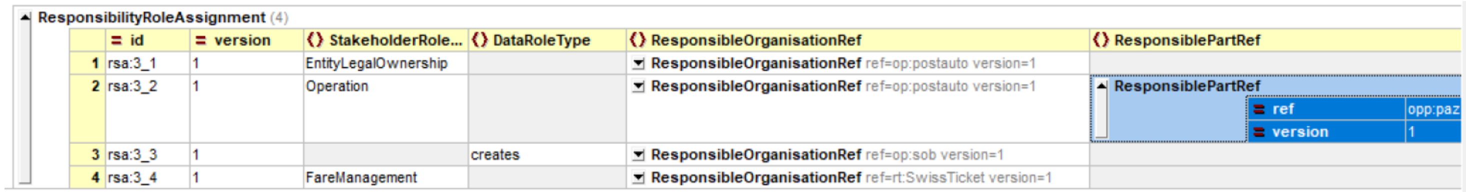


Figure 6: The element "ResponsiblePartRef" indicates the responsible organisation part.

In the most simple case the ResponsibilitySets are assigned to Lines with the attribut "responsibilitySetRef“:

ServiceFrame

id	j18
vers...	1

lines

Line (2)

	id	version	responsibilitySetRef	Name	ShortName	PublicCode	PrivateCode
1	42-51-_-j18	1	ResponsibilitySet:sbb	Name lang=de	ShortName lang...	IC 51	0
2	42-5-_-j18	1	ResponsibilitySet:sbb	Name lang=de	ShortName lang...	IC 5	0

Figure 7: Using ResponsibilitySet with Line.

Alternatively the ResponsibilitySet is assigned to a ServiceJourney:

TimetableFrame

id	j18
vers...	1

vehicleJourneys

ServiceJourney (33)

	id	version	responsibilitySetRef	PrivateCode	DepartureTime	dayTypes	ServiceJourneyPatternRef	LineRef
1	47295544	1	ResponsibiliySet:sob	1	07:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
2	47295545	1	ResponsibiliySet:sbb	2	09:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
3	47295546	1	ResponsibiliySet:sob	3	15:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
4	47295547	1	ResponsibiliySet:sbb	4	06:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
5	47295548	1	ResponsibiliySet:sob	5	05:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
6	47295549	1	ResponsibiliySet:sbb	6	17:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
7	47295550	1	ResponsibiliySet:sob	7	11:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
8	47295551	1	ResponsibiliySet:sbb	8	18:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
9	47295552	1	ResponsibiliySet:sob	9	22:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
10	47295553	1	ResponsibiliySet:sbb	10	12:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
11	47295554	1	ResponsibiliySet:sob	11	19:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
12	47295555	1	ResponsibiliySet:sbb	12	13:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...
13	47295556	1	ResponsibiliySet:sob	13	20:49:00.0000000+01:00	dayTypes	ServiceJourneyPatternRef re...	LineRef ref=42-51-_-j18 v...

Figure 8: Using ResponsibilitySet with ServiceJourney.

5.7 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.

5.7.1 Business Requirements

Not all roles must be filled.

5.7.2 Structure

Element	Usage	Structure	Description	Example
Attributes: • id • version				
id	1:1	ResponsibilityRoleAssignmentId		ch:1:ResponsibilityRoleAssign-ment:SBB_SBB-2
Description	0:1	MultilingualString		
IGNORED AT IMPORT				
DataRoleType	0:1	xsd:DataRoleTypeEnum		
NOT TO BE USED **DataRoleTypeEnum**: • collects • validates • aggregates • distributes • redistributes				
StakeholderRoleType	0:1	xsd:StakeholderRoleTypeEnum		Operation
Only the values defined below are allowed in Switzerland:				

StakeholderRoleTypeEnum - allowed values: • Operation • EntityLegalOwnership • FareManagement SNCF will additionally use “planning” NOT TO BE USED: • control • reservation • other				
ResponsibleOrganisationRef	0:1	OrganisationRef	Reference to an ORGANISA-TION to which this RESPON-SIBILITY ROLE is assigned.	ref="ch:1:Operator:11"
Reference to the Organisation				
ResponsiblePartRef	0:1	OrganisationPartRef	Reference to an ORGANISA-TION PART to which this RE-SPONSIBILITY ROLE is as-signed.	
Reference to the OrganisationPart, where applicable				
ResponsibleAreaRef	0:1	AdministrativeZoneRef	Reference to an ADMINIS-TRATIVE ZONE to this RE-SPONSIBILITY ROLE is assigned.	
NOT TO BE USED				

5.7.3 Example

```
<roles>
  <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:SBB_SBB-1" version="any">
    <StakeholderRoleType>EntityLegalOwnership</StakeholderRoleType>
    <ResponsibleOrganisationRef ref="ch:1:Operator:11" version="any" />
  </ResponsibilityRoleAssignment>
  <ResponsibilityRoleAssignment id="ch:1:ResponsibilityRoleAssignment:SBB_SBB-2" version="any">
```

```
    <StakeholderRoleType>Operation</StakeholderRoleType>
    <ResponsibleOrganisationRef ref="ch:1:Operator:11" version="any" />
  </ResponsibilityRoleAssignment>
</roles>
```

5.7.4 Hints

-

5.8 OperationalContext

(NeTEx-1 7.7.8.3.4)
NOT TO BE USED
Characterization of a set of operational objects, such as timing or links determined either by a DEPARTMENT or by an ORGANISATIONAL UNIT.

5.8.1 Business Requirements

We don't need it and won't use it.

5.9 VehicleType

(NeTEx-1 7.7.11.3.2)
NOT TO BE USED
The VEHICLE TYPE MODEL represents VEHICLES and their properties.

VEHICLES may be classified according to the vehicle scheduling requirements as to model and capacity and on board facilities (e.g. standard bus, double-deck, etc.). These same requirements may be attached to a SERVICE JOURNEY to indicate that it should be satisfied by a vehicle of that type.

5.9.1 Business Requirements

We don't need it and won't use it.

6 Infrastructure Frame

(NeTEx-1, 8.2)

NOT TO BE USED

An Infrastructure Frame is a set of infrastructure network data (and other data logically related to these) to which the same VALIDITY CONDITIONs have been assigned.

7 Site Frame

(NeTEx-1, 8.5.2)
A set of SITE data (and other data logically related to these) to which the same VALIDITY CONDITIONs have been assigned.

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

The SITE MODEL provides a general description of common properties a physically situated location, such as a station or point of interest, including its entrances, levels, equipment, paths, accessibility properties, etc. The SITE MODEL is refined by specific submodels such as STOP PLACE, POINT OF INTEREST, PARKING, etc. to define specific types of ADDRESSABLE PLACE.

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.*
- *STOP PLACE COMPONENTs: describe the various topological parts and places associated with a STOP PLACE - for example ENTRANCEs and ACCESS SPACEs.*
- *PATH LINKs: model the paths through a STOP PLACE and describe physical connections between STOP PLACE COMPONENTs.*
- *CHECK CONSTRAINTs: model processes that may slow a passenger down in a STOP PLACE as for example ticket barriers.*
- *EQUIPMENT and LOCAL SERVICEs: describs the various service and accessibility features of a STOP PLACE – for example ticket machines, wheelchair luggage trolleys or lifts and staircaises.*
- *ACCESSIBILITY: describes any STOP PLACE COMPONENT either in terms of suitability for specific user needs or in terms of limitations for mobility or visually impaired passengers as an example.*

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

Remark 1)

We do not use NAVIGATION PATH and SUITABILITY thus they are omitted.

Remark 2)

A few class relationships are omitted for the sake of clarity. But only in obvious cases like PATH LINK END where, for example, ENTRANCE REF is already listed as an attribute and therefor the relationship to STOP PLACE ENTRANCE omitted.

Remark 3)

Since this map is a compromise between the NeTEx model and our examples (see also the Realisation Guide), objects are sometimes listed in subclasses instead of where they originate. An example is STOP PLACE. Most of its elements are inherited from the SITE / SITE ELEMENT class but STOP PLACE is the primary class we use in our examples.

Remark 4)

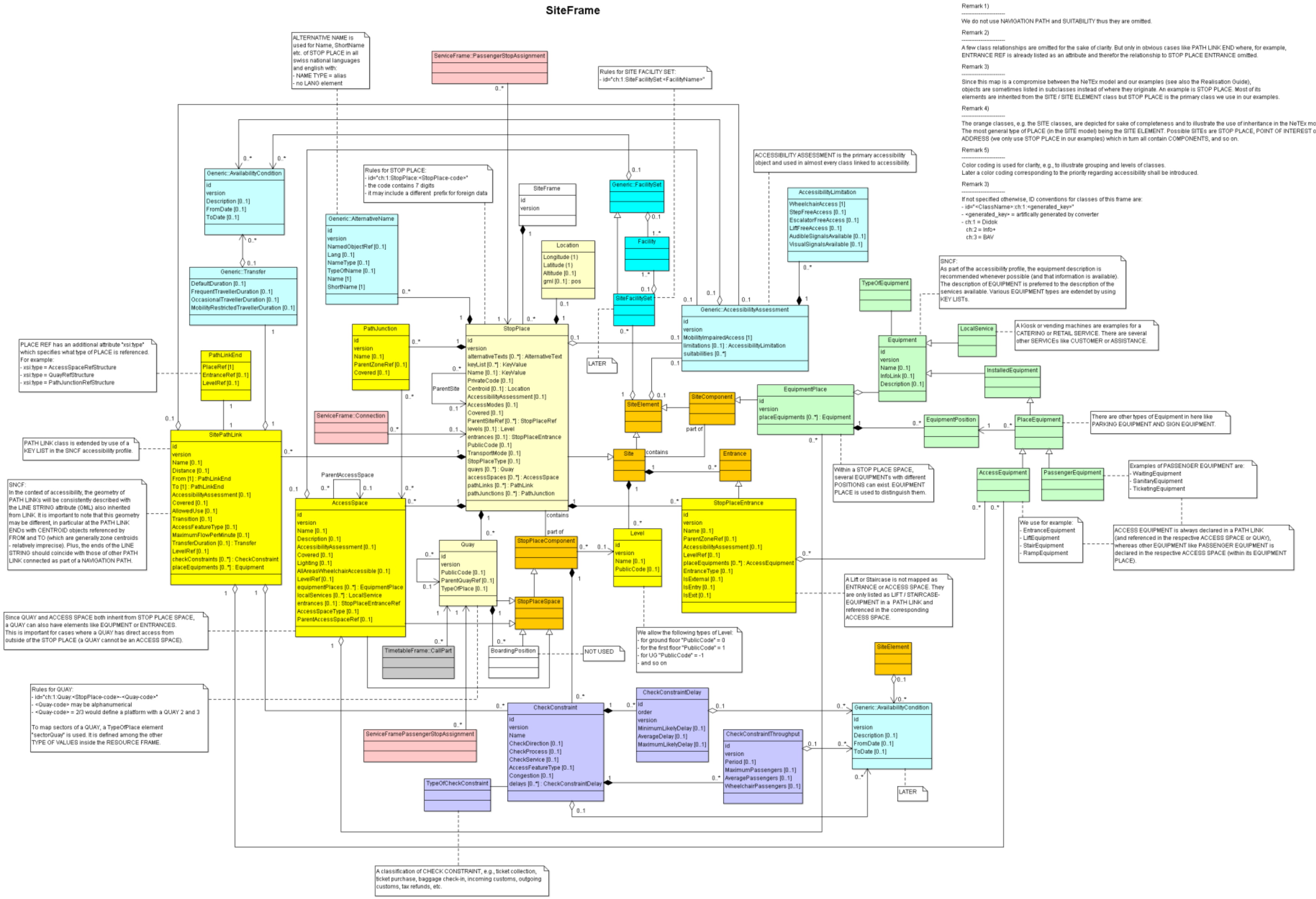
The orange classes, e.g. the SITE classes, are depicted for sake of completeness and to illustrate the use of inheritance in the NeTEx model. The most general type of PLACE (in the SITE model) being the SITE ELEMENT. Possible SITEs are STOP PLACE, POINT OF INTEREST or ADDRESS (we only use STOP PLACE in our examples) which in turn all contain COMPONENTS, and so on.

Remark 5)

Color coding is used for clarity, e.g., to illustrate grouping and levels of classes.
Later a color coding corresponding to the priority regarding accessibility shall be introduced.

Remark 3)

If not specified otherwise, ID conventions for classes of this frame are:
- id="<ClassName>:ch:1:<generated_key>"
- <generated_key> = artifically generated by converter
- ch:1 = Didok
  ch:2 = Info+
  ch:3 = BAV



See also the following figure for an example of a simple station model. Note that simplified IDs are used which do not agree with the ID conventions established in this document. The station consists of two monomodal STOP PLACEs with the smaller one being a bus stop. QUAYs, ACCESS SPACEs, EQUIPMENT PLACEs and ENTRANCEs are the most important building blocks of a STOP PLACE. PATH LINKs are omitted in this map since they would render it unreadable (see chapter **Erreur ! Source du renvoi introuvable.** for mapping examples).

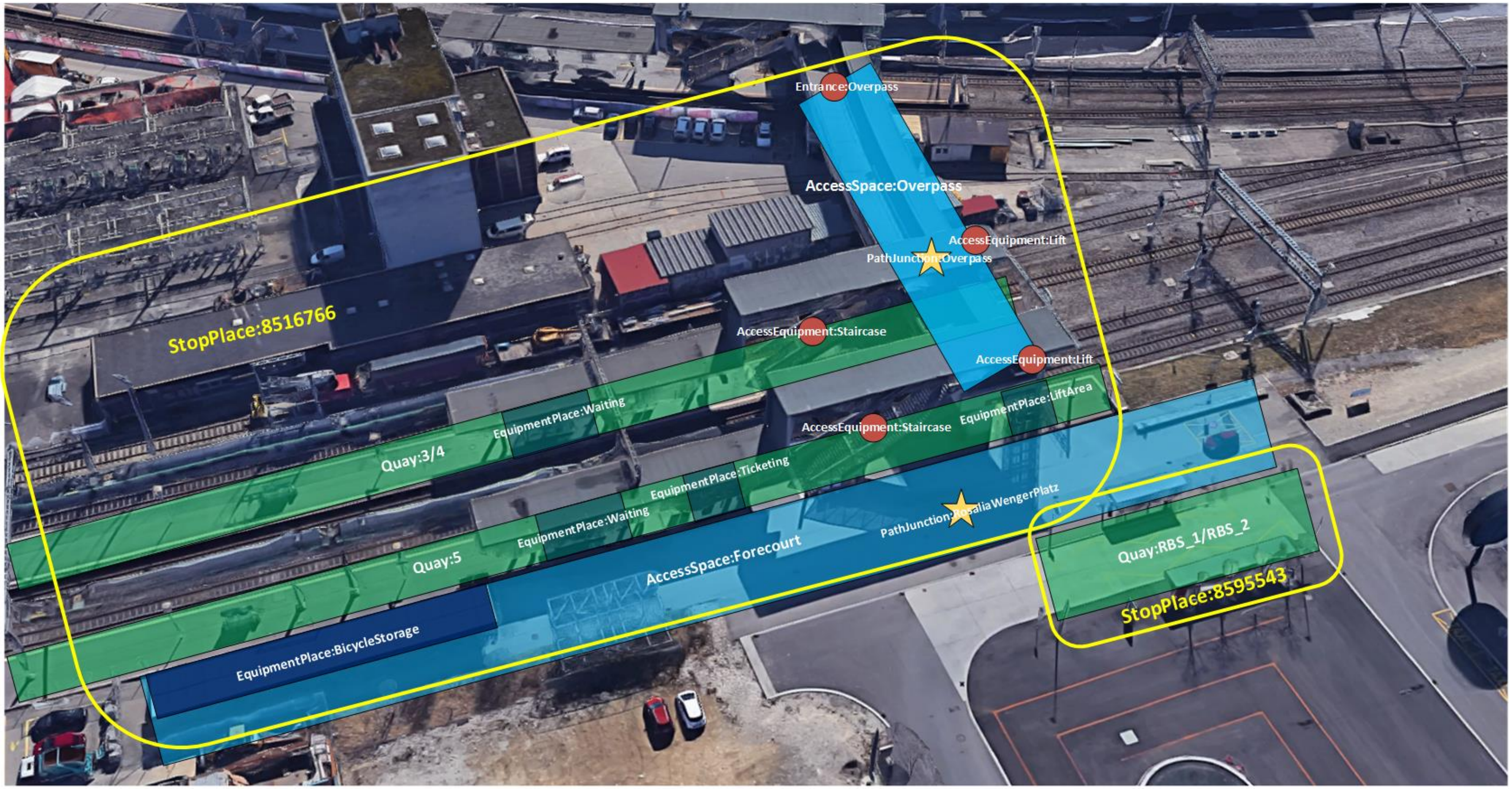


Figure 9: Simple station model of STOP PLACE "Wankdorf Bhf. Nord" in Bern.

7.1.1 Business Requirements

-

7.1.2 Structure

Element	Usage	Structure	Description	Example
::>		VersionFrame	SITE FRAME inherits from VERSION FRAME.	
id	1:1	SiteFrameIdType	Identifier of SITE FRAME.	
topographicPlaces	0:*	Place	TOPOGRAPHIC PLACEs in frame.	
LATER				
addresses	0:*	Address	ADDRESSes in frame.	
NOT TO BE USED				
accesses	0:*	Access	ACCESSes in frame.	
NOT TO BE USED				
stopPlaces	0:*	StopPlace	STOP PLACEs in frame.	
flexibleStopPlaces	0:*	FlexibleStopPlace	FLEXIBLE STOP PLACEs in frame.	
NOT TO BE USED				
pointsOfInterest	0:*	PointOfInterest	POINTs OF INTEREST in frame.	
NOT TO BE USED				
parking	0:*	Parking	PARKINGs in frame.	
NOT TO BE USED Is not yet used by the French Accessibility profile.				
navigationPaths	0:*	NavigationPath	NAVIGATION PATHs in frame.	
NOT TO BE USED				
pathJunctions	0:*	PathJunction	PATH JUNCTIONs in frame.	
LATER				
pathLinks	0:*	PathLink	PATH LINKs in frame.	
LATER				
checkConstraints	0:*	CheckConstraint	CHECK CONSTRAINTs in frame.	

checkConstraintDelays	0:*	CheckConstraintDelay	CHECK CONSTRAINT DELAYs in frame.	
pointOfInterestClassifications	0:*	PointOfInterestClassification	POINT OF INTEREST CLASSIFICATIONs in frame.	
NOT TO BE USED				
pointOfInterestClassificationHierachies	0:*	PointOfInterestClassificationHierachy	POINT OF INTEREST CLASSIFICATION HIERARCHies in frame.	
NOT TO BE USED				
siteFacilitySets	0:*	SiteFacilitySet	SITE FACILITY SETs in frame.	
LATER				
tariffZones	0:*	TariffZone	TARIFF ZONEs in frame.	
NOT TO BE USED				

7.2 TopographicPlace

(prCEN TS 16614-PI Profile FV (E)-v7_v3, section 6.2.6)
LATER
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. It may be of any size (e.g. County, City, Town, Village) and of different specificity e.g. 'Greater London', 'London', 'West End', 'Westminster', 'St James's'. A TOPOGRAPHICAL PLACE must always have a name.

7.2.1 Business Requirements

There is a discussion about the importance for many passenger information systems to know to which place a StopPlace belongs. Therefore we may add it later.

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. For a complex interchange, such as a station, this includes all the component areas of the station; the entrances, concourses, platforms; the levels they are on, the paths through the station and the various types of equipment found in the station, such as ticket machines and lifts, barriers, signs and seating. It also allows detailed accessibility attributes to be recorded at both the element and the station level.

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), and concourses (ACCESS SPACEs), etc. The physical point of access to transport is always a QUAY (currently this may also be a STOP PLACE in Switzerland as the physical model is not complete yet). ENTRANCEs describe the internal and external entrances to the STOP PLACE.

- *QUAYs and ACCESS SPACES can be connected to each other using PATH LINKs.*
- *SITE and SITE COMPONENT inherit common properties from SITE ELEMENT, including ACCESSIBILITY characteristics, and the ability to specify ALTERNATIVE NAMEs, ACCESSIBILITY, PATH LINKs, CHECK CONSTRAINTs and EQUIPMENT, all of which are discussed separately. It is also possible to specify whether the component is indoors or outdoors, or with a gated area.*

Furthermore:

- *Specific labelled points on a QUAY can be identified as BOARDING POSITIONs, for example the positions to board Eurostar coaches, or the doorways points to an enclosed metro line like the TfL Jubilee Line.*
- *STOP PLACEs can be organised into a hierarchy so that clusters of transport interchanges, such as a paired rail and tube station, can be described.*
- *QUAYs can be nested; this allows one to represent composite platforms with two or more sides or named sections. One can thus journey plan to any level of detail. See later below for examples. Similarly ACCESS SPACEs can be nested – within another ACCESS SPACE.*
- *ENTRANCEs describe points at which a passenger can access a stop place, normally on foot – an Access mode can be used to identify other permitted modes of entry such as cycle or car. ENTRANCEs can be external, for example the main or internal, for example from an entrance concourse to a platform.*

Sometimes a complex SITE is made up of a number of different SITEs, for example a large rail STOP PLACE may contain a metro station as a child STOP PLACE and have associated STOP PLACEs for the stops of the bus routes that pass by it.

- *There should be a separate STOP PLACE for each transport mode (but see discussion below of shared multimodal use of platforms).*

- *A separate STOP PLACE should be created if an area of a station can be referenced as a separate station by a timetable or other passenger information usage. For example “St Pancras Domestic” and “St Pancras International”.*
- *There should be a separate STOP PLACE for each pair of bus or tram stops (or isolated stop) on street.*

7.3.1 Business Requirements

KIDS assumed a unique PublicKey for a StopPlace in Switzerland and certainly we will adhere to this. In Switzerland all this 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 or the original number may be used. In future unique global identifiers are preferred.

As soon as the Swiss Location ID is available in the processing systems, we will swiftly move to it. So do not analyse the content of the ID to get attributes from it. We will keep the technical ID stable.

In the case of generated foreign StopPlaces the ID may look like this ch:1:StopPlace:8712311, ch:1:StopPlace:1112123. An original foreign StopPlace id may look like that fr:sncf:StopPlace:8712311

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:StopPlace:<DiDok_number>	• For now, the code at the beginning contains all 7 digits of the DiDok number. • It may include a different prefix for foreign data. The SLOID will only contain the 5 digits DiDok number without the prefix "85".	Yes	Built from Attributes by Converter	• ch:1:StopPlace:8507000 Bahnhof Bern, or in the future ch:1:sloid:7000 • Bern RBS is a Quay and has sub-Quays • ch:1:StopPlace:8576646 Bern, Bahnhof (has Quays Bfpl, A,B,L,

				D, E, I, M) with ParentSiteRef = ”ch:1:StopPlace:8507000” • 00000012 Metastations stay. • There exist StopPlaces without Quays. Examples: • Bern airport • Belp airport (BRN) • Zürich airport • Zürich airport (ZRH) with ParentSiteRef “Zürich airport”
ch:1:sloid:<DiDok_number>	• We will switch to the SLOID (Swiss Location ID) as soon as possible. Meaning that <Object_name>="StopPlace" will be replaced with <ID_name>="sloid" in the future. • The SLOID uses the DiDok number (without the country prefix "85" and without leading zeros) as its <Technical_ID>. **Careful**: this is different from the old definition which used DiDok85 number with the country prefix.	Yes	Built from Attributes by Converter	

Table 15: StopPlace ID definition.

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 ScheduledStopPoint 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.

In the data exchange between SNCF and SBB we will try to use the same identifiers for the same StopPlaces.

7.3.2 Structure

<table>
<tr><th>Element</th><th>Usage</th><th>Structure</th><th>Description</th><th>Example</th></tr>
<tr><td>::></td><td>::></td><td>Site</td><td>STOP PLACE inherits from SITE.</td><td></td></tr>
<tr><td colspan="5">Attributes:
• id
• version
• responsibilitySetRef

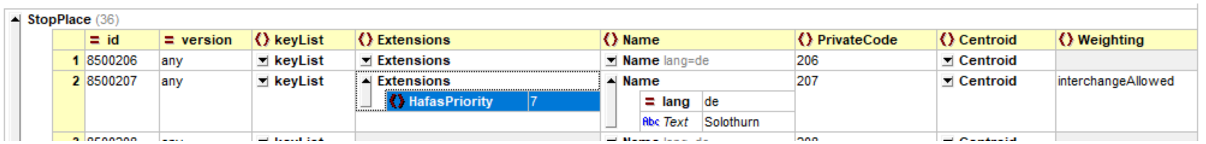
Contains a KeyValue for “Didok” (e.g. 8501023) and “SLID” (e.g. ch:11:01023). We will NOT use the control digit.</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>id</td><td>1:1</td><td>StopPlaceIdType</td><td>Identifier of a STOP PLACE.</td><td></td></tr>
<tr><td colspan="5">See Table 15: StopPlace ID definition.</td></tr>
<tr><td>keyList</td><td>0:*</td><td>KeyValue</td><td>KEY LIST with the KEY VALUEs related to the STOP PLACE. Will contain the Didok number and SLOID of the STOP PLACE.</td><td></td></tr>
<tr><td colspan="5">We use two KeyValues, one for the Didok number and another one for the SLOID (Swiss Location ID).</td></tr>
<tr><td>Extensions</td><td>0:1</td><td>ExtensionStructure</td><td>Extensions of the STOP PLACE.</td><td><Extensions>
<HafasPriority>7</HafasPriority>
<HafasKMInfo>3000</HafasKMInfo>
</Extensions</td></tr>
<tr><td colspan="5">For the case "passing on HAFAS-interchange-priority" an EXTENSION element "HafasPriority" is introduced in addition to the official StopPlace element "Weighting".


Figure 10: HAFAS PRIORITY extension illustrated in XML format.

The official part is in the element Weighting. In addition, also an extension HafasKMinfo is added.</td></tr>
</table>

Name		MultiLingualString	Short Name of TYPE OF VALUE.	<Name>Wimbledon Rail Station</Name>
The attribute language is only used when it is necessary. We prefer it without a lang attribute.				
ShortName		MultiLingualString	Description of TYPE OF VALUE.	<ShortName>Wimbledon Station</ShortName>
The attribute language is only used when it is necessary. We will do a lot of the work by transforming HRDF. In that case there are no language attributes but “alias”. HRDF only has short names (30 characters)				
PrivateCode	0:1	PrivateCodeType	Private Code of STOP PLACE.	
Field has optional multiplicity but **must be filled** if data is available. In Switzerland it is the DiDok number.				
Centroid	0:1	Location	Global or national location of STOP PLACE.	
gml:Polygon	0:1	gml:Polygon	Polygon associated with zone.	
LATER				
Url	0:1	xsd:anyURI	Default URL for ADDRESSABLE PLACE.	
IGNORED AT IMPORT				
Image	0:1	xsd:anyURI	Default image for ADDRESSABLE PLACE.	
IGNORED AT IMPORT				
PostalAddress	0:1	PostalAddress	A POSTAL ADDRESS to which mail can be sent.	
IGNORED AT IMPORT SNCF uses it, we don’t.				
AccessibilityAssessment	0:1	AccessibiltyAssessment	ACCESSIBILITY ASSESSMENT associated with STOP PLACE	
LATER				

<table>
<tr><td>AccessModes</td><td>0:1</td><td>AccessModeEnum</td><td>Allowed MODEs to access STOP PLACE.</td><td><AccessModes>bicycle foot taxi car</AccessModes></td></tr>
<tr><td colspan="5">IGNORED AT IMPORT

AccessModeEnum allows the following values:
• foot
• bicycle
• boat
• car
• taxi
• shuttle</td></tr>
<tr><td>alternativeNames</td><td>0:*</td><td>AlternativeName</td><td>Abbreviation etc. of the STOP PLACE. Alternative names for SITE ELEMENT.</td><td></td></tr>
<tr><td colspan="5">We will also use these for synonyms. From INFO+ the synonyms are used on the StopPlace and not necessarily on the Meta-StopPlace.</td></tr>
<tr><td>PublicUse</td><td>0:1</td><td>PublicUseEnum</td><td>Whether SITE ELEMENT can be used by the general public.</td><td></td></tr>
<tr><td colspan="5">LATER

Table 16: PublicUseEnum - allowed values:
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>publicOnly</td><td>Component can be used by public</td></tr>
<tr><td>staffOnly</td><td>Component can be used only by staff.</td></tr>
<tr><td>authorisedUsersOnly</td><td>Component can be used only by authorised users.</td></tr>
<tr><td>disabledUsersOnly</td><td>Component can be used only by disabled users.</td></tr>
</table></td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>Covered</td><td>0:1</td><td>CoveredEnum</td><td>Whether SITE ELEMENT is covered or outdoors.</td><td></td></tr>
<tr><td colspan="5">LATER</td></tr>
</table>

Table 17: CoveredEnum - allowed values:

Value	***Description***
indoors	*Component is indoors.*
outdoors	*Component is outdoors.*
covered	*Component is covered.*
mixed	*Component is mixed.*
unknown	*Component cover is unknown.*

Gated	0:1	GatedEnum	Whether SITE ELEMENT is within a gated area.	

LATER

Table 18: GatedEnum - allowed values:

Value	***Description***
gatedArea	*Component is within a gated section.*
openArea	*Component is outside of any gated section.*
unknown	*Component gated status is unknown.*

Lighting	0:1	LightingEnum	How SITE ELEMENT is lit.	

NOT TO BE USED

Table 19: LightingEnum - allowed values:

Value	***Description***
wellLit	*Component is well lit.*
poorlyLit	*Component is poorly lit.*
unlit	*Component is not lit at all.*
other	*Component has other lighting.*
unknown	*Component lighting is unknown.*

AllAreasWheelchairAccessible	0:1	xsd:Boolean	Whether all areas of component are accessible in a Wheelchair.	
LATER				
PersonCapacity	0:1	NumberOfPeople	Number of people that can be in component at a time.	
NOT TO BE USED				
facilities	0:*	+SiteFacilitySet	SITE FACILITY SET associated with SITE ELEMENT.	
LATER				
TopographicPlaceRef	0:1	TopographicPlaceRef-Structure	This is a primary Topographic place.	
LATER Will be used later to identify the place.				
AtCentre	0:1	xsd:Boolean	Whether STOP PLACE is at centre of TOPOGRAPHIC PLACE.	
NOT TO BE USED				
Locale	0:1	Locale		
IGNORED AT IMPORT				
OrganisationRef	0:1	OrganisationRefStructure	Reference to OPERATOR of SITE	
ParentSiteRef	0:1	SiteRefStructure	Parent SITE which contains this SITE	
The ParentSiteRef is set in case the StopPlace belongs to a bigger structure. The reference points to the higher level, up to the meta-station level. It only references other StopPlaces.				
adjacentSites	0:1	SiteRef	Adjacent SITEs to the STOP PLACE.	
LATER				

levels	0:*	Level LevelRef	LEVELs found within STOP PLACE.	
LATER				
entrances	0:*	StopPlaceEntrance StopPlaceVehicleEn-trance	Passenger Entrance to a STOP PLACE (STOP PLACE ENTRANCE) or to a VEHICLE (STOP PLACE VEHICLE ENTRANCE).	
LATER				
equipmentPlaces	0:*	EquipmentPlace	EQUIPMENT PLACEs associated with STOP PLACE COMPONENT.	
LATER				
placeEquipments	0:*	InstalledEquipment	Items of fixed EQUIPMENT that may be located in places within the SITE ELEMENT.	
LATER				
localServices	0:*	LocalService	LOCAL SERVICEs that may be lo-cated in PLACEs within the SITE ELE-MENT.	
LATER				
PublicCode	0:1	StopPlaceCodeType	Code used to identify a STOP PLACE to the public as an alternative to a name.	
NOT TO BE USED We switched from PublicCode to PrivateCode.				
TransportMode	1:1	VehicleModeEnum	The main TRANSPORT MODE of the STOP PLACE.	
LATER				

The TransportMode will in the export for the SNCF be calculated from the lines that use the StopPlace. However, this is generated by SBB and can not be reliably used. This may change. Might later be used when Didok provides this information.				
OtherTransportModes	0:*	VehicleModeEnum	The other TRANSPORT MODE available the STOP PLACE.	
LATER				
SNCF uses this information to determine if a StopPlace is mono- or multimodal.				
tariffZones	0:*	TariffZoneRef	The TARIFF ZONES associated with the STOP PLACE.	
NOT TO BE USED				
StopPlaceType	1:1	StopPlaceTypeEnum	The type of the STOP PLACE.	
LATER				
BorderCrossing	0:1	xsd:boolean	Whether STOP PLACE is a border crossing.	
unlocalisedEquipment	0:*	InstalledEquipment LocalService OtherEquipment	Equipment available at STOP PLACEs but not specifically located.	
NOT TO BE USED				
servedPlaces	0:*	TopographicalPlaceRef	TOPOGRAPHICAL PLACEs that the STOP PLACE STOP PLACEs.	
LATER				
mainTerminusForPlaces	0:*	TopographicalPlaceRef	TOPOGRAPHICAL PLACEs for which the STOP PLACE is a main terminus. Only certain stations will be deemed the main STOP PLACEs points. For example London has many rail stations but only some are main line termini. Geographic containment is not necessarily implied. For example London Gatwick and London Stansted airports are not in London, but are designated airports for London. Norwich station is not in Norwich, etc.	
NOT TO BE USED				

<table>
<tr><td>LimitedUse</td><td>0:1</td><td>LimitedUseEnum</td><td>Categorisation of the stop as having topographic limitations which may affect its use in journey planners</td><td></td></tr>
<tr><td colspan="5">LATER
This will be used for stations like Saligans where transbording is possible but it is not possible to enter or leave the station.

Table 20: LimitedUseEnumeration - allowed values:
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>interchangeOnly</td><td>Stop may only be used for interchange, not for entrance or exit.</td></tr>
<tr><td>noDirectRoadAccess</td><td>Stop may not be reached from road by a paved path.</td></tr>
<tr><td>longWalkToAccess</td><td>Stop may only be accessed by a long (200m) walk from road.</td></tr>
<tr><td>isolated</td><td>Stop is an island or ferry stop that does not connect to road network.</td></tr>
<tr><td>limitedService</td><td>Stop has a very limited service.</td></tr>
</table></td></tr>
<tr><td>Weighting</td><td>0:1</td><td>InterchangeUseEnum</td><td>Default relative weighting to be used for stop place.</td><td></td></tr>
<tr><td colspan="5">We will use this in kind to "BF-Prios“ in the HRDF format.
If there exists more than one INTERCHANGE possibility along a ROUTE, because, for example, two LINEs run parallel to each other, the choice of INTERCHANGE can be influenced by assigning a WEIGHTING or priority element to it. This priority factor holds values between 0 (highest priority) and 16 (lowest priority).

The STOP PLACE element WEIGHTING basically accomplishes this feature but only allows the following values:
noInterchange
interchangeAllowed
recommendedInterchange
preferredInterchange
To incorporate the desired value range, we will add an EXTENSION element “HafasPriority” that contains the full information.</td></tr>
<tr><td>quays</td><td>0:*</td><td>Quay</td><td>The QUAYs contained in the STOP PLACE, that is platforms, jetties, bays, taxi ranks, and other points of physical access to VEHICLEs.</td><td></td></tr>
<tr><td colspan="5"></td></tr>
</table>

accessSpaces	0:*	AccessSpace	ACCESS SPACEs within the STOP PLACE, i.e. STOP PLACE COMPONENTs that are not QUAYs, BOARDING POSITIONS, or ENTRANCEs. May be connected to QUAYS by PATH LINKs.	
pathLinks	0:*	PathLink	A link between any two PLACEs (That is STOP PLACEs, ACCESS SPACEs or QUAYs, BOARDING POSITIONs, POINTs OF INTEREST etc or PATH JUNCTIONs) that represents a step in a possible route for pedestrians, cyclists or other out of vehicle passengers within or between a PLACE.	
LATER PathLinks will be added for accessibility soon.				
pathJunctions	0:*	PathJunction	A designated point, inside or outside of a STOP PLACE or POINT OF INTEREST, at which two or more PATH LINKs may connect or branch.	
LATER				
accesses	0:*	Access	ACCESS LINKs associated with COMPONENT.	
NOT TO BE USED				
navigationPaths	0:*	NavigationsPath	A designated path between two PLACEs. May include an Ordered sequence of references to PATH LINKS.	
NOT TO BE USED				

While PathLinks are provided, we assume that the consuming system is better suited to calculate the NavigationPaths.				
vehicleStoppingPlaces	0:*	VehicleStoppingPlace	VEHICLE STOPPING PLACEs within the STOP PLACE.	
NOT TO BE USED				

7.3.3 Example

```xml
<SiteFrame id="ch:1:SiteFrame:GlattbruggOpfikonStationModel" version="any">
    <stopPlaces>
        <!--Glattbrugg, Bahnhof (761/762)-->
        <StopPlace id="ch:1:StopPlace:8590620" version="any">
          <keyList>
            <KeyValue>
              <Key>Didok</Key>
              <Value>8590620</Value>
            </KeyValue>
            <KeyValue>
              <Key>SLID</Key>
              <Value>ch:773:90620</Value>
            </KeyValue>
          </keyList>
          <Name lang="de">Glattbrugg, Bahnhof (Bus 761/762)</Name>
          <Centroid>
            <Location>
              <Longitude>8.559357</Longitude>
              <Latitude>47.430569</Latitude>
              <Altitude>431</Altitude>
              <gml:pos srsName="CHTRS95">253.911 684.552</gml:pos>
            </Location>
          </Centroid>
          <AccessModes>foot</AccessModes>
          <Covered>outdoors</Covered>
          <OrganisationRef ref="85:773" version="any" />
          <ParentSiteRef ref="ch:1:StopPlace:8503310" version="any" />
          <PublicCode>8590620</PublicCode>
          <StopPlaceType>busStation</StopPlaceType>
          <quays>
            <!--quay on busstation side-->
            <Quay id="ch:1:Quay:8590620-1" version="any">
```

```xml
              <Covered>mixed</Covered>
              <PublicCode>761/762 Perron 1</PublicCode>
              <QuayType>busPlatform</QuayType>
            </Quay>
            <!--quay vis a vis of busstation-->
            <Quay id="ch:1:Quay:8590620-2" version="any">
              <Covered>outdoors</Covered>
              <PublicCode>761/762 Perron 2</PublicCode>
              <QuayType>busStop</QuayType>
            </Quay>
          </quays>
        </StopPlace>
    </stopPlaces>
```

7.3.4 Hints

The QUAY types are explained in Table 26: Allowed values for TypeOfQuay.

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 in the final version:

- Parent QUAY, for example “Gleis 1/2” (double QUAY) or “Bushaltestelle Linie 10” (single QUAY).
- Sub QUAY if the Parent QUAY is a double QUAY, e.g., QUAY 1 and QUAY 2 separately.
- Sector QUAY if the sub QUAY is further divided into sectors (for example A/B/C/D).

- Sub and Sector QUAYs refer to their respective PARENT QUAY via the equally named reference element.
- Sector QUAYs shall have the same QUAY TYPE as their PARENT QUAY.
- Sector QUAYs shall have an additional element TypeOfPlaceRef imbedded in PLACE TYPES.
- The possible values of TYPE OF PLACE are declared in a TYPES OF VALUE list within the RESOURCE FRAME.

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:Quay:<Stop-Place_code>:<Quay_code>	• The Quay code may be alphanumerical. • If the Quay code corresponds to a platform (for example "8/9"), then a mapping of the individual Quays should be created as well. • The quay sector might also be appended. • The Quay codes are defined by the responsible organisation.	Yes	Built from Attributes by Source	• ch:1:Quay:8512345:0:51 or in the future ch:1:sloid:12345:0 • ch:1:Quay:8512345:0:52 with the last 2 digits being internal information. • ch:1:Quay:8507000:12, ch:1:Quay:8507000:12A, ch:1:Quay:8507000:12AB … • ch:1:Quay:8503000:31/32 • Some organisations use "-" already in their numbering (mostly in Austria). • As we don't use the "-" to analyse attributes, they may use them. Examples: • 15-25 Zürich Aussersihl (Abzw) • 6-56 Lyss • 12-22 Zürich Aussersihl (Abzw) • 4-34 Niederglatt • 14-24 Zürich Aussersihl (Abzw) • 31-41 Herisau • 11-21 Zürich Aussersihl (Abzw)

ch:1:sloid:<Technical_ID>	• We will switch to the SLOID (Swiss Location ID) as soon as possible. Meaning that <Object_name>="Quay" will be replaced with <ID_name>="sloid" in the future. • The SLOID uses the DiDok number (without the country prefix "85" and without leading zeros) followed by the Quay code as its <Technical_ID> (separated by ":"). The quay sector might also be appended. The Quay codes are defined by the responsible organisation.	Yes	Built from Attributes by Source	

Table 21: Quay ID definition.

The following screenshots show examples of the QUAY mapping (even if it does not correctly match Bern (there is no platform 11/12, it only illustrates the mapping):

quays

Quay (16)

	= id	= version	{} Name	{} ShortName	{} Priv...	{} Centroid	{} placeTypes	{} QuayType	{} ParentQuayRef
1	8507000:1	any	Name lang=de	ShortName lang=de	1	Centroid			
2	8507000:3	any	Name lang=de	ShortName lang=de	3	Centroid			
3	8507000:5	any	Name lang=de	ShortName lang=de	5	Centroid			
4	8507000:7	any	Name lang=de	ShortName lang=de	7	Centroid			
5	8507000:9	any	Name lang=de	ShortName lang=de	9	Centroid			
6	8507000:11	any	Name = lang: de Text: Gleis 11+12	ShortName = la...: de Text: 11+12	11	Centroid		railPlatform	
7	8507000:11A	any	Name = lang: de Text: Gleis 11+12 Sektor A	ShortName = la...: de Text: 11+12 A	11A	Centroid	placeTypes TypeOfPlaceRef = ref: quaySector	railPlatform	ParentQuayRef = ref: 8507000:11 = version: any
8	8507000:11B	any	Name lang=de	ShortName lang=de	11B	Centroid	placeTypes TypeOfPlaceRef = ref: quaySector	railPlatform	ParentQuayRef = ref: 8507000:11 = version: any
9	8507000:11C	any	Name lang=de	ShortName lang=de	11C	Centroid	placeTypes TypeOfPlaceRef = ref: quaySector	railPlatform	ParentQuayRef = ref: 8507000:11 = version: any
10	8507000:11D	any	Name lang=de	ShortName lang=de	11D	Centroid	placeTypes TypeOfPlaceRef = ref: quaySector	railPlatform	ParentQuayRef = ref: 8507000:11 = version: any
11	8507000:13	any	Name lang=de	ShortName lang=de	13	Centroid			
12	8507000:15	any	Name lang=de	ShortName lang=de	15	Centroid			
13	8507000:21	any	Name lang=de	ShortName lang=de	21	Centroid			
14	8507000:23	any	Name lang=de	ShortName lang=de	23	Centroid			
15	8507000:80	any	Name lang=de	ShortName lang=de	80	Centroid			
16	8507000:90	any	Name lang=de	ShortName lang=de	90	Centroid			

Figure 11: Example of quay and sector mapping with the additional PLACE TYPE element for sector QUAYS.

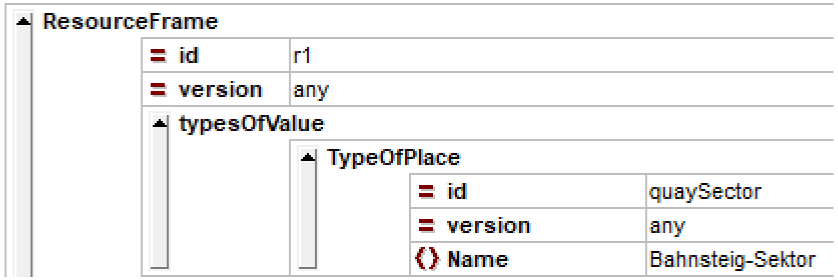


Figure 12: Definition of the TYPE OF PLACE element for sector mapping.

For the future use of formations the sectors of a platform will be defined as Quay with TypeOfPlace='quaySector'. Such a sector Quay will also reference its parent via ParentQuayRef. The sector groups, e.g. 12AB, will not be used for that purpose.

We will use HRDF to generate the NeTEx file. We may have:

- 12/13
- 12
- 12 A
- 12 AB

These Quays are generally not built hierarchical. However, SBB will try to impose such a hierarchy: Quay '12' would be the parent, '12A' and '12AB' would be one level below. Later the hierchy information from Didok will be matched with the realization in the converter.

7.4.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	StopPlaceSpace	QUAY inherits from STOP PLACE SPACE.	
id	1:1	*QuayIdType*	Identifier of QUAY.	
SeeTable 21: Quay ID definition.				
keyList	0:1	KeyValue	KEY LIST with the KEY VALUEs related to the QUAY. Will contain the.SLOID of the QUAY.	
The keyList contains a single KeyValue with the SLOID (Swiss Location ID).				

PrivateCode	0:1	PrivateCodeType	Private Code of QUAY.	
NOT TO BE USED				
Centroid	0:1	Location	Centre POINT of QUAY.	
gml:Polygon	0:1	gml:Polygon	Polygon associated with zone.	
LATER				
Url	0:1	xsd:anyURI	Default URL for ADDRESSABLE PLACE.	
IGNORED AT IMPORT				
Image	0:1	xsd:anyURI	Default image for ADDRESSABLE PLACE.	
IGNORED AT IMPORT				
PostalAddress	0:1	PostalAddress	A POSTAL ADDRESS to which mail can be sent.	
IGNORED AT IMPORT SNCF uses it, we don’t.				
AccessibilityAssessment	0:1	AccessibilityAssessment	The accessibility characteristics of the QUAY. Described by ACCESSIBILITY LIMITATIONs, and/or a set of SUITABILITies.	See ACCESSIBILITY ASSESSMENT section.
LATER				
AccessModes	0:1	AccessModeEnum	Allowed MODEs to access STOP PLACE.	<AccessModes>bicycle foot taxi car</AccessModes>
IGNORED AT IMPORT				

<table>
<tr><td colspan="5">AccessModeEnum allows the following values:
foot
bicycle
boat
car
taxi
shuttle</td></tr>
<tr><td>alternativeNames</td><td>0:*</td><td>AlternativeName</td><td>Abbreviation etc. of the STOP PLACE. Alternative names for SITE ELEMENT.</td><td></td></tr>
<tr><td colspan="5">We will also use these for synonyms. From INFO+ the synonyms are used on the StopPlace and not necessarily on the Meta-StopPlace.</td></tr>
<tr><td>PublicUse</td><td>0:1</td><td>PublicUseEnum</td><td>Whether SITE ELEMENT can be used by the general public.</td><td></td></tr>
<tr><td colspan="5">LATER

Table 22: PublicUseEnum - allowed values:
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>publicOnly</td><td>Component can be used by public</td></tr>
<tr><td>staffOnly</td><td>Component can be used only by staff.</td></tr>
<tr><td>authorisedUsersOnly</td><td>Component can be used only by authorised users.</td></tr>
<tr><td>disabledUsersOnly</td><td>Component can be used only by disabled users.</td></tr>
</table></td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>Covered</td><td>0:1</td><td>CoveredEnum</td><td>Whether SITE ELEMENT is covered or outdoors.</td><td></td></tr>
<tr><td colspan="5">LATER

Table 23: CoveredEnum - allowed values:
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>indoors</td><td>Component is indoors.</td></tr>
<tr><td>outdoors</td><td>Component is outdoors.</td></tr>
</table></td></tr>
</table>

covered	*Component is covered.*
mixed	*Component is mixed.*
unknown	*Component cover is unknown.*

Gated	0:1	GatedEnum	Whether SITE ELEMENT is within a gated area.	

LATER

Table 24: GatedEnum - allowed values:

Value	***Description***
gatedArea	*Component is within a gated section.*
openArea	*Component is outside of any gated section.*
unknown	*Component gated status is unknown.*

Lighting	0:1	LightingEnum	How SITE ELEMENT is lit.	

NOT TO BE USED

Table 25: LightingEnum - allowed values:

Value	***Description***
wellLit	*Component is well lit.*
poorlyLit	*Component is poorly lit.*
unlit	*Component is not lit at all.*
other	*Component has other lighting.*
unknown	*Component lighting is unknown.*

AllAreasWheelchairAccessible	0:1	xsd:Boolean	Whether all areas of component are accessible in a Wheelchair.	

LATER

PersonCapacity	0:1	NumberOfPeople	Number of people that can be in component at a time.	
NOT TO BE USED				
facilities	0:*	SiteFacilitySet	SITE FACILITY SET associated with SITE ELEMENT.	
LATER				
LevelRef	0:1	LevelRefStructure	Reference to a STOP PLACE LEVEL.	
equipmentPlaces	0:*	EquipmentPlace	EQUIPMENT PLACEs associated with the QUAY for the location of EQUIPMENT such as TICKETING EQUIPMENT, TICKET VALIDATOR EQUIPMENT or LIFT EQUIPMENT etc.	See EQUIPMENT PLACE section.
LATER				
placeEquipments	0:*	InstalledEquipment	Unlocated EQUIPMENT associated with the QUAY such as SIGN EQUIPMENT or VEHICLE ACCESS EQUIPMENT.	
LATER				
localServices	0:*	LocalService	Unlocated LOCAL SERVICES associated with the QUAY such as ASSISTANCE SERVICE for mobility impaired passangers.	
LATER				
entrances	0:*	StopPlaceEntranceRef	Reference to a SITE ENTRANCE.	
LATER				

PublicCode	0:1	xsd:normalizedString	Code use to identify QUAY to the public.	<PublicCode>5A</PublicCode>
Field has optional multiplicity but **must be filled** if data is available. Contains the public description, e.g. “21/22“,“12“,“12A“,“P“...				
PlateCode	0:1	xsd:normalizedString	Asset Code use to identify QUAY.	
NOT TO BE USED				
ShortCode	0:1	xsd:normalizedString	Short Code use to identify QUAY for near band wireless. “	
NOT TO BE USED				
Label	0:1	MultilingualString	Label associated with on QUAY.	
NOT TO BE USED				
destinations	0:*	DestinationDisplayRef	Destinations associated with on QUAY.	
NOT TO BE USED				
CompassBearing	0:1	CompassBearingType	Bearing of street relative to QUAY in degrees.	
NOT TO BE USED				
CompassOctant	0:1	CompassOctantEnum	Bearing of street relative to QUAY in compass quadrant	
NOT TO BE USED				
QuayType	0:1	QuayTypeEnum	Type of QUAY	
LATER We don’t use it, because the information currently is not available. The SNCF uses: • “Platforme” • “QuayPhysique” • “VoiAQuai“				
ParentQuayRef	0:1	QuayRef	Reference to parent of QUAY that wholly contains it.	
The link to the parent Quay is used.				
boardingPositions	0:*	BoardingPosition	BOARDING POSITIONs within QUAY.	
LATER or NOT TO BE USED				

Table 26: Allowed values for TypeOfQuay:

TypeOfQuay	Description
airlineGate	Airline gate.
railPlatform	Rail QUAY.
metroPlatform	Metro QUAY.
coachStop	

busStop	“Onstreet” bus stop place with a single QUAY or double QUAY (both directions combined):
	• An example of a single QUAY busStop would be the stop place “Gewerbeschule”
	  ○ of bus line 20 in Bern with two single QUAY busStops on both sides of the street.
	• An example of a double QUAY busStop would be the stop place “Wankdorf Bhf. -
	  ○ RBS line 36” in Bern.

busPlatform	A bus QUAY that is part of a larger bus station, possibly with multiple busPlatforms: • Examples are the busPlatforms of the bus station “Postauto Station” of mobility hub Bern.
tramPlatform	A tram QUAY that is part of a larger tram station, possibly with multiple tramPlatforms: • Examples are the tramPlatforms A/B/C/D of the tram station “Bahnhofplatz” of mobility hub Bern.
tramStop	“Onstreet” tram stop place: • Examples are the various tramStops of mobility hub “Zytglogge” in Bern.
boatQuay	Boat QUAY.
ferryLanding	Ferry QUAY.
telecabinePlatform	
taxiStand	Taxi stand.
setDownPlace	Set Down or Pick up Place: • Examples are pick up places at an airport, e.g., “Check-in 1 & 2 / Dropping off” or “Arrival 1 & 2 / Picking up” of Zurich airport. • Pick up / drop off places of train station / mobility hubs, e.g., “Kurzparking” of mobility hub Bern.
vehicleLoadingPlace	

Quay types are not used for the time being, as the information can not be generated from INFO+.

7.4.3 Example

```
<quays>
    <Quay id="ch:1:Quay:8516766-3/4" version="any">
      <PublicCode>3/4</PublicCode>
    </Quay>
</quays
```

Possible future Quay definition with additional information regarding accessibility:

```
<quays>
  <Quay id="ch:1:Quay:8516766-5" version="any">
    <AccessibilityAssessment id="ch:1:AccessibilityAssessment:8516766-acsp-1-aa-1" version="any">
      <MobilityImpairedAccess>true</MobilityImpairedAccess>
      <limitations>
        <AccessibilityLimitation>
          <WheelchairAccess>true</WheelchairAccess>
          <StepFreeAccess>true</StepFreeAccess>
          <EscalatorFreeAccess>true</EscalatorFreeAccess>
          <LiftFreeAccess>true</LiftFreeAccess>
          <AudibleSignalsAvailable>false</AudibleSignalsAvailable>
          <VisualSignsAvailable>true</VisualSignsAvailable>
        </AccessibilityLimitation>
      </limitations>
    </AccessibilityAssessment>
    <Covered>covered</Covered>
    <Lighting>wellLit</Lighting>
    <LevelRef ref="ch:1:Level:8516766-RWPl" version="any" />
    <equipmentPlaces>
      <EquipmentPlace id="ch:1:EquipmentPlace:8516766-quay-5" version="any">
        <Name>main area with ticket machine and staircase to overpass</Name>
        <placeEquipments>
          <TicketingEquipment id="ch:1:TicketingEquipment:8516766-quay-5-machine" version="any">
            <Description>BLS Ticket machine</Description>
            <VehicleModes>rail tram bus</VehicleModes>
            <TicketMachines>true</TicketMachines>
            <NumberOfMachines>1</NumberOfMachines>
            <HeightOfMachineInterface>0.95</HeightOfMachineInterface>
            <TicketingServiceFacilityList>cardTopUp purchase</TicketingServiceFacilityList>
            <PaymentMethods>coin creditCard debitCard </PaymentMethods>
```

```
          </TicketingEquipment>
          <TicketValidatorEquipment id="ch:1:TicketValidatorEquipment:8516766-quay-5" version="any">
            <Description>ticket validator machine</Description>
            <TicketValidatorType>paperStamp</TicketValidatorType>
          </TicketValidatorEquipment>
          <WaitingRoomEquipment id="ch:1:WaitingRoomEquipment:8516766-quay-5" version="any">
            <Seats>5</Seats>
          </WaitingRoomEquipment>
          <EquipmentRef ref="ch:1:StaircaseEquipment:8516766-staircase-1" version="any"></EquipmentRef>
        </placeEquipments>
      </EquipmentPlace>
      <EquipmentPlace id="ch:1:EquipmentPlace:8516766-quay-5-lift" version="any">
        <Name>area with lift 1 to overpass</Name>
        <placeEquipments>
          <EquipmentRef ref="ch:1:LiftEquipment:8516766-lift-1" version="any"></EquipmentRef>
        </placeEquipments>
      </EquipmentPlace>
    </equipmentPlaces>
    <PublicCode>5</PublicCode>
    <QuayType>railPlatform</QuayType>
  </Quay>
</quays>
```

7.4.4 Hints

EQUIPMENT PLACE objects only contain an ID attribute and a PLACE EQUIPMENTS substructure which in turn contains all EQUIPMENT objects of the particular EQUIPMENT PLACE. This structure ensures that, for example, an ACCESS SPACE can contain several geographically distinct locations with access to EQUIPMENT.

7.5 SiteFacilitySet

(NeTEx-1, 7.7.14.3.3)

LATER

Set of FACILITies available for a SITE or SITE ELEMENT. A FACILITY provides just a simple name of a capability. Detailed properties may be stated for some types of facilities by a corresponding EQUIPMENT type.

These FACILITies are combined into FACILITY SETs - a set of FACILITIES that may be associated with an ENTITY and subject to a specific VALIDITY CONDITION. Values with a SET are logically ANDed together.

7.5.1 Business Requirements

SITE FACILITY will be used in a later stage of modeling (also for Accessibility purposes). We intend to use one Facility per set.
See chapter 13 for a comparison between the FACILITY and EQUIPMENT model in terms of accessibility and generally.

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:SiteFacilitySet:<Technical_ID>	Technical ID is not yet defined.	Yes	Built from Attributes by Converter	

Table 27: SiteFacilitySet ID definition.

7.5.2 Structure

Element	Usage	Structure	Description	Example
Attributes: • id • version				
::>	::>	DataManagedObject	SITE FACILITY SET inherits from FACILITY SET.	
id	1:1	IdType	Identifier of SITE FACILITY SET.	
SeeTable 27: SiteFacilitySet ID definition.				
FacilitySetGroup	0:1		All elements of the FACILITY SET GROUP. Multiplicity counts for each element of the Group.	

SiteFacilitySetGroup	0:1		All elements of the SITE FACILITY GROUP. See subsequent section. Multiplicity counts for each element of the Group.	

7.5.3 Example

```
<facilities>
    <SiteFacilitySet version="any" id="mybus:SiteFacilitySet:SSP_02456A">
        <AccessibilityToolList>buggy wheelchair </AccessibilityToolList>
        <CarServiceFacilityList>carWash</CarServiceFacilityList>
        <SanitaryFacilityList>toilet wheelChairAccessToilet</SanitaryFacilityList>
    </SiteFacilitySet>
</facilities>
```

7.5.4 Hints

-

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:

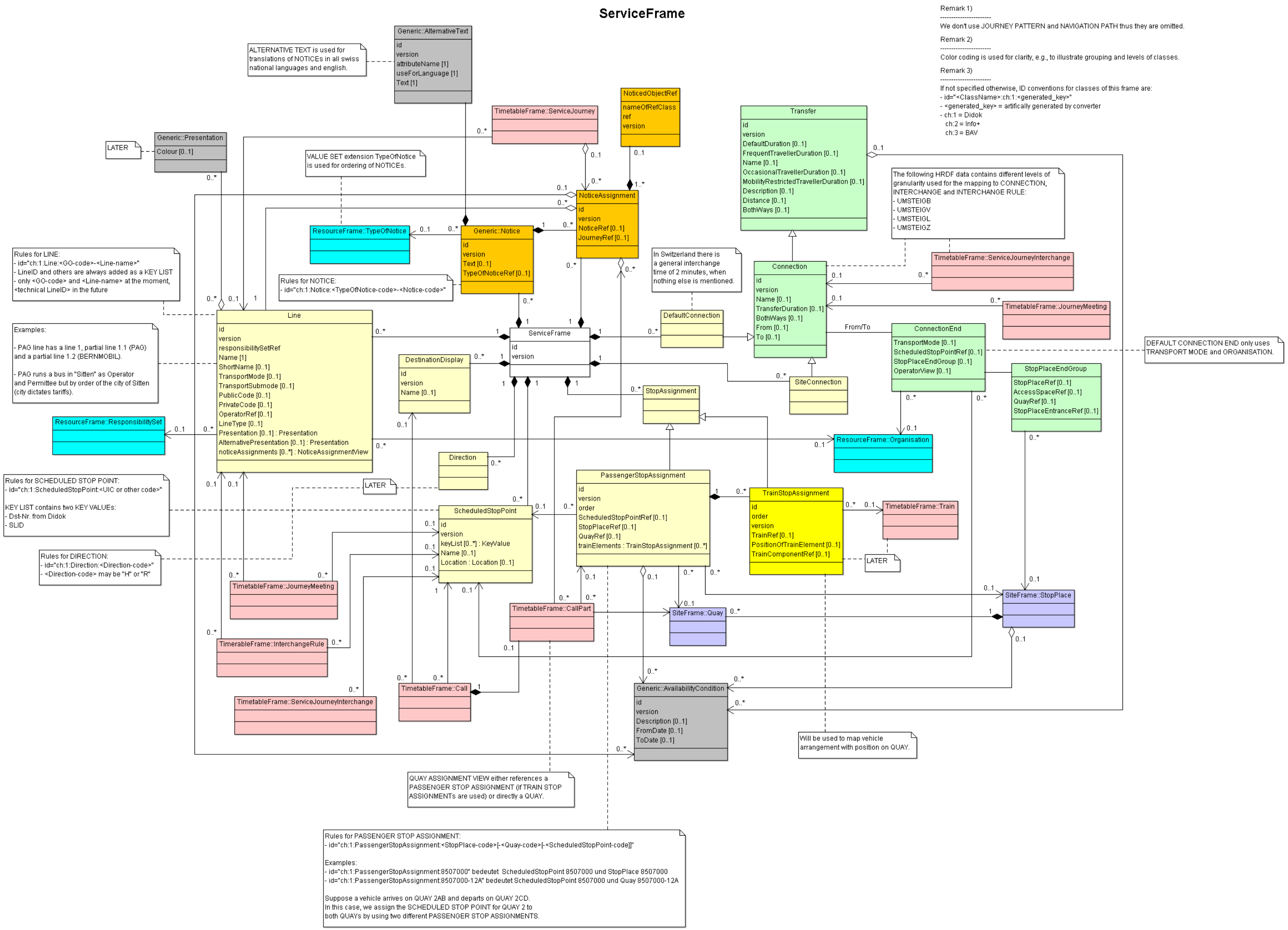
- *Route model: fixed LINEs and ROUTEs of a transport network.*
- *Flexible Network model: flexible LINEs and ROUTEs of a demand responsive transport network.*
- *Line Network model: overall topology of the LINEs and LINE SECTIONs that make up a transport network.*
- *Service Pattern model: SCHEDULED 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.

ServiceFrame



8.1.1 Business Requirements

-

8.1.2 Structure

Element	Usage	Structure	Description	Example
::>		VersionFrame	SERVICE FRAME inherits from VERSION FRAME.	
id	1:1	ServiceFrameIdType	Identifier of SERVICE FRAME.	
Network	0:1	Network	Reference to a NETWORK of which this is a frame.	<Network version="1" changed="2017-08-17T00:00:00Z" id="CTP:GroupOfLine:OCESN" > <Name>SNCF</Name> </Network>
Contains exactly one network (inbound or outbound) LATER				
directions	0:*	Direction	DIRECTIONs in SERVICE FRAME.	<Direction version="any" id="ch:1:Direction:H"> <DirectionType>outbound</DirectionType></Direction>
LATER				
routePoints	0:*	RoutePoint	ROUTE POINTs in SERVICE FRAME.	
LATER				
routeLinks	0:*	RouteLink	ROUTE LINKs in SERVICE FRAME.	
NOT TO BE USED				
routes	0:*	Route	ROUTEs in SERVICE FRAME.	
LATER				
commonSections	0:*	CommonSection	COMMON SECTIONs in SERVICE FRAME.	

NOT TO BE USED				
groupsOfLinks	0:*	GroupOfLinks	GROUP OF LINKs in SERVICE FRAME.	
NOT TO BE USED				
lines	0:*	Line	LINEs in SERVICE FRAME.	see chapter 8.8.3
They are referenced in various elements of the TimetableFrame (ServiceJourneys, InterchangeRule etc.)				
groupsOfLines	0:*	GroupOfLines	GROUP OF LINEs in SERVICE FRAME.	
NOT TO BE USED				
destinationDisplays	0:*	DestinationDisplay	DESTINATION DISPLAYs in SERVICE FRAME.	
They are referenced by individual Calls of ServiceJourneys.				
lineNetworks	0:*	LineNetwork	LINE NETWORKs in SERVICE FRAME.	
NOT TO BE USED				
scheduledStopPoints	0:*	ScheduledStopPoint	SCHEDULED STOP POINTs in SERVICE FRAME.	see chapter 8.17.3
serviceLinks	0:*	ServiceLink	SERVICE LINKs in SERVICE FRAME.	
NOT TO BE USED Service Links are not mapped (they are not mandatory in NeTeEx), the sequence of Scheduled Stop Point is used instead.				
servicePatterns	0:*	ServicePattern	SERVICE PATTERN in SERVICE FRAME.	
NOT TO BE USED We will do this in the Call.				
stopAreas	0:*	StopArea	STOP AREAs in SERVICE FRAME.	
LATER				
connections	0:*	Connection	CONNECTIONs in SERVICE FRAME.	
LATER				
tariffZones	0:*	TariffZone	TARIFF ZONEs in SERVICE FRAME.	

LATER				
stopAssignments	0:*	StopAssignment	STOP ASSIGNMENT in SERVICE FRAME.	
PassengerStopAssignement of Schedules Stop Points to Stop Places				
timingPoints	0:*	TimingPoint	TIMING POINTs in SERVICE FRAME.	
NOT TO BE USED				
timingLinks	0:*	TimingLink	TIMING LINKs in SERVICE FRAME.	
LATER				
timingPatterns	0:*	TimingPattern	TIMING PATTERN in SERVICE FRAME.	
LATER				
journeyPatterns	0:*	JourneyPattern	JOURNEY PATTERNs in SERVICE FRAME.	
LATER				
transferRestrictions	0:*	TransferRestriction	TRANSFER RESTRICTIONs in SER-VICE FRAME.	
NOT TO BE USED				
routingConstraintZones	0:*	RoutingConstraint	ROUTING CONSTRAINT ZONEs in SERVICE FRAME.	
NOT TO BE USED				
serviceExclusions	0:*	ServiceExclusion	SERVICE EXCLUSIONs in SERVICE FRAME.	
NOT TO BE USED				
timeDemandTypes	0:*	TimingDemandType	TIME DEMAND TYPEs in SERVICE FRAME.	
NOT TO BE USED				
logicalDisplays	0:*	LogicalDisplay	LOGICAL DISPLAYs in SERVICE FRAME.	
NOT TO BE USED				
displayAssignments	0:*	DisplayAssignment	DISPLAY ASSIGNMENTs in SER-VICE FRAME.	
LATER				

groupsOfPoints	0:*	GroupOfPoints	GROUP OF POINTs in SERVICE FRAME.	
NOT TO BE USED				
passengerInformationEquipments	0:*	PassengerInformationE-quipment	PASSENGER INFORMATION EQUIPMENT in SERVICE FRAME.	
LATER				

8.2 ServiceLink

(VDV 462, section 11.1 / NeTEx-1, 8.6.3.4.3)
A LINK between an ordered pair of STOP POINTs. Service links are directional - there will be separate links for each direction of a route. Each ServiceLink is part of an Operational Contex and independent of the line.

8.2.1 Business Requirements

A possible future use of ServiceLink is the modeling of coordinate sequences that can then be used on a map. This may also be done with Route and RoutLinks, but it is more complex there.

In HRDF border points are modeled in the (*GR lines). We also have information on the route like “Panoramastrecke” or “Basistunnel”.

In NeTEx this can be modeled as shown in the Basel S-rail line 6 (Badischer Bahnhof to Zell (Wiesenthal) or between Riehen and Lörrach/Stetten, where it crosses the border.

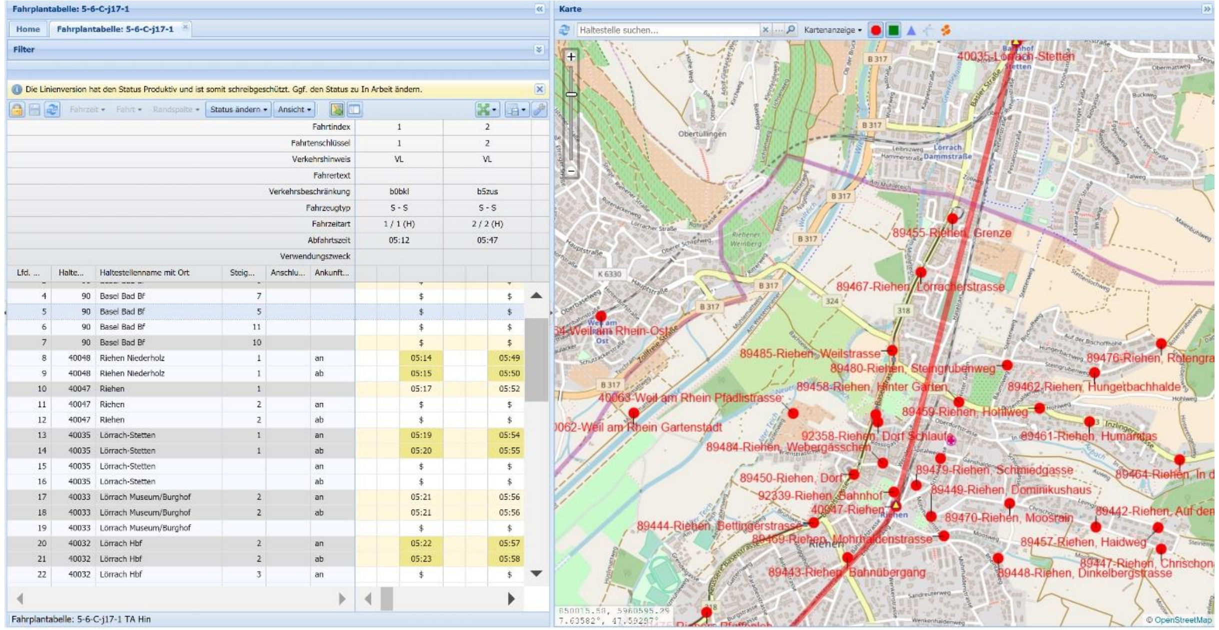


Figure 13: S6 from Basel to Zell (Wiesental).

Borderpoints can be modeled in NeTEx with BorderPoint elements. They can be put into the GeneralFrame or the FareFrame (as part of “borderPoints”. VDV 462 has decided to put them into the GeneralFrame. See also section 12.2 "BorderPoint" for the SBB approach. The following image shows the VDV modeling:

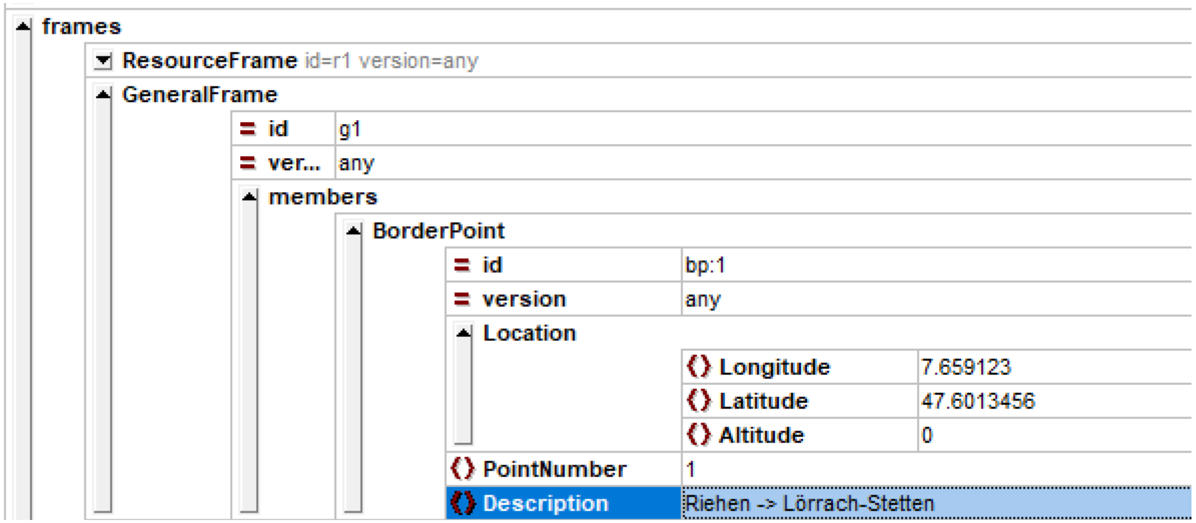


Figure 14: Modeling BorderPoint.

The PointNumber is the current Number of the border stop in HRDF. The point also can have a name and coordinates.

The border points are assigned to the partial route Riehen/Lörrach

Examples with possible Id for StopPlace and ScheduledStopPoint:

Hstnr	Name	Gleis	StopPlaceId	SSPId	LinkId
40047	Riehen	1	8014439	pt-243356	sl-5-pt-243356-pt-243358
40035	Lörrach/ Stetten	1	8014440	pt-243358	

Table 28: Id examples for StopPlace, ScheduledStopPoint and ServiceLink.

The ServiceLink is defined as:

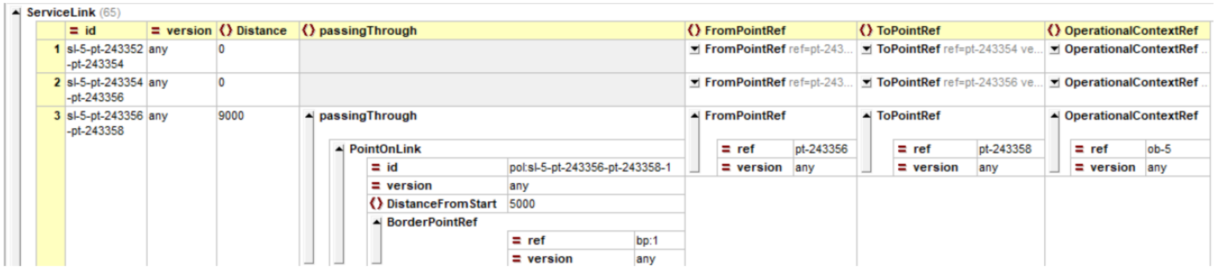


Figure 15: Point on the ServiceLink.

Intermediate points are given as ServiceLink/passingThrough/PointOnLink.

Besides the reference on the defined BorderPoints also a distance from the beginning can be provided. Not only BorderPoints can be modeled, but also other types of points.

We model with Calls and therefore a reference to the ServiceLink is given there:

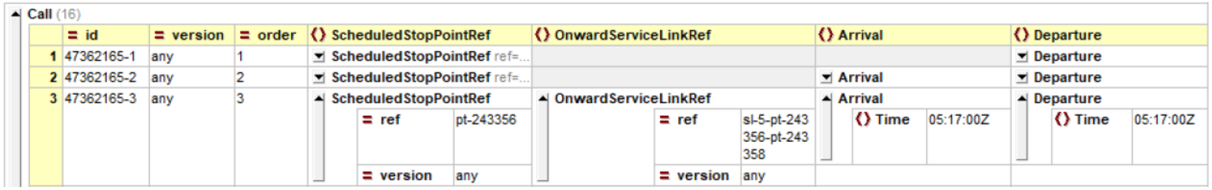


Figure 16: Reference in to ServiceLink with "OnwardServiceLinkRef".

The modeling ist efficient, als for all ServiceJourneys the same ServiceLink for the same BorderPoint is used. When the coordinates for ServiceJourneys are used “OnwardServiceLinkRef” will be used anyhow.

We will not use ServiceLink for border modelling for the time being, and instead model these elements with Via elements in Call.

8.2.2 Structure

Element	Usage	Structure	Description	Example
serviceLinks		-structure		

Attributes: • id • version				
::>	::>	LINK	SERVICE LINK inherits from LINK. In the European passenger information profile, the schematic of the service is provided through the SERVICE LINK. Therefore, whenever the shape of the line is available, the detailed shape of the different links will have to be provided by the gml:LineString element of the inherited LINK.	
id	1:1	IdType	Identifier of SERVICE LINK	
Distance	0:1	DistanceType	Distance along LINK (inherited).	
LATER				
FromPointRef	1:1	ScheduledStopPoin-tRefStructure	Reference to SCHEDULED STOP POINT at which SERVICE LINK starts.	
ToPointRef	1:1	ScheduledStopPoin-tRefStructure	Reference to SCHEDULED STOP POINT at which SERVICE LINK ends.	
VehicleMode	0:1	TransportModeEnum	Mode of transport for which SERVICE LINK applies.	
NOT TO BE USED				
OperationalContextRef	0:1	OperationalContext-RefStructure	Reference to OPERATIONAL CONTEXT used to distinguish SERVICE LINK from	

			similar links between the same two points.	
NOT TO BE USED Between two StopPlaces there may be different links for different vehicles (e.g. bus or train). Without the OperationalContext it is difficult to see which Link is currently used. The connection can then only be made by Call/OnwardtimingLinkRef.				

8.2.3 Example

```
<ServiceLink id="ch:1:ServiceLink:91_8519559_8592442" version="any">
  <Distance>0</Distance>
  <FromPointRef ref="ch:1:ScheduledStopPoint:8519559" version="any" />
  <ToPointRef ref="ch:1:ScheduledStopPoint:8592442" version="any" />
</ServiceLink>
```

8.2.4 Hints

-

8.3 passingThrough

(VDV 462, section 11.2 / NeTEx-1, 7.6.5.3.5)
NOT TO BE USED
Intermediate points within ServiceLinks. PASSING THROUGH is an element of the LINK class and of type POINT ON LINK.

8.3.1 Business Requirements

If the need to model the border points in future, then we might start using passingThrough.

8.4 Network

(NeTEx-1, 8.4.5.8.2)
NOT TO BE USED
-

8.5 Direction

(NeTEx-1, 8.4.5.5.1 Direction)
A classification for the general orientation of ROUTEs.

8.5.1 Business Requirements

The current problem with direction is, that in Switzerland we only use H (Hin, Outbound) and R (Rück, Inbound). Circular is not used. In many cases we don't have the direction information.

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 ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:Direction<Direction_code>	"ch:1:Direction:H" or "ch:1:Direction:R" are the two default directions. But currently the keys are generated directly from the HRDF data. Hence "ch:1:Direction:8507000" is a valid direction too.	Yes	Built from Attributes by Source	• ch:1:Direction:H • ch:1:Direction:R
ch:1:slnid:<Technical_ID>	• We will switch to the SLNID (Swiss Line ID) as soon as possible. Meaning that <Object_name>="Direction" will be replaced with <ID_name>="slnid" in the future. • The <Technical_ID> of the SLNID is still under discussion.	Yes	Built from Attributes by Source	

Table 29: Direction ID definition.

8.5.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	DIRECTION inherits from DATA MANAGED OBJECT.	
id	1:1	DirectionIdType	Identifier of DIRECTION.	
See Table 29: Direction ID definition.				

Name	1:1	String	Name of DIRECTION.	<Name>A</Name>
NOT TO BE USED				
Used by SNCF.				
ExternalDirectionRef	0:1	ExternalObjectRef	An alternative code that uniquely identifies the DIRECTION specifically for use in AVMS systems. For VDV compatibility.	
NOT TO BE USED				
DirectionType	0:1	DirectionTypeEnum	A fixed value e.g. *'Outbound', 'Inbound', 'Clockwise',* associated with this direction.	
NOT TO BE USED **DirectionTypeEnum**: • outbound • inbound • clockwise • anticlockwise				
OppositeDirectionRef	0:1	DirectionRef	Reference to a DIRECTION that runs counter to this DIRECTION.	
NOT TO BE USED				

8.5.3 Example

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

8.5.4 Hints

-

8.6 RoutePoint

(NeTEx-1, 8.4.5.5.2)
NOT TO BE USED
A POINT used to define the shape of a ROUTE through the network. For technical border points we use BorderPoints in the FareFrame instead.
-

8.7 Route

NeTEx-1, 8.4.5.5.4)
LATER
An ordered list of located POINTs defining one single path through the road (or rail) network. A ROUTE may pass through the same POINT more than once.
Table 30: TypeOfDirectionEnumeration:

-

8.8 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, being variants of a core route with some deviations on certain parts only. Often the vehicle journeys on these ROUTEs are scheduled jointly with tight synchronisation, in order to provide a regular service on this specific LINE. They are often grouped together for presentation of the timetable to the public.

Two ROUTEs using the same infrastructure path (or parallel tracks), but with opposite DIRECTIONs, will generally belong to the same LINE.

A LINE can also be defined as a group of one or more ServiceJourneyPattern (LInienfahrweg of public transportation. Each LINE has a unique number PrivateCode, a unique 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..

A line can have at most two directions.

The assignement of a LINE to an ORGANISATION is done by the element OperatorRef and to the operationalContext (Betriebszweig) with OperationalContextRef.

8.8.1 Business Requirements

Note that there exist journeys in Switzerland and particularly in HRDF that are not associated with a Line. In NeTEx, however, the ServiceJourneys corresponding to such HRDF FPLAN journeys must still reference something in LineRef. To ensure this, we introduce a placeholder Line called "NoLine" for each Operator (or ResponsibilitySet respectively) that has journeys without a Line. See the following table for the details on how the ID of those NoLine placeholders is generated.

We will switch to the final LineID together with changes in HRDF, which allow the transfer of the line-id. The final goal is to use the Swiss Line ID as the id. (LATER).

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:Line:<GO_code/TU_code>:<Technical_ID>	• Filled in by the Organisations • In the case of Postauto the information used to build the OrganisationPart can also be used to build the <Technical_ID> • LinienID and others must also be included in a KeyList. • <Technical_ID> contains, for the moment, the Line name (and optionally partial line) but in the future the technical LinienID. Be aware that this means that currently the S1 in Zürich and in Bern have the same LineID	Yes	Built from Attributes by Source	• ch:1:Line:11:101 (NOT the official SBB Lines for the time being) • ch:1:Line:801:01 • ch:1:Line:Swiss:1 • ch:1:Line:11:S1 and ch:1:Line:11:IC1 are being discussed

	ch:1:Line:11:S1 due to HRDF providing only the line name and not a real line number.			
ch:1:Line:<GO_code/TU_code>:NoLine	• Whenever a ServiceJourney is independent of a Line, i.e., no Line is assigned to it, the ServiceJourney LineRef must point to such a placeholder Line. A so called "NoLine" must be generated for an Operator (or ResponsibilitySet respectively) whenever ServiceJourneys without any Line are assigned to this Operator.	Yes	Built from Attributes by Source	• ch:1:Line:11:NoLine
ch:1:slnid:<AdminOrg>:<Technical_ID>	• We will switch to the SLNID (Swiss Line ID) as soon as possible. Meaning that <Object_name>="Line" will be replaced with <ID_name>="slnid" in the future. • The <Technical_ID> of the SLNID is still under discussion.	Yes	Built from Attributes by Source	

Table 31: Line ID definition.

8.8.2 Structure

Element	**Usage**	**Structure**	**Description**	**Example**
::>	::>	DataManagedObject	LINE inherits from DATA MANAGED OBJECT.	
Id	1:1	LineIdType	Identifier of LINE.	ch:1:Line:11:IC1
See Table 31: Line ID definition.				
keyList	0:1	KeyValue	KEY LIST with the KEY VALUEs related to the LINE. Will contain the SLNID of the LINE.	<keyList> <KeyValue> <Key>SLNID</Key> <Value>ch:1:slnid:100001:IC1:XXX</Value>

				</KeyValue> </keyList>
The following KeyValues are added: • SLID (Line ID according to VDV 433) • STID (PartialLine ID according to VDV 433) Those are LATER replaced by the SLNID.				
Name	1:1	MultilingualString	Name of LINE.	<Name>1</Name>
Could be obtained in HRDF from I+ : Liniennummer. In case of the NoLine (for journeys without an actual Line), the Name is "NoLine".				
ShortName	0:1	MultilingualString	Short Name of LINE.	<ShortName>1</ShortName>
Could be obtained in HRDF from I+ : Liniennummer. In case of the NoLine (for journeys without an actual Line), the ShortName is "NoLine".				
Description	0:1	MultilingualString	Description of LINE.	
LATER				
TransportMode	0:1	VehicleModeEnum	Identifier of Primary TRANSPORT MODE of LINE.	<TransportMode>urban-Rail</TransportMode>
May change during the day (e.g. tram or bus)				
TransportSubmode	0:1	TransportSubmodeEnum	Identifier of TRANSPORT MODE of LINE.	
Url	0:1	any	A URL associated with the LINE.	
IGNORED AT IMPORT				
PublicCode	0:1	xsd:normalizedString	Public identifier of LINE.	
Field has optional multiplicity but **must be filled** if data is available. It is the LinienText, i.e., it should be a concatenation of “VM-Art“ and line number in Switzerland. Except LemanExpress “S L1”. However, this information is not exported currently. Therefore the PublicCode is only the line number. It may be an extension in future with an additional *I line in HRDF. NoLines **do not** use a PublicCode.				
PrivateCode	0:1	xsd:normalizedString	Alternative identifier of LINE.	
Field has optional multiplicity but **must be filled** if data is available. It is the LinienID. NoLines **do not** use a PrivateCode.				
ExternalLineRef	0:1	ExternalObjectRef	An alternative code that uniquely identifies the LINE specifically for use in AVMS systems. For VDV compatibility.	

IGNORED AT IMPORT				
AuthorityRef	0:1	TransportOperatorRef	Reference to AUTHORITY of LINE.	
LATER				
OperatorRef	0:1	OperatorRef	Reference to OPERATOR of LINE.	
LATER				
additionalOperators	0:*	OperatorRef	References to additional OPERATOR of LINE.	
LATER for SBB, SNCF will use this eventually.				
otherModes	0:1	modeRef	Additional transport MODEs for LINE.	
IGNORED AT IMPORT				
OperationalContextRef	0:1	OperationalContextRef	Reference to OPERATIONAL CONTEXT of LINE.	
LATER				
LineType	0:1	LineTypeEnum	Classification of LINE. +v1.1.	
IGNORED AT IMPORT **LineTypeEnumeration**: • local • longDistance • express • seasonal • other				
TypeOfLineRef	0:1	TypeOfLineRef	Reference to a TYPE of LINE.	
LATER				
ExternalCategoryRef	0:1	ExternalObjectRef	An external product classification for all journeys of the LINE for use in AVMS systems. For VDV compatibility.	<routes> <RouteRef version="1" ref="CTP:Route:OCE22"/> <RouteRef version="1" ref="CTP:Route:OCE22"/> </routes>

LATER				
Monitored	0:1	xsd:boolean	Whether real-time data is available for LINE.	
IGNORED AT IMPORT				
routes	0:*	RouteRef	Routes that follow the LINE.	
LATER				
RepresentByGroupRef	0:1	GroupOfLinesRef	Identifier of GROUP OF LINES that should be used to represent this LINE.	
NOT TO BE USED				
Presentation	0:1	Presentation	Preferred presentation attributes to use when rendering LINE on maps, etc.	
LATER				
AlternativePresentation	0:1	Presentation	Alternative presentation attributes to use when rendering LINE on maps, etc.	
LATER				
AccessibilityAssessment	0:1	AccessibilityAssessment	The overall accessibility characteristics of the LINE.	
LATER				
allowedDirections	0:*	AllowedDirection	Directions allowed for this LINE.	
NOT TO BE USED				

Table 32: TransportModeEnumeration:

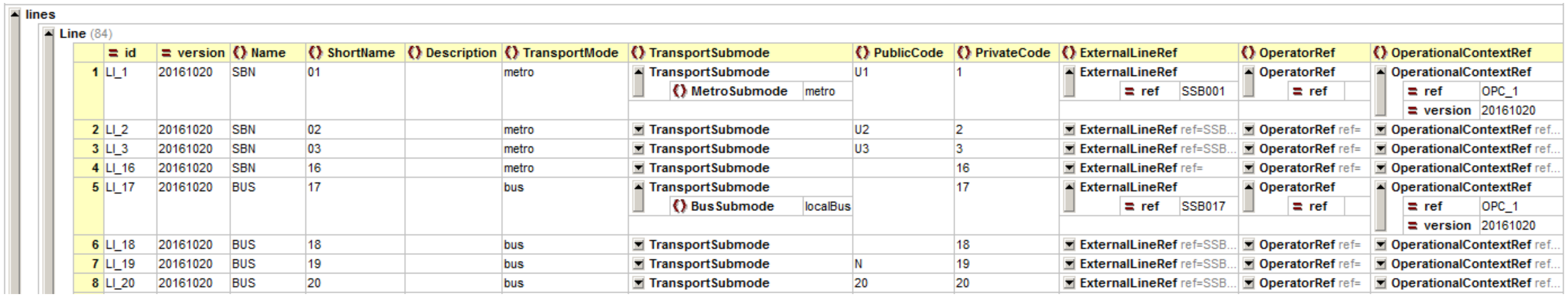
Name	**Description**
air	Air
bus	Bus
coach	Coach
funicular	Funicular
metro	Metro
rail	Rail
trolleyBus	Trolley Bus
tram	Tram
water	Water
cableway	Cableway

other	Other mode

8.8.3 Example

```xml
<Line id="ch:1:Line:11:IC1" version="any" responsibilitySetRef="ch:1:ResponsibilitySet:SBB_SBB">
  <Name>Genève Aéroport – Bern – Zürich HB – St.Gallen</Name>
  <ShortName>1</ShortName>
  <TransportMode>intercityRail</TransportMode>
  <TransportSubmode>
    <RailSubmode>longDistance</TramSubmode>
  </TransportSubmode>
  <PublicCode>IC1</PublicCode>
  <PrivateCode>11:IC1</PrivateCode>
  <OperatorRef ref="ch:1:Operator:11" version="any" />
  <ExternalProductCategoryRef ref="ch:1:TypeOfProductCategory:IC" version="any" />
  <Presentation>
    <Colour>FF3333</Colour>
  </Presentation>
</Line>
```

Another code example:



lines

Line (84)

	id	version	Name	ShortName	Description	TransportMode	TransportSubmode	PublicCode	PrivateCode	ExternalLineRef	OperatorRef	OperationalContextRef
1	LI_1	20161020	SBN	01		metro	TransportSubmode MetroSubmode metro	U1	1	ExternalLineRef ref SSB001	OperatorRef ref	OperationalContextRef ref OPC_1 version 20161020
2	LI_2	20161020	SBN	02		metro	TransportSubmode	U2	2	ExternalLineRef ref=SSB...	OperatorRef ref=	OperationalContextRef ref...
3	LI_3	20161020	SBN	03		metro	TransportSubmode	U3	3	ExternalLineRef ref=SSB...	OperatorRef ref=	OperationalContextRef ref...
4	LI_16	20161020	SBN	16		metro	TransportSubmode		16	ExternalLineRef ref=	OperatorRef ref=	OperationalContextRef ref...
5	LI_17	20161020	BUS	17		bus	TransportSubmode BusSubmode localBus		17	ExternalLineRef ref SSB017	OperatorRef ref	OperationalContextRef ref OPC_1 version 20161020
6	LI_18	20161020	BUS	18		bus	TransportSubmode		18	ExternalLineRef ref=SSB...	OperatorRef ref=	OperationalContextRef ref...
7	LI_19	20161020	BUS	19		bus	TransportSubmode	N	19	ExternalLineRef ref=SSB...	OperatorRef ref=	OperationalContextRef ref...
8	LI_20	20161020	BUS	20		bus	TransportSubmode	20	20	ExternalLineRef ref=SSB...	OperatorRef ref=	OperationalContextRef ref...

Figure 17: XML structure of example.

8.9 DestinationDisplay

(NeTEx-1, 8.4.5.8.4)

The DESTINATION DISPLAY is an advertised destination of a specific LINE (or JOURNEY PATTERN), usually displayed on a head-sign or at other on-board locations. The DESTINATION DISPLAY can only be associated to STOP POINT IN JOURNEY PATTERN in the European passenger information profile.

8.9.1 Business Requirements

-

8.9.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	DESTINATION DISPLAY inherits from DATA MANAGED OBJECT	
Attributes: • id • version				
id	1:1	DestinationDisplayIdType	Identifier of DESTINATION DISPLAY.	ch:1:DestinationDisplay:8501022
Name	1:1	MultilingualString	Name of DESTINATION DISPLAY.	Genève
Is always language neutral. The data is taken from the Destination or from the reference in *R (HRDF). If DURCHBIND is used then the destination display shows the final destination.				
ShortName	0:1	MultilingualString	Short Name of DESTINATION DISPLAY.	
NOT TO BE USED				
SideText	0:1	MultilingualString	Text to display on side of vehicle associated with DESTINATION DISPLAY.	
FrontText	0:1	MultilingualString	Front of vehicle text associated of DESTINATION DISPLAY.	
NOT TO BE USED				

DriverDisplayText	0:1	MultilingualString	Text to display to DRIVER.	
ShortCode	0:1	xsd:normalizedString	PUBLIC CODE associated with DESTINA-TION DISPLAY.	
NOT TO BE USED				
PublicCode	0:1	xsd:normalizedString	Private CODE associated with DESTINA-TION DISPLAY.	
NOT TO BE USED				
PrivateCode	0:1	xsd:normalizedString	Additional short CODE associated with DESTINATION DISPLAY.	
NOT TO BE USED				
vias	0:*	Via	Text to show for VIA display.	
NOT TO BE USED				
variants	0:*	DeliveryDisplayVariant	Variant Display texts for different media.	
NOT TO BE USED				

8.9.1 Example

```
<destinationDisplays>
      <DestinationDisplay id="ch:1:DestinationDisplay:8501022" version="any">
            <Name>Genève</Name>
      </DestinationDisplay>
</destinationDisplays>
```

8.9.1 Hints

An advertised destination of a specific LINE or JOURNEY PATTERN, usually displayed on a headsign or at other on-board locations.

8.10 Via

(NeTEx-1, 8.4.5.8.8)
A VIA is a POINT used as a ROUTE POINT dedicated to distinguish two possible paths (ROUTEs) between an origin and a destination. These can be used to validate the selection of allowed values.

8.10.1 Business Requirements

Modeling special routes like “Panoramastrecke” can also be done without ServiceLinks.

Border points can be referenced with a Call/vias/Via element.

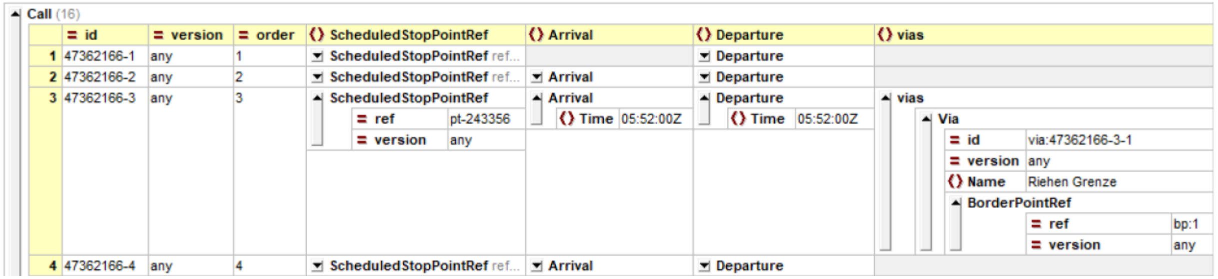


Figure 18: Reference to BorderPoint in Call/vias/Via.

The element Via\Name” is mandatory. Here it contains the name of the border point.

Also general information on the Link can be given here. In the minimal form the Via element just contains a text:

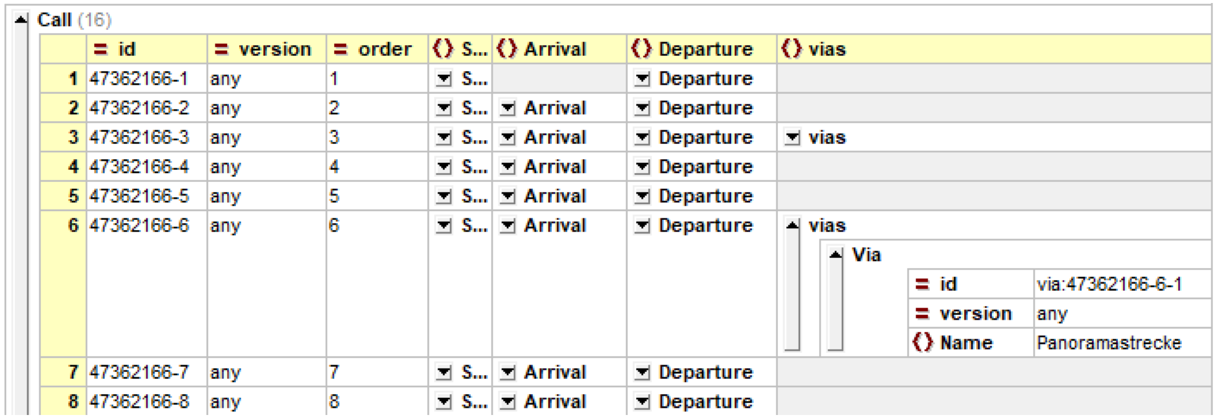


Figure 19: .Link information with Via

Borderpoints can also be normal StopPlaces (like Basel Badischer Bahnhof, Genève).

8.10.2 Structure

Element	**Usage**	**Structure**	**Description**	**Example**
::>	::>	DataManagedObject	VIA inherits from DATA MANAGED OB-JECT	
Attributes: • id • version				
id	1:1	IdType	Identifier of VIA.	
DestinationDisplayRef	0:1	DestinationDisplayRef-Structure	DESTINATION DISPLAY corresponding to VIA description.	
NOT TO BE USED				
Name	1:1	xsd:MultilingualString	Name of DESTINATION DISPLAY.	<Name>BorderPoint between Ge-nève and Annemasse</Name>

RoutePointRef	0:1	RoutePointRefStructure	Reference to ROUTE POINT corre-sponding to VIA name, if any.	<RoutePointRef ref="ch:1:Route-Point:Genève-Annemasse-border" version="any" />
ViaType	0:1	ViaTypeEnum	Classification of meaning of via.	
NOT TO BE USED **ViaTypeEnum**: • stopPoint • name • other				

8.10.1 Example

```
<vias>
  <Via id="ch:1:Via:BorderPoint-Genève/Annemasse" version="any">
    <Name lang="en">BorderPoint between Genève and Annemasse</Name>
    <RoutePointRef ref="ch:1:RoutePoint:Genève-Annemasse-border" version="any" />
  </Via>
</vias>
```

8.10.2 Hints

-

8.11 DestinationDisplayVariant

(NeTEx-1, 8.4.5.8.4)

NOT TO BE USED

-

8.12 DeliveryType

(NeTEx-1, 8.4.5.8.5.1)
NOT TO BE USED

8.13 Presentation

(NeTEx-1, 7.6.2.3.3)
LATER
Set of PRESENTATION values used to control appearance of an element.

8.13.1 Business Requirements

Used to further describe a LINE.

NeTEx cannot provide the full complexity of the presentation of lines as given in print or web layouts. The elemente Presentation can contain the basic attributes like font or colour, but also links to general information.
The following image shows the element Presentation:

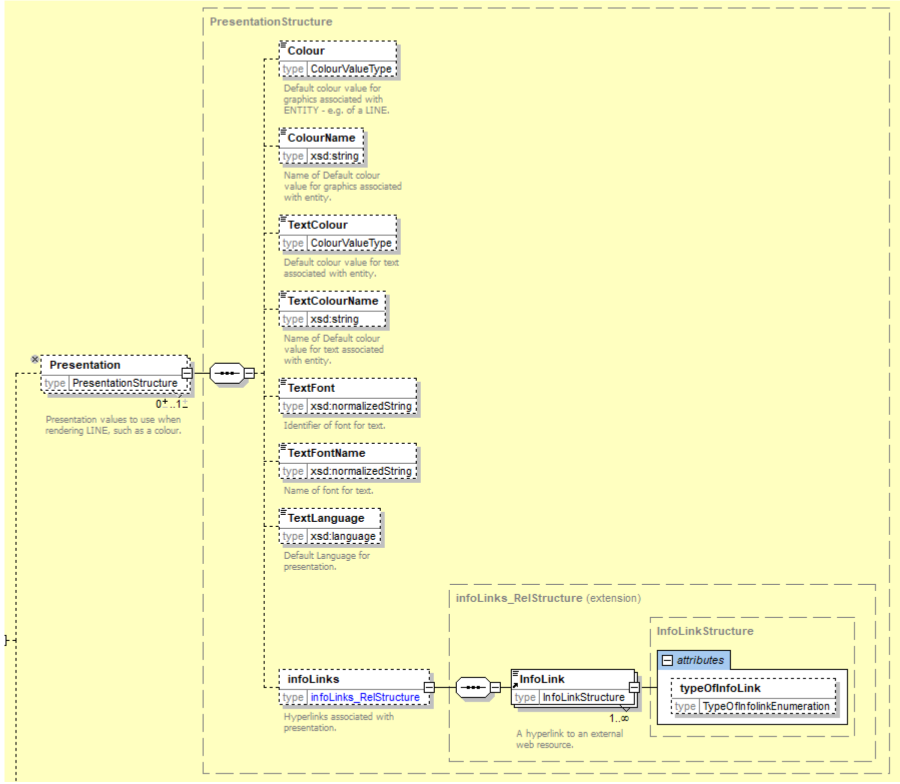


Figure 20: Element Presentation for a Line.

The following elements exist:

- Colour: The colour to show the line with in passenger information. This is an RGB value.
- ColourName: The name of the colour
- TextColour: The colour of the text (as RGB)
- TextFont: Identfication of the font
- TextFontName: Name of the font
- TextLanguage: Langugage, in which the line information is shown
- infoLinks: Different types of links to further information

The InfoLinks are further typed with the attribute "typeOfInfoLinks“. The following enum shows the allowed values:

```
<xsd:simpleType name="TypeOfInfolinkEnumeration">
  <xsd:annotation>
    <xsd:documentation>Enumeration of Uses of language.</xsd:documentation>
  </xsd:annotation>
  <xsd:restriction base="xsd:string">
    <xsd:enumeration value="contact"/>
    <xsd:enumeration value="resource"/>
    <xsd:enumeration value="info"/>
    <xsd:enumeration value="image"/>
    <xsd:enumeration value="document"/>
    <xsd:enumeration value="timetableDocument"/>
    <xsd:enumeration value="fareSheet"/>
    <xsd:enumeration value="map"/>
    <xsd:enumeration value="other"/>
  </xsd:restriction>
```

Figure 21: Values for TypeOfLink.

For the presentation in print there exists the element PrintPresentation. The main difference is, that the colour scheme is CMYK. Background colour is unfortunately an element that does not exist. We might add this as an extension.
An icon can be provided by using an INfoLink with type “resource”. This should point to an icon-file that is publicly reachable (e.g. opendata platform). A better solution would be a new “icon”-enum value. We are working on this change request to the specification, too.

8.13.2 Structure

Element	Usage	Structure	Description	Example
Colour	0:1	ColourValue	Identifier of colour value to use for ENTITY in user interface, e.g. LINE colour.	
ColourName	0:1	xsd:normalizedString	Text name of colour value to use for ENTITY in user interface, e.g. LINE colour.	

Extensions	0:1	ExtensionStructure	Extensions can be defined here. “BackgroundColour” and “BackgroundColourName” are used. The BackgroundColour identifies a colour value used in user interface, e.g. LINE colour.	<Extensions> <BackgroundColour>FF3333 </BackgroundColour> <BackgroundColourName>red </BackgroundColourName> </Extensions
LATER				
TextColour	0:1	ColourValue	Identifier of colour value to use for text for ENTITY in user interface, e.g. colour for name of LINE.	
TextColourName	0:1	xsd:normalizedString	Text name of colour value to use for text for ENTITY in user interface, e.g. name of colour for name of LINE.	
TextLanguage	0:1	xsd:language	Identifier of default language of text for ENTITY in user interface.	
InfoLink	0:1	InfoLinkStructure	URL for image associated with entity e.g. icon.	

8.13.1 Examples

The XML looks like this:

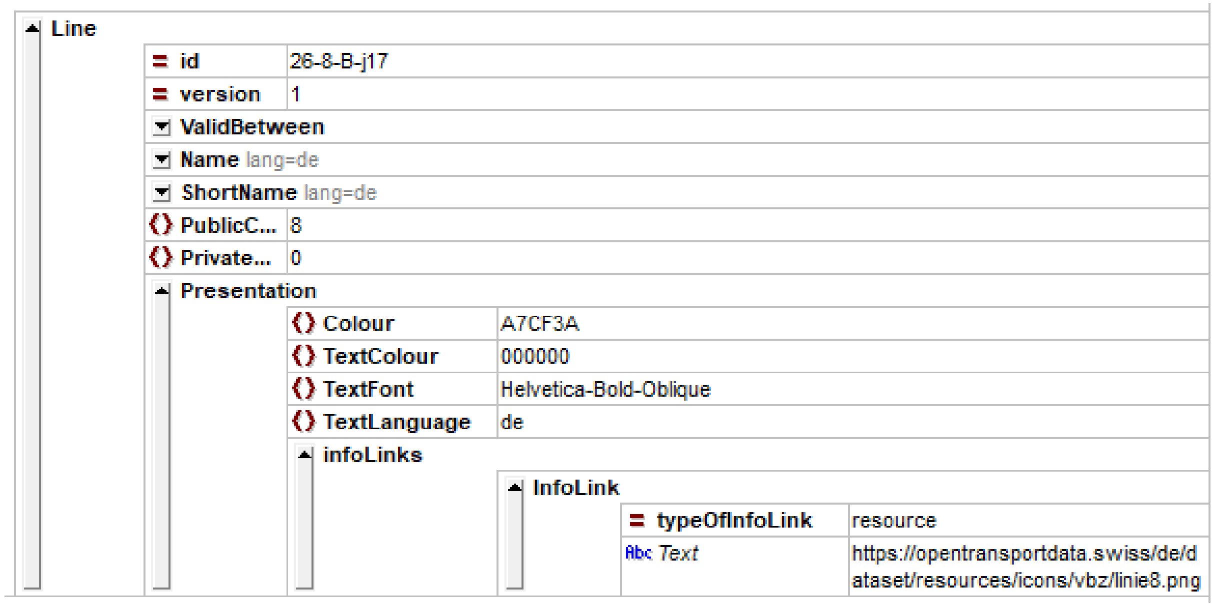


Figure 22: XML example with InfoLink to icon.

8.13.2 Hints

-

8.14 Alterntive Presentation

(NeTEx-1, 7.6.2.3.3)
LATER
Has the same structure as PRESENTATION.

8.15 InfoLink

(NeTEx-1, 7.6.2.3.4)
LATER

Info Link defines a URL with a content type.

Table 33:

8.16 TimingPoint

(NeTEx-1, 8.4.7.4.1)
NOT TO BE USED
A POINT against which the timing information necessary to build schedules may be recorded.

Table 34:

-

8.17 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 topo-graphic 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 ASSIGNEMTNs.

ScheduledStopPoint is a core concept. It is the "Point" used in the timetable for the services to stop. Unfortunately a ScheduledStopPoint can refer to a BoardingPosition, a Quay or a StopPlace. So the level of hierarchy is not determined by the element.

8.17.1 Business Requirements

The ID is created as follows:

ID	Description	Stability	Construction	Examples

ch:1:ScheduledStopPoint:<Technical_ID>	• We export without x:xx, but adopt the name, if it is available. • NAVs (timetables). • <AdminOrg> is not needed. • <Technical_ID> is equal to the DiDok number and the Quay code (see examples).	Yes	Built from Attributes by Source	• ch:1:ScheduledStopPoint:8507000 (= Bahnhof Bern) KeyList("DiDok")=8507000 • ch:1:ScheduledStopPoint:1112123 (= NAV in Germany) KeyList("DiDok")=1112123 • ch:1:ScheduledStopPoint:8712311 KeyList("Didok")=8712311 • ch:1:ScheduledStopPoint:851234:0:51 • ch:1:ScheduledStopPoint:8512345:0:52 • ch:1:ScheduledStopPoint:8512345:1:51 (at Mentz) • ch:1:ScheduledStopPoint:8512345 and in the PSA with QuayRef="ch:1:Quay:851234:L" for internal QuayRef="ch:1:Quay:8512345:51" or "ch:1:Quay:8512345:0:51"
ch:1:sloid:<Technical_ID>	• We will switch to the SLOID (Swiss Location ID) as soon as possible. Meaning that <Object_name>="ScheduledStopPoint" will be replaced with <ID_name>="sloid" in the future.	Yes	Built from Attributes by Source	

Table 35: ScheduledStopPoint ID definition.

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. For trains in Switzerland, the Didok-code is used as the base for the ID of the ScheduledStopPoint.

DIVA stop points are mapped to SCHEDULED STOP POINTS:

```
<scheduledStopPoints>
```

```xml
    <ScheduledStopPoint id="ch:1:ScheduledStopPoint:8504123" version="any">
      <Name>Corcelles-Nord</Name>
      <Location>
        <Longitude>6.960287589054</Longitude>
        <Latitude>46.83525247177</Latitude>
        <Altitude>448</Altitude>
        <gml:pos srsName="CHTRS03">187.235 563.507</gml:pos>
      </Location>
      <ShortName>CN</ShortName>
      <ShortStopCode>8504123</ShortStopCode>
      <PrivateCode>4123</PrivateCode>
      <StopType>railStation</StopType>
    </ScheduledStopPoint>
    <ScheduledStopPoint id="ch:1:ScheduledStopPoint:8504124" version="any">
      <Name>Dompierre</Name>
      <Location>
        <Longitude>6.985358995910</Longitude>
        <Latitude>46.85439832076</Latitude>
        <Altitude>442</Altitude>
        <gml:pos srsName="CHTRS03">189.352 565.432</gml:pos>
      </Location>
      <ShortName>DOP</ShortName>
      <ShortStopCode>8504124</ShortStopCode>
      <PrivateCode>4124</PrivateCode>
      <StopType>railStation</StopType>
    </ScheduledStopPoint>
    <ScheduledStopPoint id="ch:1:ScheduledStopPoint:8504125" version="any">
      <Name>Domdidier</Name>
      <Location>
        <Longitude>7.011380328317</Longitude>
        <Latitude>46.86850467051</Latitude>
        <Altitude>439</Altitude>
        <gml:pos srsName="CHTRS03">190.909 567.425</gml:pos>
      </Location>
      <ShortName>DOM</ShortName>
      <ShortStopCode>8504125</ShortStopCode>
      <PrivateCode>4125:1</PrivateCode>
      <StopType>railStation</StopType>
    </ScheduledStopPoint>
```

```xml
    <ScheduledStopPoint id="ch:1:ScheduledStopPoint:8504127" version="any">
      <Name>Faoug</Name>
      <Location>
        <Longitude>7.074592657922</Longitude>
        <Latitude>46.90823159776</Latitude>
        <Altitude>434</Altitude>
        <gml:pos srsName="CHTRS03">195.301 572.265</gml:pos>
      </Location>
      <ShortName>FG</ShortName>
      <ShortStopCode>8504127</ShortStopCode>
      <PrivateCode>4127</PrivateCode>
      <StopType>railStation</StopType>
    </ScheduledStopPoint>
</scheduledStopPoins>
```

8.17.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	POINT	SCHEDULED STOP POINT inherits from POINT.	
• id • version				
id	1:1	ScheduledStopPointIdType	Identifier of a SCHEDULED STOP POINT.	ch:1:ScheduledStop-Point:8504123:1
See Table 35: ScheduledStopPoint ID definition.				
keyList	0:1	+KeyValue	KEY LIST with the KEY VALUEs beloning to the SCHEDULED STOP POINT. Will contain the SLOID and, if available, the DiDok number.	
The keyList contains two KeyValue, one with the DiDok number and one with the SLOID.				
Name	0:1	xsd:MultilingualString	Name of SCHEDULED STOP POINT.	
Contains the Name of the StopPlace. Every StopPoint must represent a StopPlace, Quay or other stop area, and therefore have a Name (equal to 'StopPlace/Name').				
Location	0:1	LocationStructure	Location of SCHEDULED STOP POINT.	

stopAreas	0:*	StopAreaRef	STOP AREAs to which SCHEDULED STOP POINT belongs.	
NOT TO BE USED				
tariffZones	0:*	TariffZoneRef	TARIFF ZONEs to which SCHEDULED STOP POINT belongs.	
LATER				
ShortName	0:1	xsd:MultilingualString	Short Name of SCHEDULED STOP POINT.	
Contains the public description of the Quay, e.g. “21/22“,“12“,“12A“,“P“... (the PublicCode of the Quay). If the StopPoint represents a Quay, 'ShortName' must be present and contain 'Quay/PublicCode'				
Description	0:1	xsd:MultilingualString	Description of SCHEDULED STOP POINT.	
NOT TO BE USED. This ist he equivalent to the physical presentation on a board at the station.				
Label	0:1	xsd:MultilingualString	Label of SCHEDULED STOP POINT.	
LATER Contains the simple presentation (e.g. "Bern“, "Berne“, "Berna“.				
ShortStopCode	0:1	xsd:normalizedString	Short identifier of a SCHEDULED STOP POINT.	8507000:13CD
This is the ScheduledStopPoint code also used in its technical ID (with the UIC country code as prefix).				
PublicCode	0:1	xsd:normalizedString	Public Code of a SCHEDULED STOP POINT.	
NOT TO BE USED We switched from PublicCode to PrivateCode.				
PrivateCode	0:1	xsd:normalizedString	Alternative identifier of a SCHEDULED STOP POINT. can be used to associate with legacy systems.	7000:13CD
The PrivateCode contains the <Technical_ID> of the ScheduledStopPointID (see target example), meaning the DiDok number and the public Quay description (separated with ":"). It will be equal to the SLOID in the future.				

ExternalStopPointRef	0:1	ExternalObjectRef	An alternative code that uniquely identifies the SCHEDULED STOP POINT specifically for use in AVMS systems. For VDV compatibility.	
NOT TO BE USED				
Url	0:1	xsd:anyURI	URL associated with SCHEDULED STOP POINT.	
NOT TO BE USED				
StopType	1:1	StopPlaceTypeEnum	Type of STOP PLACE. Restricted to an allowed value.	railStation
LATER				
CompassBearing	0:1	AbsoluteBearingType	Heading of STOP relative to street. Degrees from North. This should be considered as a derived value that can be used for presentation purposes when information about the physical stop is not available. The definitive value is the compass bearing found on the QUAY (i.e. physical stop) to which a SCHEDULED STOP POINT is assigned.	
NOT TO BE USED				
vehicleModes	0:*	VehicleMode	VEHICLE MODEs associated with SCHEDULED STOP POINT.	
Contains a TransportMode. Normally a single TransportMode is supported by a ScheduledStopPoint. NOT TO BE USED				
ForAlighting	0:1	xsd:boolean	Default for whether stop may be used for alighting. May be overridden on specific services.	
NOT TO BE USED				
ForBoarding	0:1	xsd:boolean	Default for whether stop may be used for boarding. May be overridden on specific services.	
NOT TO BE USED				
RequestStop	0:1	xsd:boolean	Default for whether stop is a request stop. May be overridden on specific services.	

NOT TO BE USED				
TopographicPlaceRef	0:*	TopographicPlaceRef	Principle TOPOGRAPHIC PLACE associated with SCHEDULED STOP POINT.	
IGNORED AT IMPORT				
AtCentre	0:1	xsd:boolean	Whether STOP POINT can be considered as being at the centre of a TOPOGRAPHIC PLACE. Default is '*false*'.	
NOT TO BE USED				

8.17.3 Example

```
<scheduledStopPoints>
  <ScheduledStopPoint id="ch:1:ScheduledStopPoint:8591089" version="any">
    <keyList>
      <KeyValue>
        <Key>Didok</Key>
        <Value>91089</Value>
      </KeyValue>
      <KeyValue>
        <Key>SLOID</Key>
        <Value>ch:sloid:849:91089</Value>
      </KeyValue>
    </keyList>
    <Name>ZÃ¼rich, Bleulerstrasse</Name>
    <Location>
      <Longitude>8.571593951733416</Longitude>
      <Latitude>47.34717215872908</Latitude>
      <Altitude>462</Altitude>
      <gml:pos srsName="CHTRS95">244.653 685.609</gml:pos>
    </Location>
    <Label>Bleulerstrasse</Label>
    <ShortStopCode>8591089</ShortStopCode>
    <PrivateCode>91089</PrivateCode>
    <StopType>onstreetBus</StopType>
  </ScheduledStopPoint>
  <ScheduledStopPoint id="ch:1:ScheduledStopPoint:8590129:A" version="any">
    <keyList>
      <KeyValue>
```

```xml
        <Key>Didok</Key>
        <Value>90129:A</Value>
      </KeyValue>
      <KeyValue>
        <Key>SLOID</Key>
        <Value>ch:sloid:106:90129:A</Value>
      </KeyValue>
    </keyList>
    <Name>Bern Wankdorf, Bahnhof</Name>
    <Location>
      <Longitude>7.46420677</Longitude>
      <Latitude>46.96675449</Latitude>
      <Altitude>550</Altitude>
      <gml:pos srsName="CHTRS95">201.725 601.960</gml:pos>
    </Location>
    <ShortName>A</ShortName>
    <Label>Wankdorf Bahnhof, Haltekante A</Label>
    <ShortStopCode>8590129:A</ShortStopCode>
    <PrivateCode>90129:A</PrivateCode>
    <StopType>tramStation</StopType>
  </ScheduledStopPoint>
  <ScheduledStopPoint id="ch:1:ScheduledStopPoint:857000:13CD" version="any">
    <keyList>
      <KeyValue>
        <Key>Didok</Key>
        <Value>7000</Value>
      </KeyValue>
      <KeyValue>
        <Key>SLOID</Key>
        <Value>ch:sloid:11:7000:13CD</Value>
      </KeyValue>
    </keyList>
    <Name>Bern Hauptbahnhof</Name>
    <Location>
      <Longitude>7.4391190057559</Longitude>
      <Latitude>46.94882449699032</Latitude>
      <Altitude>540</Altitude>
      <gml:pos srsName="CHTRS95">199.749 600.037</gml:pos>
    </Location>
```

```
    <Label>Gleis 13, Sektor CD</Label>
    <ShortStopCode>8507000:13CD</ShortStopCode>
    <PrivateCode>7000:13CD</PrivateCode>
    <StopType>railStation</StopType>
  </ScheduledStopPoint>
</scheduledStopPoints>
```

-

8.18 StopArea

(NeTEx-1, 8.6.3.1)
NOT TO BE USED
A group of SCHEDULED STOP POINTs close to each other.

8.19 JourneyPattern

(NeTEx-1, 8.6.2.3.1)
NOT TO BE USED
An ordered list of STOP POINTs and TIMING POINTs on a single ROUTE, describing the pattern of working for public transport vehicles. As a reminder, a POINT IN JOURNEY PATTERN can be a STOP POINT a TIMING POINT, both or none (only a POINT IN JOURNEY PATTERN). A JOURNEY PATTERN may pass through the same POINT more than once. The first point of a JOURNEY PATTERN is the origin. The last point is the destination.

8.20 ServiceJourneyPattern

(NeTEx-1, 8.6.3.4.5)
NOT TO BE USED
The subset of a JOURNEY PATTERN made up only of STOP POINTs IN JOURNEY PATTERN.

8.21 TariffZone

(NeTEx-1, 7.6.8.3.2)
LATER
A ZONE used to define a zonal fare structure in a zone-counting or zone-matrix system.

The generic Zone (NeTEx-1, 7.6.8) is used. For simplification all necessary information is shown in one table. Zone itself inherits from GroupOfPoints

8.22 PassengerStopAssignement

(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.

8.22.1 Business Requirements

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:PassengerStopAssignment:<Stop-Place_code>[:<Quay_code>[:<Sched-uledStopPoint_code]]	The StopPlace code is the DiDok number and the Quay code corresponds to the public description of the Quay. The square brackets comprise the optional parts.	Yes	Built from Attributes by Converter	• Id=”ch:1:PassengerStopAssignment:8507000” corresponds to StopPlace "ch:1:StopPlace:8507000" and SSP "ch:1:ScheduledStopPoint:8507000" • Id=ch:1:PassengerStopAssignment:8507000:12A corresponds to SSP "ch:1:ScheduledStopPoint:8507000" and Quay "ch:1:Quay:8507000:12A"

Table 36: PassengerStopAssignment ID definition.

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.

- ID convention: ch:1:PassengerStopAssignment:<StopPlace code>[-<Quay code>[-<ScheduledStopPoint code]] where the brackets denote optional suffixes.
- ch:1:PassengerStopAssignment:8507000 would imply ch:1:ScheduledStopPoint:8507000 and ch:1:StopPlace:8507000
- ch:1:PassengerStopAssignment:8507000:12A would imply ch:1:ScheduledStopPoint:8507000 and ch:1:Quay:8507000:12A

The assignment of ScheduledStopPoint's to StopPlace/Quay is done centrally in ServiceFrame/stopAssignments/PassengerStopAssignment. This results only in a signle PassengerSTopAssignment per combination and not on the call level. Only in very special cases we will have such information on the Call. E.g. when it shall be modeled in which sectors stops which part of the train/carriage.

8.22.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	StopAssignment	PASSENGER STOP ASSIGNMENT inherits from STOP ASSIGNMENT.	
id	1:1	PassengerStopAssignmentIdType	Identifier of PASSENGER STOP ASSIGNMENT.	ch:1:PassengerStopAssignment:8507000:2
See Table 36: PassengerStopAssignment ID definition.				
ScheduledStopPointRef	0:1	ScheduledStopPointRef	Reference to a SCHEDULED STOP POINT to be assigned.	ch:1:ScheduledStopPoint:8507000:2
StopPlaceRef	1:1	StopPlaceRef	Reference to STOP PLACE to which the SCHEDULED STOP POINT is assigned.	ch:1:StopPlace:8507000
QuayRef	0:1	QuayRef	Reference to a QUAY within the STOP PLACE to which the SCHEDULED STOP POINT is assigned.	ch:1:Quay:8507000:2

BoardingPositionRef	0:1	BoardingPositionRef	Reference to a BOARDING POSITION with QUAY at STOP PLACE to which the SCHEDULED STOP POINT is assigned.	
NOT TO BE USED				
trainElements	0:*	TrainStopAssignment	TRAIN STOP ASSIGNMENTs associated with PASSENGER STOP ASSIGNMENT. These can provide more detailed information about individual BOARDING POSITION and carriage alignments.	
LATER				

8.22.3 Example

```
<stopAssignments>
    <PassengerStopAssignment id="ch:1:PassengerStopAssignment:8590129:A" version="any" order="1">
      <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8590129:A" version="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" version="any" />
      <StopPlaceRef ref="ch:1:StopPlace:8590129" version="any" />
      <QuayRef ref="ch:1:Quay:8590129:2" version="any" />
    </PassengerStopAssignment>
    <PassengerStopAssignment id="ch:1:PassengerStopAssignment: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>
```

8.22.4 Hints

-

8.23 TrainStopAssignement

(NeTEx-1, 8.6.9)

LATER

A TRAIN STOP ASSIGNMENT describes the alignment of the carriages of a train with the BOARDING POSITIONs of a QUAY so that, for example, exact guidance can be given to passengers as to where to stand on the platform to access a particular carriage or part of the train.

Each TRAIN COMPONENT of a TRAIN can be assigned to a SCHEDULED STOP POINT and a specific QUAY and BOARDING POSITION of a STOP PLACE.

8.23.1 Business Requirements

Will be used to map vehicle arrangement with QUAY position within PASSENGER STOP ASSIGNMENTS. Especially when trains cover multiple sectors.

With TrainStopAssignment each carriage is assigned to a Quay, quay sector, or even a BoardingPosition. This element can be used on Call/Departure, be it as PassengerStopAssignmentRef or with DynamicStopAssignment:

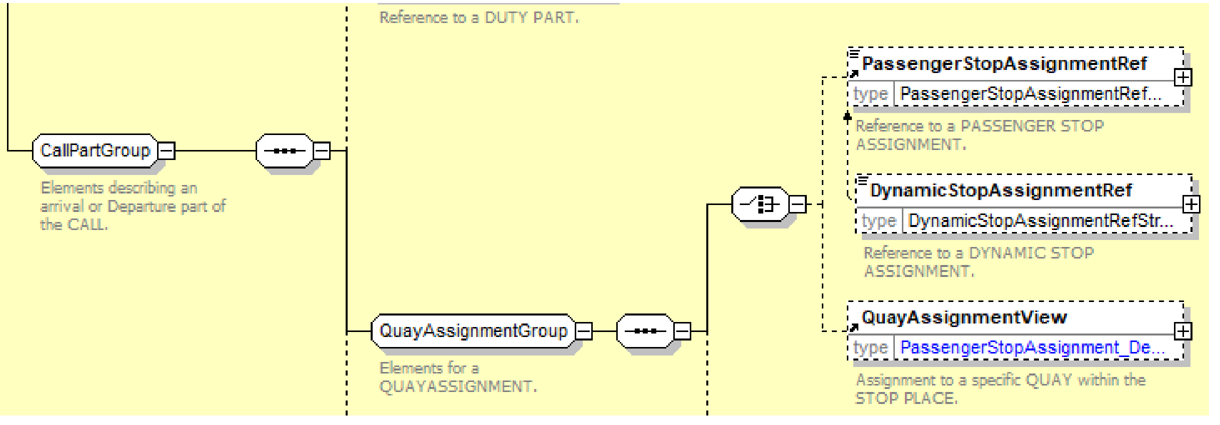


Figure 23: PassengerStopAssignment and DynamicStopAssignment

The problem is that only a single element can be provided. To change this in the element Train, not only the type of train (e.g. RABe-525) but an actual instance of the full train must be defined:

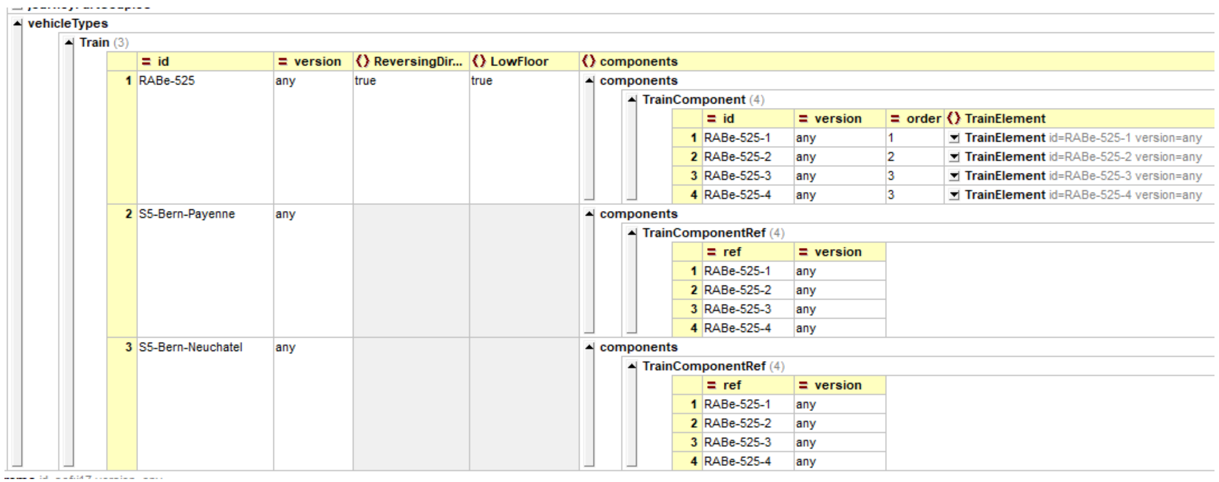


Figure 24: Definition af a real train on the base of the type RABe-525

We define two “trains” S5-Bern-Payerne and S5-Bern-Neuchatel. To avoid redundant modelling wie reference with TrainComponentRef to the base type RABe-525.

We then change the ServiceJourney elements to the real types:

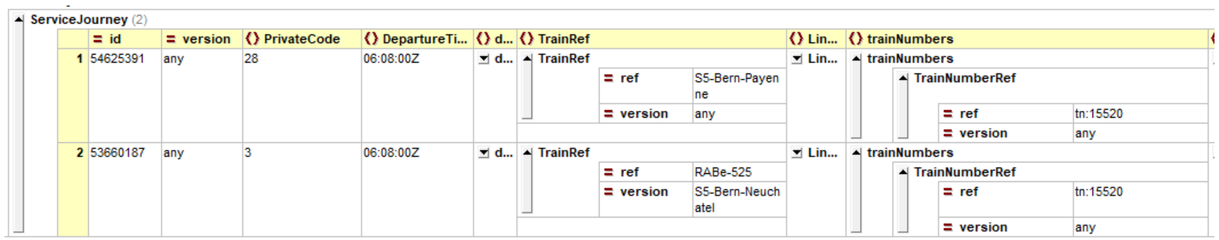


Figure 25: ServiceJourney referencing to the trains

In ServiceFrame/stopAssigments we can now position the carriages to the relevant sector(s).
We assign the ScheduledStopPoint for track 12 sector A:

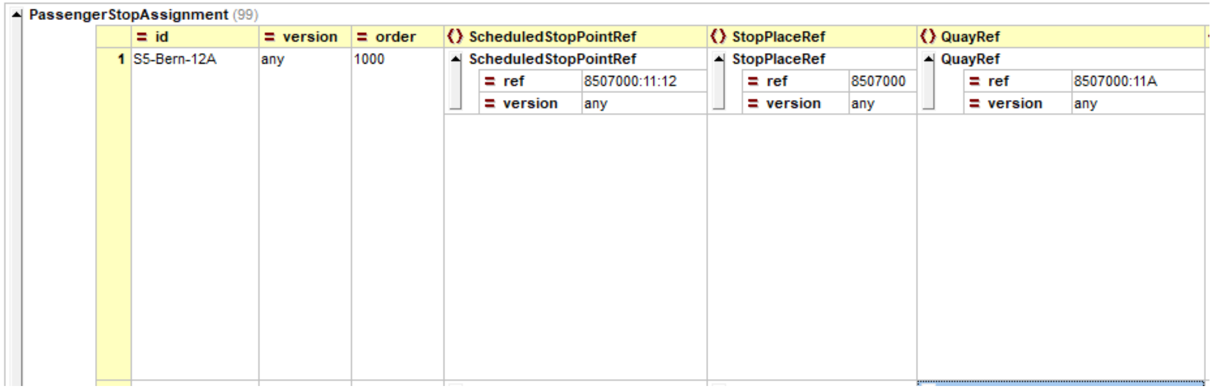


Figure 26: PassengerStopAssignment part 1: Assigning to a Quay

In trainElements the carriages of the train are listed:

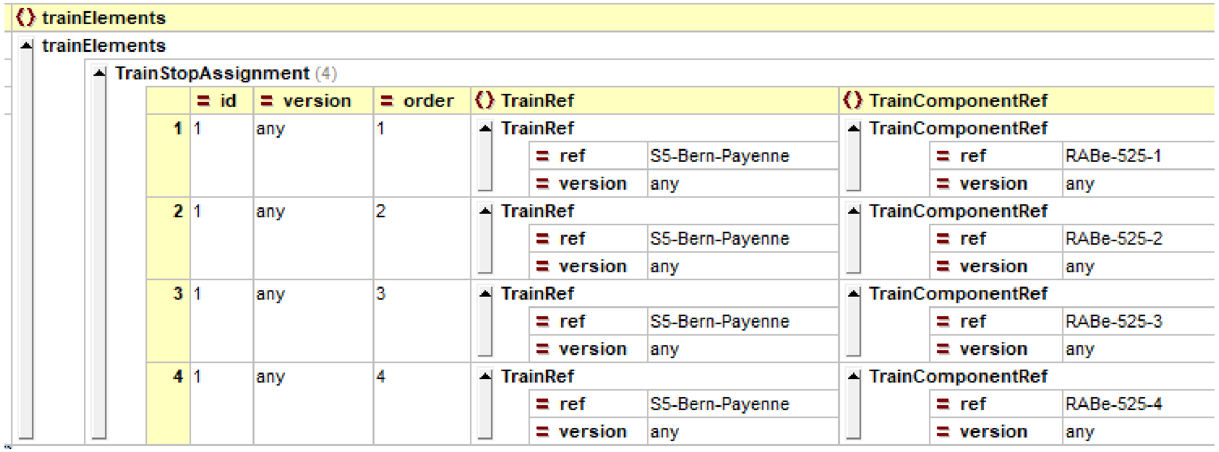


Figure 27: PassengerStopAssignment part 2: Assigning the carriages to the sector

The same si done for the other sectors. This type of modelling is effective, as the same situation (e.g. splitting of journey) will happen frequently. Each carriage can be assigned the correct quay. However, when also operatingdays and validity are added, the situation will get complex real fast. It may also be problematic that a single ScheduledStopPoint is assigned to several Quays (sectors), even if the uniqueness is guaranteed by the TrainElements.

8.23.2 Structure

8.24 Connection

(NeTEx-1, 8.5.14)

A CONNECTION expresses that there is a possible walking link[1] 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 may be used.

The connection time information could also be used for passenger information such as in travel planners, however sometimes more detailed information about timings and suitable paths adapted to the individual traveller's specific preferences and capabilities is necessary. In that case additional information can be retrieved from attributes related to the physical model, such as PATH LINKs and NAVIGATION PATHs.

- *A CONNECTION can also be used to state an average contingency time to change at a given interchange regardless of the actual point to point transition – by making the 'from' and the 'to'.SCHEDULED STOP POINTs the same. (Some journey planners support only this level of precision).*
- *A CONNECTION can also be used to state an average contingency time to change at a given interchange between any two modes regardless of the actual point to point transition – by using the 'from'.and the 'to' SCHEDULED STOP POINTs for the respective modes.*
- *SITE CONNECTION: the possibility of making a connection between two SITE / SITE COMPONENTs.and / or SCHEDULED STOP POINTs and STOP AREAs. Used to define points of connection between areas of a SITE for reaching public transport. It allows a default time for a transfer between a part of a SITE (which may also correspond to a SCHEDULED STOP POINTs or STOP AREAs).*

[1] 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 schuttle busses.

CONNECTION times are typically created as part of tactical planning of routes and timetables. NAVIGATION PATH times are derived from a bottom up assessment of the Physical STOP PLACE.

The following should be emphasized: CONNECTION transfer times relate to the timetabled connection times (and can be used without reference to actual platforms). NAVIGATION PATH transfer times relate to the known times to traverse between the physical stop. Whilst these may be the same, they are not necessarily so.

DEFAULT CONNECTIONs only provide a TRANSFER DURATION between a FROM and TO element corresponding to a TRANSPORT MODE. A SITE CONNECTION, on the other hand, actually links the FROM and TO elements by references to SCHEDULED STOP POINT, STOP PLACE, QUAY and appropriate NAVIGATION PATHS.

8.24.1 Business Requirements

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:DefaultConnection:<Technical_ID>	The technical id is the DiDok number of the StopPlace for now. In cases where multiple Connections exist for the same StopPlace (for different pairs of Operators and/or ProductCategories), a sequence number is added to the ID (with delimiter "-").	Yes	Built from Attributes by Converter	ch:1:DefaultConnection:9999999-3 ch:1:DefaultConnection:8500010
ch:1:SiteConnection:<Technical_ID>	LATER			
ch:1:sccid:<AdminOrg>:<Technical_ID>	The "Swiss Connection ID" or SCCID will presumably replace the IDs of the NeTEx objects "InterchangeRule", "ServiceJourneyInterchange" and "Connection". The <Technical_ID> is still under discussion.	Yes	Built from Attributes by Converter	

Table 37: ConnectionID conventions.

The core data exchange format for timetables is currently HRDF which contains different levels of granularity for connections / interchanges. The following sections show how these levels will be mapped to the NeTEx Connection model. However, to fully map the relevant HRDF data, we also need the NeTEx InterchangeRule model (see chapter 10.36).

The most basic interchange information is found in UMSTEIGB of HRDF (first row):

```
9999999 02 02 STANDARD
```

In Switzerland a general interchange time of 2 minutes applies whenever nothing else is mentioned. We map this to multiple DefaultConnections – one for each pair of TransportMode – in the following way (keep in mind that this is not a complete list):

```
<connections>
  <DefaultConnection id="ch:1:DefaultConnection:9999999-1" version="any">
    <TransferDuration>
      <DefaultDuration>PT2M</DefaultDuration>
    </TransferDuration>
    <BothWays>true</BothWays>
    <From>
      <TransportMode>rail</TransportMode>
    </From>
    <To>
      <TransportMode>rail</TransportMode>
    </To>
  </DefaultConnection>
  <DefaultConnection id="ch:1:DefaultConnection:9999999-2" version="any">
    <TransferDuration>
      <DefaultDuration>PT2M</DefaultDuration>
    </TransferDuration>
    <BothWays>true</BothWays>
    <From>
      <TransportMode>rail</TransportMode>
    </From>
    <To>
```

```
      <TransportMode>bus</TransportMode>
    </To>
  </DefaultConnection>
  <DefaultConnection id="ch:1:DefaultConnection:9999999-3" version="any">
    <TransferDuration>
      <DefaultDuration>PT2M</DefaultDuration>
    </TransferDuration>
    <BothWays>true</BothWays>
    <From>
      <TransportMode>rail</TransportMode>
    </From>
    <To>
      <TransportMode>tram</TransportMode>
    </To>
  </DefaultConnection>
  <DefaultConnection id="ch:1:DefaultConnection:9999999-4" version="any">
    <TransferDuration>
      <DefaultDuration>PT2M</DefaultDuration>
    </TransferDuration>
    <BothWays>true</BothWays>
    <From>
      <TransportMode>tram</TransportMode>
    </From>
    <To>
      <TransportMode>tram</TransportMode>
    </To>
  </DefaultConnection>
  <DefaultConnection id="ch:1:DefaultConnection:9999999-5" version="any">
    <TransferDuration>
      <DefaultDuration>PT2M</DefaultDuration>
    </TransferDuration>
    <BothWays>true</BothWays>
```

```
    <From>
      <TransportMode>bus</TransportMode>
    </From>
    <To>
      <TransportMode>bus</TransportMode>
    </To>
  </DefaultConnection>

  ...

</connections>
```

The following HRDF data is mapped to NeTEx DefaultConnections:

- UMSTEIGB describes interchange times for a specific **StopPlace** (more detailed than the general default time of 2 minutes)
- UMSTEIGV describes interchange times between two **Operators** at a specific StopPlace (more detailed than UMSTEIGB)
- UMSTEIGL describes interchange times between two **Lines**, including the respective Operators, **ProductCategories** (VMArt–VMArt) and Directions, at a specific StopPlace (more detailed than UMSTEIGV)

UMSTEIGL is only partially mapped by DefaultConnections (see also chapter 10.36 about InterchangeRule), whereas UMSTEIGZ is fully mapped to InterchangeRules instead.

A complete export of the UMSTEIG data is necessary because we would lose information otherwise, i.e., overwriting DefaultConnections is not allowed (but is superseded). For example, an UMSTEIGL entry must not overwrite the UMSTEIGV entry with the respective StopPlace and Operator pair, or we lose the information for all other interchanges between those two Operators (because UMSTEIGL only applies to a specific pair of ProductCategories). However, an UMSTEIGL DefaultConnection supersedes an UMSTEIGV DefaultConnection with matching StopPlace and Operators.

Careful: Only those entries of UMSTEIGL where the line number and direction value is arbitrary (“*”) are mapped to DefaultConnections. All other entries (for specific Lines and Directions) are mapped to NeTEx InterchangeRules (see chapter 10.36).

DefaultInterchange could also be used, but it is not done in the CEN profile, so we don’t use it either.

8.24.1.1 Connection and Interchange hierarchy for public transport in Switzerland

Transfer times	Advertised	Online-Timetable year's schedule	Online-Timetable day's schedule
Journey-related	yes	yes	yes
Line-related with StopPlace	no	yes	yes
TU-related with StopPlace	yes	yes	yes
StopPlace -related	yes	yes	yes
Line-related without StopPlace	no	yes	yes
TU-related without StopPlace	yes	yes	yes
General	yes	yes	yes

Table 38: Overview of the connection/interchange hierarchy.

8.24.1.2 The usage of Connection / DefaultConnection / SiteConnection

The EU-Profile will use Connections. This allows to model time to walk and distance between ScheduledStopPoints depending on TransportMode and TransportSubmode in both directions. The Connection model is imbedded in the ServiceFrame and describes the site and network view of the connecting paths between stop points/places. These connections are either entirely network based (DefaultConnection), i.e., depend only on the connected TransportModes/Operators, or reference actual topographic paths in the form of PathLinks/NavigationPaths (SiteConnection).

In other words, SiteConnections act as a link between ScheduledStopPoints (network) and the actual walkways (PathLinks in the SiteFrame). Connections can be referenced by ServiceJourneyInterchanges to add topographic information to the transfer times. ServiceJourneyInterchanges describe the transfer times (and wait times) between ServiceJourneys (and ScheduledStopPoints) and how these transfers happen, i.e., if they are advertised, if they are guaranteed or not etc. By contrast, Connections describe transfer durations between actual places relevant for (possibly mobility impaired) passengers.

- The Connections can be used with types (e.g. different values for different types of people, for example mobility impaired passengers).
- There is also TypeOfTransfer (e.g. Shuttle).
- The DefaultConnection can be used between Organisations and TransportMode and eventually also from Organisation to TransportMode.

HRDF currently provides data on Organisation2Organisation and ProductCategory2ProductCategory connections.

In the future we also want to deliver interchange information between Lines and Directions as well as between journeys. Currently this information is not available in Info+.

The subsequent sections describe the various HRDF files relevant for the Connection mapping (the rest can be found in chapter 10.36.1).

8.24.1.3 UMSTEIGB (HRDF)

See also the part in section 8.24.1 on how to handle the special UMSTEIGB entry "9999999". The other entries of UMSTEIGB describe the general transfer times at a given StopPlace, and provides the following information (example values in brackets):

- The number of the StopPlace (8570949)
- Transfer time between long distance train and long distance train (IC – IC) in minutes (01)
- Transfer time for other connections in minutes (02)
- Name of the station for readability

```
8570949 01 01 Grimentz, télécabine
8571067 01 01 Bürchen, Egga
8571075 01 01 Visp, Bahnhof Süd
8571078 01 01 Baltschieder, Kumme
8571082 01 01 Ausserberg, Abzw. St. German
8571186 10 10 Domodossola, Stazione
8571213 01 01 Bühl bei Aarberg, Dorf
8571220 01 01 Aarberg, Post/Bahnhof
8571228 01 01 Merzligen, Linde
8571354 01 01 Kappelenring, Nord
8571364 01 01 Uettligen, Dorf
```

We don't differentiate between long distance and the other transfer times, therefore UMSTEIGB entries are mapped to a single DefaultConnection in NeTEx (excluding of course the `9999999` entry which is discussed in the preceding section). Example:

```
8571186 10 10 Domodossola, Stazione
```

```
<DefaultConnection id="ch:1:DefaultConnection:8571186-1" version="any">
  <TransferDuration>
    <DefaultDuration>PT10M</DefaultDuration>
```

```xml
  </TransferDuration>
  <StopPlaceRef ref="ch:1:StopPlace:8571186" version="any" />
</DefaultConnection>
```

Note that the technical ID of each DefaultConnection starts with the UIC code of the StopPlace (first column of UMSTEIG). To ensure that the IDs are unique, a sequence number is added in case a StopPlace is referenced in more than one UMSTEIG file.

8.24.1.4 METABHF (HRDF)

METABHF describes the transfer times between two adjacent StopPlaces (whereas UMSTEIGB describes interchanges at a given Stop-Place), and provides the following information:

- First Stop (8509606)
- Second Stop (8507097)
- Duration of Interchange in minutes (003)
- (optional) "S“ as separator adds seconds to the walk time
- (optional) Additional seconds to walk

METABHF also has an "*A" row for atttributes. The code is taken from the HRDF file "ATTRIBUT_XX“ (where "XX“ is the language code). For example the attribute code "Y” means “walk”. Other attributes will be passed through the conversion in a way that a reconstruction into HRDF is possible. So there are also other means of interchange possible in NeTEx (other than walking).

```
8588562 8507097 006
*A Y
8507078 8507097 004
*A Y
8503508 8587020 003
*A Y
8509606 8530598 003
*A Y
8509763 8530580 005
*A Y
8503129 8587655 003
*A Y
8503303 8575927 001
```

```
*A Y
8505302 8505535 010
```

Mapping example:

```
8588562 8507097 006
*A Y
```

```
<SiteConnection id="ch:1:SiteConnection:8588562-8507097" version="any">
  <WalkTransferDuration>
    <DefaultDuration>PT6M</DefaultDuration>
  </WalkTransferDuration>
  <BothWays>true</BothWays>
  <From>
    <StopPlaceRef ref="ch:1:StopPlace:8588562" version="any" />
  </From>
  <To>
    <StopPlaceRef ref="ch:1:StopPlace:8507097" version="any" />
  </To>
</SiteConnection>
```

Note that, compared to the other UMSTEIG mappings, TransferDuration is replaced by WalkTransferDuration because of the "Y" attribute.

8.24.1.5 UMSTEIGV (HRDF)

UMSTEIGV describes the transfer times between Operators (at a given StopPlace), and provides the following information:

- StopPlace (8501008)
- Frist organisation (88____)
- Second organisation (000011)
- Time for interchange in minutes (10)
- Name of StopPlace for readability

```
8501008 88____ 000011 10 Genève
8501008 87____ 000011 10 Genève
8501008 085000 000011 10 Genève
8506138 000065 007000 00 Eschenz
```

```
8506139 007000 000065 00 Stein am Rhein
```

Mapping example:

```
8501008 88____ 000011 10 Genève
```

```xml
<DefaultConnection id="ch:1:DefaultConnection:8501008-1" version="any">
  <TransferDuration>
    <DefaultDuration>PT10M</DefaultDuration>
  </TransferDuration>
  <From>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:88____" version="any" />
    </OperatorView>
  </From>
  <To>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </To>
  <StopPlaceRef ref="ch:1:StopPlace:8501008" version="any" />
</DefaultConnection>
```

8.24.1.6 UMSTEIGL (HRDF)

UMSTEIGL describes the transfer times between two Lines at a given StopPlace (depends also on the Directions, Operators and ProductCategories). However, only those entries of UMSTEIGL where the line number and direction value is arbitrary (“*****”) are modelled as DefaultConnections. All other entries (for specific Line and Direction values) are mapped to NeTEx InterchangeRules (see chapter 10.36.1.1).

UMSTEIGL provides the following information:

- StopPlaceID (8508207)
- Organiation (000033)
- TransportMode / VMArt (RE)
- Line Number ("8" or arbitrary "*")
- Direction flag (1)

- Transfer time in Minutes (002)
- "!" or space that indicates whether the connection is guaranteed or not ("!" means "Guaranteed=true")

```
8507100 000011 IC  *        * 000011 EC  *         * 006  Thun
8507050 000827 NFT 8        * 000850 NFB 40        * 004  Bern, Egghölzli
8587568 000138 NFB 300      * 000138 NFB 401       * 005  Grabs, Industrie
8508207 000033 RE  *        * 000033 S   2         * 004  Langnau i.E.
8576937 000870 NFB 51       * 000870 NFB 52        * 002  Langenthal, Bahnhof
8501609 000011 IC  *        * 000011 ATZ *         * 008  Brig
8500010 000011 EXT *        * 000011 TER *         * 010  Basel SBB
8500010 000011 IC  *        * 000011 TE2 *         * 010  Basel SBB
8500010 87____ TE2 *        * 000011 ICE *         * 010  Basel SBB
574223 000885 BUS 7        2 000885 BUS 2         2 002  St. Gallen, St.Leonhard
8574223 000885 BUS 7        1 000885 BUS 2         2 002  St. Gallen, St.Leonhard
```

The interchange can be marked as guaranteed with a "!“. TransportMode (VMArt) and direction can be marked as “*” meaning “all”.

Table 39: Mapping between HRDF table “UMSTEIGL” and NeTEx.

HRDF	**NeTEx**
Haltestellennummer	StopPlaceRef
Verwaltung 1	From/**OperatorRef**
Verkehrsmittel 1	• From/**TransportMode** • Extensions/**FromProductCategoryRef**
Verwaltung 2	To/**OperatorRef**
Verkehrsmittel 2	• Extensions/**ToProductCategoryRef** • To/**TransportMode**
Umsteigezeit	TransferDuration/**DefaultDuration**

This means that the HRDF "Verwaltung“ is an Organisation in NeTEx. A huge problem is the mapping of HRDF "Verkehrsmittel" (also called VMArt) to NeTEx TransportMode. The VMArt are more detailed which means that several VMArt will have the same TransportMode. To fully model UMSTEIGL without a loss of information, we have to include the pair of ProductCategories as a DefaultConnectionEnd in Extensions (e.g., as From- and ToProductCategoryRef).

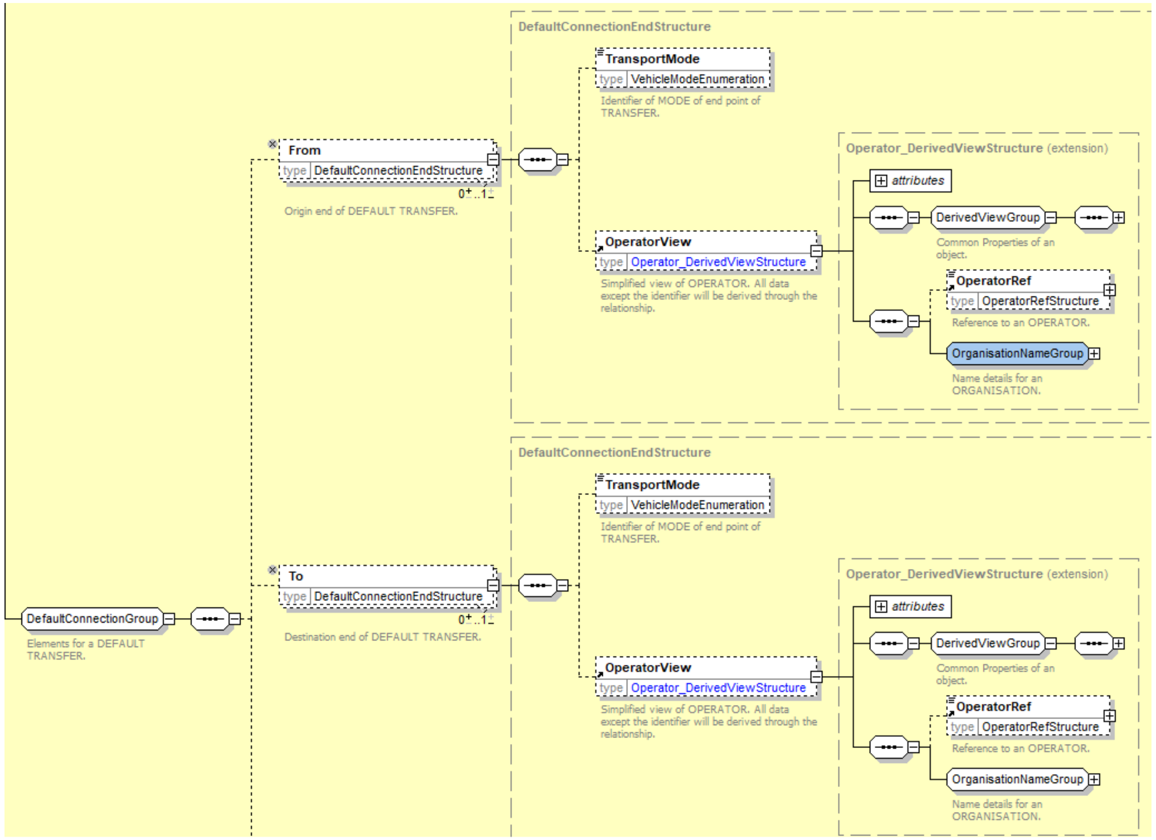


Figure 28: Excerpt from XSD schema showing the DefaultConnectionEnd structure which lacks the possibility to either reference the TransportSubmode or a pair of ProductCategories.

Mapping example of UMSTEIGL to NeTEx DefaultConnection:

```
8507100 000011 IC  *        * 000011 EC  *        * 006  Thun
```

```
<DefaultConnection id="ch:1:DefaultConnection:8507100-3" version="any">
```

```xml
  <Extensions>
    <FromProductCategoryRef ref="ch:1:TypeOfProductCategory:IC" version="any" />
    <ToProductCategoryRef ref="ch:1:TypeOfProductCategory:EC" version="any" />
  </Extensions>
  <TransferDuration>
    <DefaultDuration>PT6M</DefaultDuration>
  </TransferDuration>
  <From>
    <TransportMode>rail</TransportMode>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </From>
  <To>
    <TransportMode>rail</TransportMode>
    <OperatorView>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
    </OperatorView>
  </To>
  <StopPlaceRef ref="ch:1:StopPlace:8507100" version="any" />
</DefaultConnection>
```

8.24.1.7 The French solution for Interchanges

SNCF uses an interchange model that is mostly based on Connections between ScheduledStopPoints (as opposed to StopPlaces in Switzerland) and TransportModes as well as the Operators. A universally applicable TransferTime is also used and is superseded by more detailed values.

8.24.2 Structure

<table>
<tr><th>Element</th><th>Usage</th><th>Structure</th><th>Description</th><th>Example</th></tr>
<tr><td>connections</td><td></td><td>-structure</td><td>CONNECTION inherits from TRANSFER.</td><td></td></tr>
<tr><td colspan="5">Attributes:
• id
• version</td></tr>
<tr><td colspan="5"></td></tr>
</table>

Extensions	0:1	ExtensionStructure	Used for changes in ProductCategory (VM-Art) in SITE CONNECTION END.	
SBB unfortunately needs an Extension for changes in ProductCategory (VM-Art).				
FromProductCategoryRef (P) Extensions	0:1	TypeOfProductCategory-RefStructure	Extension needed to map HRDF "Verkehrsmittel", which is similar to but more detailed than TransportSubmode, for transfer times of interchanges.	<FromProductCategoryRef ref="ch:1:TypeOfProductCate-gory:IC" version="any" />
ToProductCategoryRef (P) Extensions	0:1	TypeOfProductCategory-RefStructure	Extension needed to map HRDF "Verkehrsmittel", which is similar to but more detailed than TransportSubmode, for transfer times of interchanges.	<ToProductCategoryRef ref="ch:1:TypeOfProductCate-gory:EC" version="any" />
id	1:1	ConnectionId		
See Table 37: ConnectionID conventions.				
keyList	0:1	+KeyValue	KEY LIST with the KEY VALUEs belong-ing to the CONNECTION. Will contain the SCCID.	
We will have a single KeyValue with the SCCID (Swiss Connection ID) in the future.				
Name	0:1	xsd:MultilingualString	Name of CONNECTION	<Name>Default transfer times for tram station to rbs station</Name>
LATER				
TransferDuration	0:1	TransferDurationStruc-ture	Scheduling TRANSFER TIMEs that apply to TRANSFER.	<TransferDuration> <DefaultDuration>PT2M</De-faultDuration> </TransferDuration>
BothWays	0:1	xsd:boolean	Whether TRANSFER can be traversed in both directions.	<BothWays>true</BothWays>

From	0:1	TransportModeEnum for DefaultConnection or SiteConnectionEnd element for SiteConnection	Properties of end at which CONNECTION starts.	<From> <TransportMode>tram </TransportMode> </From>
To	0:1	TransportModeEnum for DefaultConnection or SiteConnectionEnd element for SiteConnection	Properties of end at which CONNECTION ends.	<To> <TransportMode>bus </TransportMode> </To>
navigationPaths	0:*	+NavigationPath	NAVIGATION PATHs between SITEs.	
LATER SBB prefers PathLink and the calculation for the NavigationPaths is then done by the receiving systems. SNCF will use the ERA described items.				

8.24.1 Example

See the various examples in the Business Requirements section above.

8.24.2 Hints

-

8.25 SiteConnectionEnd

(NeTEx-1, 8.5.14.7.4)
A SiteConnectionEnd is one end of a SITE CONNECTION link and forms the FROM and TO elements of a SITE CONNECTION.

8.25.1 Business Requirements

Used for SiteConnections (not used for DefaultConnections). QuayRef, for example, is not available in the DefaultConnection structure. To account for changes in the ProductCategory, we also use an Extension (cannot be done directly in SiteConnectionEnd). See previous chapter.

8.25.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	• From • To	SITE CONNECTION END inherits from CONNECTION END	
TransportMode	0:1	TransportModeEnum	Reference to mode of SCHEDULED STOP POINT to which connection applies.	<TransportMode>rail</TransportMode>
OperatorRef	0:1	OperatorRefStructure	Reference to destination OPERATOR.	ref="ch:1:Operator:11"
ScheduledStopPointRef	0:1	ScheduledStopPointRefStructure	Reference to SCHEDULED STOP POINT to which it connects.	ref="ch:1:ScheduledStopPoint:8516161:1/2"
StopPlaceRef	0:1	StopPlaceRefStructure	Reference to destination STOP PLACE of SITE CONNECTION.	ref="ch:1:StopPlace:8516161"
PointOfInterestRef	0:1	PointOfInterestRefStructure	Reference to destination POINT OF INTEREST of SITE CONNECTION.	
LATER				
QuayRef	0:1	QuayRefStructure	Reference to QUAY of STOP PLACE to which connection applies.	ref="ch:1:Quay:8516161:1/2"

8.25.3 Example

```
<From>
    <TransportMode>tram</TransportMode>
</From>
<To>
    <TransportMode>rail</TransportMode>
</To>
```

```xml
<From>
    <TransportMode>rail</TransportMode>
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8516161:0" version="any" />
    <StopPlaceRef ref="ch:1:StopPlace:8516161" version="any" />
    <QuayRef ref="ch:1:Quay:8516161:0" version="any" />
</From>
<To>
    <TransportMode>rail</TransportMode>
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8516766:3" version="any" />
    <StopPlaceRef ref="ch:1:StopPlace:8516766" version="any" />
    <QuayRef ref="ch:1:Quay:8516766:3" version="any" />
</To>
```

SiteConnectionEnd is indirectly extended (in Connection/Extensions) to account for changes in the ProductCategory:

```xml
<Extensions>
  <FromProductCategory>ch:1:TypeOfProductCategory:X</FromProductCategory>
  <ToProductCategory>ch:1:TypeOfProductCategory:Y</ToProductCategory>
</Extensions>
```

8.25.4 Hints

-

9 ServiceCalendarFrame

(NeTEx-1, 7.7.5)
The transport offering of a public transport company is tailored to accommodate different levels of demand. In order to simplify the supply planning almost all operators design their production plan using a classification by type of day, which summarises the level of demand or other characteristics: for example, workday, weekend, school holiday, market day, etc. Long-term planned schedules are designed through the so-called transportation calendar, in which calendar days are classified as specific DAY TYPEs.
OPERATINGDAYs are in most cases similar to calendar days, with some possible differences (e.g. start and end times). An assignment process of DAY TYPEs to OPERATING DAY allows selection of the most appropriate schedules to meet the demand and face the traffic conditions. This leads to an operational plan for every OPERATING DAY. The plan is completed by the assignment of physical resources to the theoretical work and amended as necessary to deal with unexpected circumstances.

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.

ServiceCalendarFrame

Remark 1)

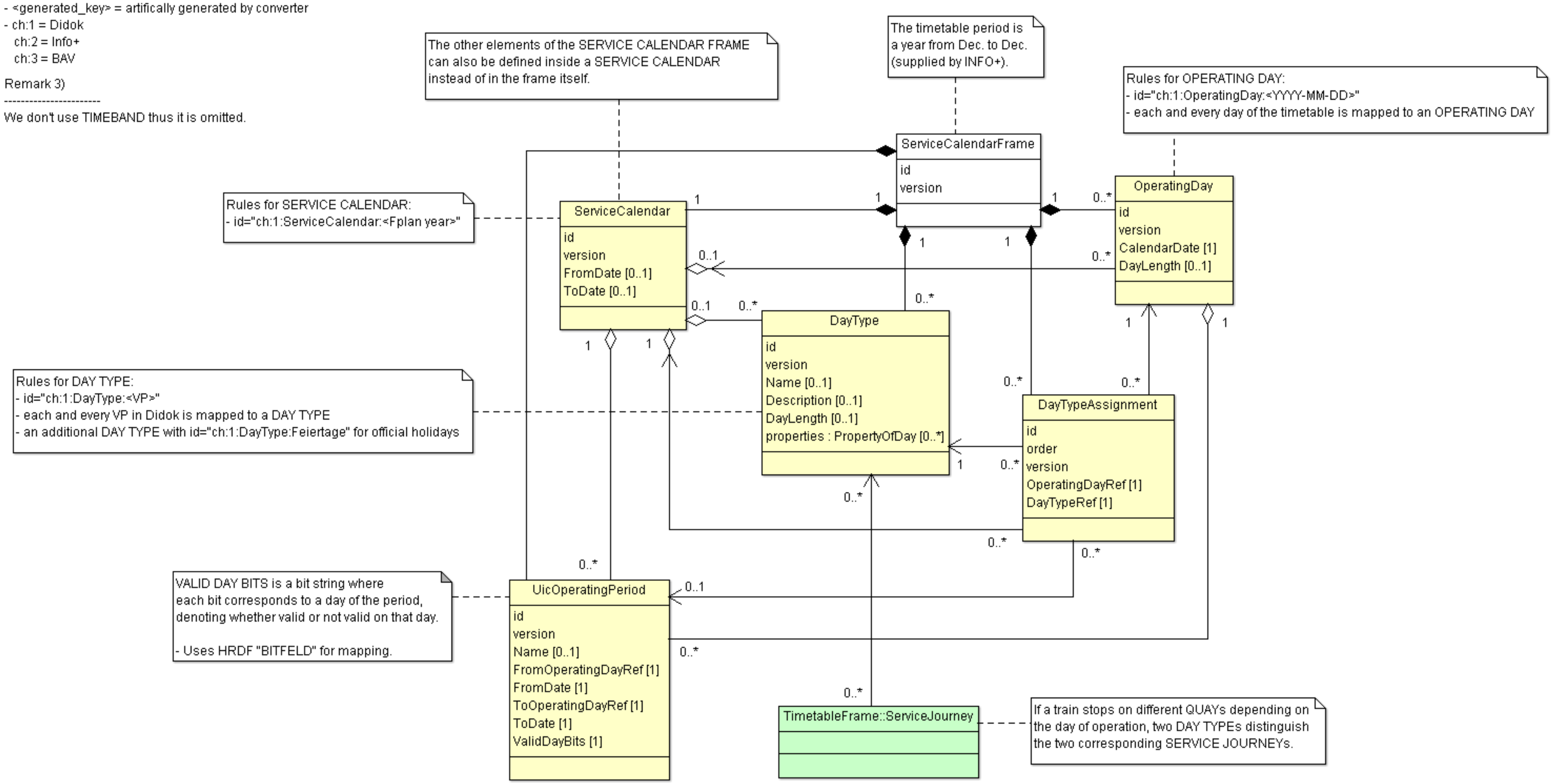
Color coding is used for clarity, e.g., to illustrate grouping and levels of classes.

Remark 2)

If not specified otherwise, ID conventions for classes of this frame are:
- id="<ClassName>:ch:1:<generated_key>"
- <generated_key> = artifically 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	Example
validityConditions	0:*	AvailabilityCondition	AVAILABILITY CONDITIONs in SERVICE CALENDAR.	
AvailabilityCondition replaces DayType, OperatingDay and OperatingPeriod. It represents VP.				
ServiceCalendar	0:*	+Structure	SERVICE CALENDAR inherits from DATA MANAGED OBJECT.	
This will be a full year in most cases. In special cases, e.g. EM, we have shorter periods (2 months). In the case of the SNCF import we expect 80 days. In the export it is always the full period.				
dayTypes	0:*	DayType	DAY TYPEs in SERVICE CALENDAR.	
We keep only a single DayType for holidays. It wil have the ID “ch:1:DayType:Feiertage”.				
timebands	0:*	Timeband	TIMEBANDs in SERVICE CALENDAR.	
operatingDays	0:*	OperatingDay	UIC OPERATING DAYs in SERVICE CAL-ENDAR.	
NOT TO BE USED				
operatingPeriods	0:*	OperatingPeriod	OPERATING PERIODs in SERVICE CAL-ENDAR.	
NOT TO BE USED				
dayTypeAssignments	0:*	DayTypeAssignment	DAY TYPE ASSIGNMENTs in SERVICE CALENDAR.	
NOT TO BE USED				

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 DayType, 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 ServiceCalendarFrame.

The ID is created as follows:

<table>
<tr><th>ID</th><th>Description</th><th>Stability</th><th>Construction</th><th>Examples</th></tr>
<tr><td>ch:1:AvailabilityCondition:<VP-bitfield></td><td rowspan="2">Contains the number of the VP bitmap (Verkehrstagebitfeldnummer of HRDF BITFELD) without leading zeros.
May be very different for SNCF.
In most cases the ID is of the form “ch:1:AvailabilityCondition:<VP-bitfield>”, in some cases it is an artificially generated key.
Due to HRDF attribute *SH (saisonal stop), new ServiceJourneys will eventually have to create new VP, in some cases with a new number.</td><td rowspan="2">Yes</td><td>Built from Attributes by Converter</td><td></td></tr>
<tr><td>ch:1:AvailabilityCondition:<generated_key></td><td>Artifically generated by Converter</td><td>ch:1:AvailabilityCondition:mic00</td></tr>
</table>

Table 40: AvailabilityCondition ID definition.

The element ValidDayBits directly indicates the days on which some service is provided or not. They are similar to the HRDF bitfields. However, the ValidDayBits must be transformed and correctly mapped from the HRDF bitfield (Hafas Hex to binary).

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

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

There are examples related to StopPlace-modelling and Accessibility where ValidDayBits is not needed, but they are marked LATER.

9.3.1.1 BITFELD (HRDF)

BITFELD contains all the ValidityPeriods ("VP" or bitfield) of a given timetable year. Each of those ValidityPeriods comprises a label and a Hex number corresponding to a ValidDayBits. BITFELD provides its data in the following format (example values in brackets):

- VP / bitfield labal (000015)
- Hex number that is equal to a binary value with the length of a full timetable year (start and end date are provided in ECKDATEN). This binary value has a 1 for each day at which it is valid (e.g. a journey is operated or an interchange is applicable) and a 0 for each day it is not valid.

```
000017 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFE00
000001 DF3E4C99F3E7CF9F3E7CF9F3E7CF9F3E7879B3E7CF9D3E3CF9F3E7CF9F3A7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F600
000015 DF3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F600
000016 DFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFBF7EFDFE00
000028 DF3E0C19F3E7CF9F3E7CF9F3E7CF9F3E7879B3E7CF9D3E3CF9F3E7CF9F3A7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F600
000030 FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF00000000000000000000000000000000000000000000000600
000040 C000000000000000000000000000000000000000000000FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFE00
017258 FFFFFFFFFFFFFFFF3E7FFFFFFFFFFFFFFFFFFFFFFFFFFFFC19FFE7FFFBFFFFFFFFFFFFFFFFFFFFFFFFFFFF7FFFFFFE00
017264 C047FFFC18304040CD6E5800103001830F801800003F0082002FBFF6FECF3E7FFFFC63E7FBFC0810306FFF9FFFFFFE00
017266 C0000000000000000000000000000000000000000000000000404009000000000039C180400000000100020000000600
017271 C00000000000000000000000000000000000000000000000000000000000001F003C00000000000000000000000000600
017273 C000000000000001020000000000000000000000000000000000000000000000000000000000000000000000000600
```

The VP "000015", for example, means "weekdays, even on holidays" and is mapped to the following AvailabilityCondition in NeTEx. Keep in mind that we use simplified IDs here, i.e., the technical ID of AvailabilityCondition may as well be randomly generated:

```
000015 DF3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F3E7CF9F600
```

```
<AvailabilityCondition id="ch:1:AvailabilityCondition:15" version="any">
  <FromDate>2019-12-15T00:00:00</FromDate>
  <ToDate>2020-12-12T00:00:00</ToDate>
  <Valid-
DayBits>011111001111100111110011111001111100111110011111001111100111110011111001111100111110011111001111100111
11001111100111110011111001111100111110011111001111100111110011111001111100111110011111001111100111110011111001
11110011111001111100111110011111001111100111110011111001111100111110011111001111100111110011111001111100111110
011111001111100111110011111001111100111110</ValidDayBits>
</AvailabilityCondition>
```

Figure 29 shows a calendar illustration of the ValidDayBits example above. A day is marked green if the bitfield has a 1 at the corresponding condition.

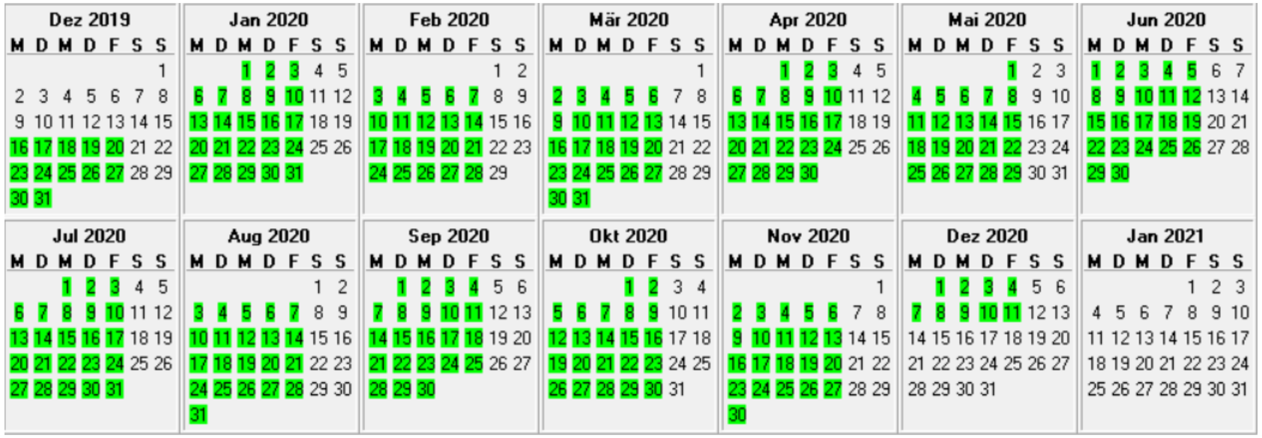


Figure 29: Illustration of HRDF BITFELD VP 000015 that represents a validity for "weekdays, even on holidays".

Careful:

The Hex number of BITFELD cannot simply be converted to a binary. To use it as an AvailabilityCondition with respect to a full timetable year, the binary number must then be trimmed accordingly because it contains meaningless bits.

9.3.2 Structure

<table>
<tr><th>Element</th><th>Usage</th><th>Structure</th><th>Description</th><th>Example</th></tr>
<tr><td>::></td><td>::></td><td>ValidityCondition</td><td>AVAILABILITY CONDITION inherits from VALIDITY CONDITION.</td><td></td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>Id</td><td>1:1</td><td>AvailabilityConditionIdType</td><td>Identifier of VALIDITY CONDITION.</td><td>ch:1:AvailabilityCondition:17</td></tr>
<tr><td colspan="5">Is of the form “ch:1:AvailabilityCondition:<VP-bitfield>” where VP is the Verkehrstagebitfeldnummer of HRDF BITFELD without leading zeros. However, the ID might also be artificially generated in some cases. See also Table 40: AvailabilityCondition ID definition.</td></tr>
<tr><td>keyList</td><td>0:1</td><td>+KeyValue</td><td>KEY LIST with the KEYVALUEs beloning to the AVAILABILITY CONDITION. Will contain the VP.</td><td></td></tr>
<tr><td colspan="5">The keyList contains a single KeyValue with the VP (Verkehrsperiode).</td></tr>
<tr><td>Description</td><td>0:1</td><td>xsd:MultilingualString</td><td>Description of the AVAILABILITY CONDITION.</td><td>Every weekend from 1.6 until 31.8</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>FromDate</td><td>0:1</td><td>xsd:dateTime</td><td>Inclusive start date for validity of AVAILABILITY CONDITION.</td><td>2019-12-15T00:00:00Z</td></tr>
<tr><td colspan="5">Is equal to the start date of the timetable year or, more generally, the period in which the ValidDayBits apply. In Switzerland it is provided in HRDF ECKDATEN. The following table shows the content of ECKDATEN for the timetable year 2020 (FromDate in bold):
15.12.2019
12.12.2020
Fahrplan 2020$30.09.2019 04:15:00$5.40.34$INFO+</td></tr>
<tr><td>ToDate</td><td>0:1</td><td>xsd:dateTime</td><td>Inclusive End date for validity of AVAILABILITY CONDITION.</td><td>2020-12-12T00:00:00Z</td></tr>
<tr><td colspan="5">Is equal to the end date of the timetable year or, more generally, the period in which the ValidDayBits apply. In Switzerland it is provided in HRDF ECKDATEN. The following table shows the content of ECKDATEN for the timetable year 2020 (ToDate in bold):
15.12.2019
12.12.2020
Fahrplan 2020$30.09.2019 04:15:00$5.40.34$INFO+</td></tr>
<tr><td>IsAvailable</td><td>0:1</td><td>xsd:boolean</td><td>Whether the AVAILABILITY CONDITION makes the resource available or not available.</td><td>true</td></tr>
</table>

Whether the object, to which the AvailabilityCondition applies, is available (or not available) for each “1” in ValidDayBits in the period between FromDate and ToDate. By default (and intuitively) IsAvailable can be assumed to be true.				
dayTypes	0:*	DayTypeRef	DAY TYPEs during which AVAILABILITY CONDITION applies.	
NOT TO BE USED				
ValidDayBits	0:1	bitString	Alternative way of stating the validity of days within the start and end date (From-/ToDate); • 1 = valid • 0 = not valid There must be one bit for each day, i.e., the number of bits must be equal to the number of days in between the From-/ToDate.	11110101000100010001011
They are similar to the HRDF bit fields (Verkehrstagebitfeld). However the ValidDayBit must be transformed and correctly mapped from the HRDF bit field (Hafas Hex to binary). ValidDayBits is required whenever the AvailabilityCondition is of temporal nature and an OperatingPeriod (VP) would have been used. Examples include: • ServiceJourney • JourneyMeeting • NoticeAssignment • ServiceFacilitySet • ServiceJourneyInterchange • InterchangeRule There are examples related to StopPlace modelling and Accessibility where ValidDayBits is not needed, but they are marked LATER.				
timeBands	0:*	TimeBand	TIME BANDs during which AVAILABILITY CONDITION applies.	
LATER Might be used later for StopPlace modelling and Accessibility (opening hours of services etc.).				

9.3.3 Example

```
<validityConditions>
  <AvailabilityCondition id="ch:1:AvailabilityCondition:ucd00" version="any">
    <FromDate>2019-10-01T00:00:00</FromDate>
```

```
    <ToDate> 2019-10-04T23:59:59</ToDate>
    <ValidDayBits> 1110</ValidDayBits>
    <IsAvailable>true</IsAvailable>
  </AvailabilityCondition>
  <AvailabilityCondition id="ch:1:AvailabilityCondition:8da00" version="any">
    <FromDate>2019-10-01T00:00:00</FromDate>
    <ToDate>2019-10-04T23:59:59</ToDate>
    <ValidDayBits> 0001</ValidDayBits>
    <IsAvailable>true</IsAvailable>
  </AvailabilityCondition>
  <AvailabilityCondition id="ch:1:AvailabilityCondition:jZ" version="any">
    <FromDate>2018-12-09T00:00:00</FromDate>
    <ToDate>2019-12-14T23:59:59</ToDate>
    <Valid-
DayBits>000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000010
0000000000000000000000000000000000000000000000000</ValidDayBits>
  </AvailabilityCondition>
</validityConditions>
```

9.3.4 Hints

The frames TimetableFrame, ServiceFrame and ServiceCalendarFrame and their elements must have the same validity.

9.4 ServiceCalendar

(NeTEx-1, 7.7.5.5.1.
The transport offering of a public transport company is tailored to accommodate different levels of demand. In order to simplify the supply planning almost all operators design their production plan using a classification by type of day, which summarises the level of demand or other characteristics: for example, workday, weekend, school holiday, market day,etc. Long-term planned schedules are designed through the so-called transportation calendar, in which calendar days are classified as specific DAY TYPEs.

OPERATING DAYs are in most cases similar to calendar days, with some possible differences (e.g. start and end times). An assignment process of DAY TYPEs to OPERATING DAY allows selection of the most appropriate schedules to meet the demand and face the traffic *conditions. This leads to an operational plan for every OPERATING DAY. The plan is completed by the assignment of physical resources to the theoretical work and amended as necessary to deal with unexpected circumstances.*

9.4.1 Business Requirements

The ServiceCalendar always consists of one timetable period (2017: December 2016 to December 2017).

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:ServiceCalendar:<Fplan_year>	May be very different for SNCF.	Yes	Built from Attributes by Converter	ch:1:ServiceCalendar:2019

Table 41: ServiceCalendar ID definition.

9.4.2 Structure

Element	Usage	Structure	Description	Example
id	1:1	ServiceCalendarIdType	Identifier of SERVICE CALENDAR.	ch:1:ServiceCalendar:2018
See Table 41: ServiceCalendar ID definition.				
Name	0:1	MultilingualString	Name of SERVICE CALENDAR.	FP2018
ShortName	0:1	MultilingualString	Short name of SERVICE CALENDAR.	
IGNORED AT IMPORT				
FromDate	0:1	xsd:date	Inclusive start date for validity of SERVICE CALENDAR.	2017-08-17
First date of timetable period				
ToDate	0:1	xsd:date	Inclusive end date for validity of SERVICE CALENDAR.	2017-11-15
Last date of timetable period				
EarliestTime	0:1	xsd:time	Earliest time that days start SERVICE CAL-ENDAR. Default to use if not specified on in-dividual OPERATING DAY.	

NOT TO BE USED				
DayLength	0:1	xsd:duration	Day length used with earliest time to work out end of day. Default to use if not specified on individual OPERATING DAY.	
NOT TO BE USED				
dayTypes	0:*	DayType	DAY TYPEs in SERVICE CALENDAR.	
NOT TO BE USED DayTypes are used outside of the ServiceCalendar in “ServiceCalendarFrame/daytypes”.				
timebands	0:*	Timeband	TIMEBANDs in SERVICE CALENDAR.	
NOT TO BE USED Timebands are used outside of the ServiceCalendar in “ServiceCalendarFrame/timebands”.				
operatingDays	0:*	OperatingDay	OPERATING DAYs in SERVICE CALENDAR.	
NOT TO BE USED				
operatingPeriods	0:*	OperatingPeriod	OPERATING PERIODs in SERVICE CALENDAR.	
NOT TO BE USED				
dayTypeAssignments	0:*	DayTypeAssignment	DAY TYPE ASSIGNMENTs in SERVICE CALENDAR.	
NOT TO BE USED				

9.4.1 Example

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

9.4.2 Hints

-

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 (e.g. traffic flow for buses).

9.5.1 Business Requirements

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:DayType:Feiertage	We only use a single DayType for holidays. It will have the id "ch:1:DayType:Feiertage".	Yes	Built from Attributes by Converter	ch:1:DayType:Feiertage

Table 42: DayType ID definition.

DayType is replaced by AvailabilityCondition. Whenever a reference to a DayType, i.e. VP, was needed, we use an AvailabilityConditionRef instead. The element ValidDayBits directly indicates the days on which some service is provided or not, similar to the bit fields of HRDF. ValidDayBits in AvailabilityConditions are used where DayTypes would have been used, for example in ServiceJourneys, NoticeAssignments or Interchanges.

We keep only a single DayType for holidays. It wil have the ID “ch:1:DayType:Feiertage”.

9.5.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	DAY TYPE inherits from DATA MANAGED OBJECT.	
• Id • version				
id	1:1	DayTypeIdType	Identifier of DAY TYPE.	ch:1:DayType:Feiertage
Only a single DayType “Feiertage” is used for holidays (see example). SeeTable 42: DayType ID definition.				

validityConditions	0:*	ValidityCondition	ValidityConditions applying to the DayType.	
AvailabilityCondition (P) validityConditions	0:1	ValidityCondition	A specific type of VALIDITY CONDITION used to specify ValidDayBits that can be associated with the DAY TYPE.	
Name	0:1	MultilingualString	Name of DAY TYPE.	Feiertage
IGNORED AT IMPORT Not used at Export				
ShortName	0:1	MultilingualString	Short name of DAY TYPE.	
NOT TO BE USED				
Description	0:1	MultilingualString	Description of DAY TYPE.	
IGNORED AT IMPORT Not used at Export				
PrivateCode	0:1	PrivateCode	Alternative Identifier for DAY TYPE.	
IGNORED AT IMPORT Not used at Export				
EarliestTime	0:1	xsd:time	Earliest start time of DAY TYPE.	
IGNORED AT IMPORT Not used at Export				
DayLength	0:1	xsd:duration	Length of DAY TYPE.	
IGNORED AT IMPORT Not used at Export				
properties	0:*	PropertyOfDay	PROPERTies of DAY TYPE.	

IGNORED AT IMPORT				
timebands	0:*	Timeband	TIMEBANDs of DAY TYPE.	
IGNORED AT IMPORT Not used at Export				

9.5.1 Example

```
<dayTypes>
  <DayType id="ch:1:DayType:Feiertage" version="any">
    <Name>Feiertage</Name>
  </DayType>
</dayTypes>
```

9.5.2 Hints

-

9.6 PropertyOfDay

(NeTEx-1, 7.7.5.7)
NOT TO BE USED
A property which a day may possess, such as school holiday, weekday, summer, winter etc. This may be used to generate a description of a day type in many different natural languages.
Table 43: HolidayTypeEnumeration:

9.7 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.

9.7.1 Business Requirements

Currently used for InterchangeRuleTimings, later also used for the opening hours in StopPlace models.

9.7.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	TIME BAND inherits from DATA MANAGED OBJECT.	
• id • version				
id	1:1	TimebandIdType	Identifier of TIME BAND.	ch:1:Timeband:InterchangeVa-lidity:2:0
Technical ID is artificially generated by the converter.				
Name	0:1	MultilingualString	Name of TIME BAND.	
StartTime	1:1	xsd:time	Inclusive start time of TIME BAND.	00:00:00
Local time (not Zulu), i.e., without “Z” or “+hh:mm” suffix.				
EndTime	1:1	xsd:time	Inclusive end time of TIME BAND.	23:59:59
Local time (not Zulu), i.e., without “Z” or “+hh:mm” suffix.				
DayOffset	0:1	xsd:integer	Day offset of end time from start time. If same day, zero.	
Duration	0:1	xsd:duration	Length of day - Alternative to use of end time.	

9.7.3 Example

```
<timebands>
  <Timeband id="ch:1:Timeband:InterchangeValidity:2:0" version="any">
    <StartTime>00:00:00</StartTime>
    <EndTime>23:59:59</EndTime>
  </Timeband>
</timebands>
```

9.7.4 Hints

-

9.8 OperatingDay

(NeTEx-1, 7.7.5.5.3)
NOT TO BE USED
The day of operation, considered from the point of view of the transportation process control, is described by the entity OPERATING DAY.
-

9.9 DayTypeAssignment

(NeTEx-1, 7.7.5.5.5)
NOT TO BE USED
The production planning requires that a DAY TYPE is assigned to each OPERATING DAY, which is frequently referred as "transportation calendar" or – in The Conceptual MODEL – as SERVICE CALENDAR. Ordinarily, this is organised thanks to a default assignment table, which would apply to the whole network. This table determines in advance the DAY TYPE that is valid in the network, for each OPERATING DAY of a given period. This is expressed as a DAY TYPE ASSIGNMENT relationship between DAY TYPE and OPERATING DAY.

9.9.1 Business Requirements

ValidDayBits in AvailabilityConditions will be used for the HRDF BITFELD mapping instead. They are similar to the HRDF bit fields. However the ValidDayBit must be transformed and correctly mapped from the HRDF bit fields. We define – for every DIVA day type combination and

HRDF-Bitfeld – an AvailabilityCondition with the corresponding ValidDayBits element. This way we still get the desired and compact representation. We will do this in validityConditions/AvailabilityCondition/ValidDayBits directly. These AvailabilityConditions are stored centrally in the ServiceCalendarFrame and only referenced in the respective elements.

9.10 OperatingPeriod

(NeTEx-1, 7.7.5.5.4)
NOT TO BE USED
A continuous interval of time between two OPERATING DAYs which will be used to define validities.

Includes the UIC OPERATING PERIOD structure which is also NOT TO BE USED.

9.10.1 Business Requirements

ValidDayBits in AvailabilityConditions will be used for the HRDF BITFELD mapping instead. They are similar to the HRDF bit fields. However the ValidDayBit must be transformed and correctly mapped from the HRDF bit fields. We define – for every DIVA day type combination and HRDF-Bitfeld – an AvailabilityCondition with the corresponding ValidDayBits element. This way we still get the desired and compact representation. We will do this in validityConditions/AvailabilityCondition/ValidDayBits directly. These AvailabilityConditions are stored centrally in the ServiceCalendarFrame and only referenced in the respective elements.

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.

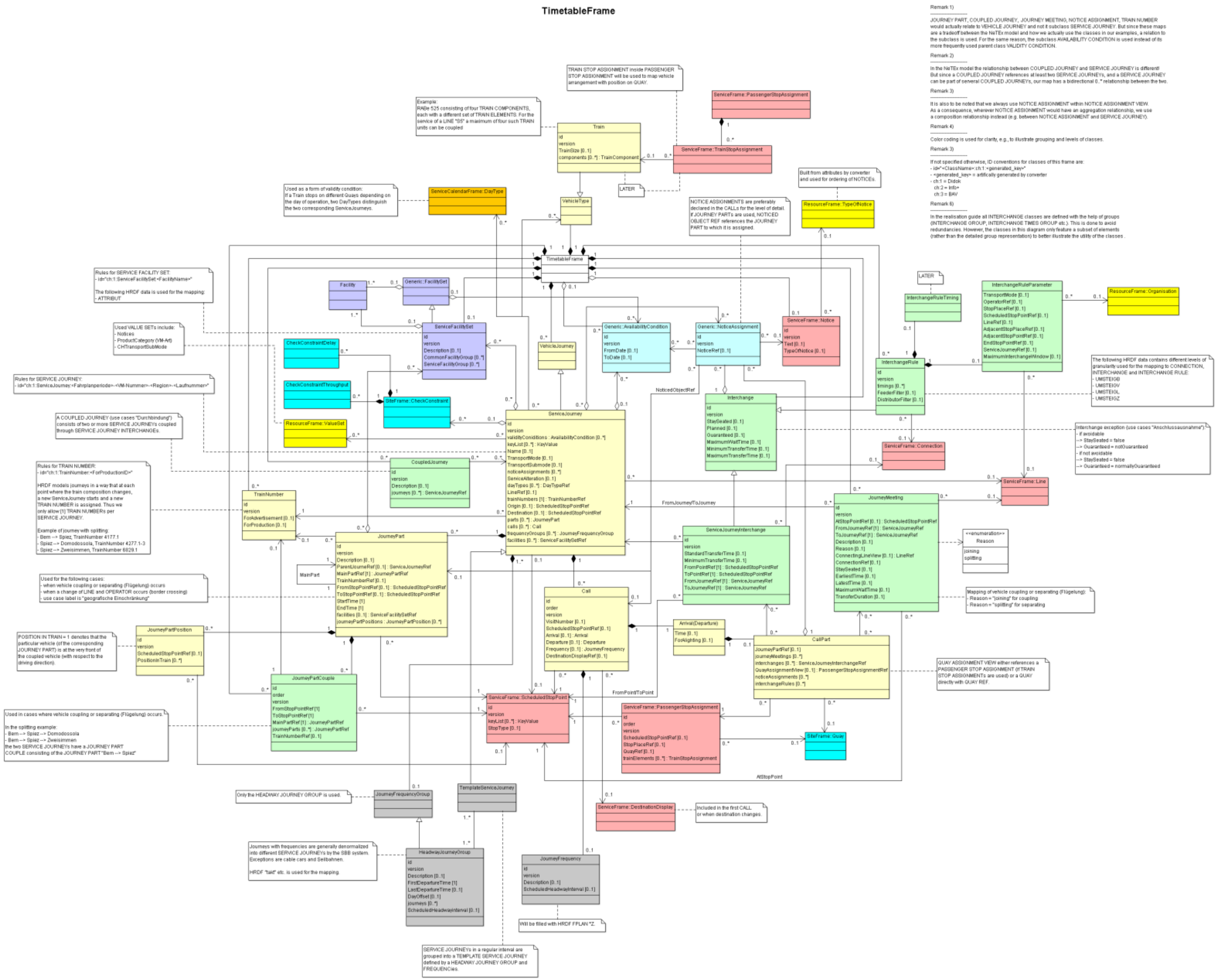
The elements of the JOURNEY & JOURNEY TIMES model can be grouped with a TIMETABLE FRAME which holds a coherent set of timetable related elements for data exchange (see VERSION FRAME in the NeTEx Framework section for general concepts relating to version frames).

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.*
- *VEHICLE TYPES like TRAIN: model the properties and physical composition of 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
Remark 1)
JOURNEY PART, COUPLED JOURNEY, JOURNEY MEETING, NOTICE ASSIGNMENT, TRAIN NUMBER would actually relate to VEHICLE JOURNEY and not it subclass SERVICE JOURNEY. But since these maps are a tradeoff between the NeTEx model and how we actually use the classes in our examples, a relation to the subclass is used. For the same reason, the subclass AVAILABILITY CONDITION is used instead of its more frequently used parent class VALIDITY CONDITION.
Remark 2)
In the NeTEx model the relationship between COUPLED JOURNEY and SERVICE JOURNEY is different! But since a COUPLED JOURNEY references at least two SERVICE JOURNEYs, and a SERVICE JOURNEY can be part of serveral COUPLED JOURNEYs, our map has a bidirectional 0..* relationship between the two.
Remark 3)
It is also to be noted that we always use NOTICE ASSIGNMENT within NOTICE ASSIGNMENT VIEW. As a consequence, wherever NOTICE ASSIGNMENT would have an aggregation relationship, we use a composition relationship instead (e.g. between NOTICE ASSIGNMENT and SERVICE JOURNEY).
Remark 4)
Color coding is used for clarity, e.g., to illustrate grouping and levels of classes.
Remark 3)
If not specified otherwise, ID conventions for classes of this frame are:
- id="<ClassName>:ch:1:<generated_key>"
- <generated_key> = artifically generated by converter
- ch:1 = Didok
ch:2 = Info+
ch:3 = BAV
Remark 6)
In the realisation guide all INTERCHANGE classes are defined with the help of groups (INTERCHANGE GROUP, INTERCHANGE TIMES GROUP etc.). This is done to avoid redundancies. However, the classes in this diagram only feature a subset of elements (rather than the detailed group representation) to better illustrate the utility of the classes.
TRAIN STOP ASSIGNMENT inside PASSENGER STOP ASSIGNMENT will be used to map vehicle arrangement with position on QUAY.
ServiceFrame::PassengerStopAssignment
Example:
RABe 525 consisting of four TRAIN COMPONENTS, each with a different set of TRAIN ELEMENTS. For the service of a LINE "S5" a maximum of four such TRAIN units can be coupled
Train
id
version
TrainSize [0..1]
components [0..*] : TrainComponent
ServiceFrame::TrainStopAssignment
LATER
Built from attributes by converter and used for ordering of NOTICEs.
Used as a form of validity condition:
If a Train stops on different Quays depending on the day of operation, two DayTypes distinguish the two corresponding ServiceJourneys.
ServiceCalendarFrame::DayType
VehicleType
NOTICE ASSIGNMENTS are preferably declared in the CALLs for the level of detail. If JOURNEY PARTs are used, NOTICED OBJECT REF references the JOURNEY PART to which it is assigned.
ResourceFrame::TypeOfNotice
TimetableFrame
Rules for SERVICE FACILITY SET:
- id="ch:1:ServiceFacilitySet:<FacilityName>"
The following HRDF data is used for the mapping:
- ATTRIBUT
Facility
Generic::FacilitySet
LATER
InterchangeRuleTiming
InterchangeRuleParameter
TransportMode [0..1]
OperatorRef [0..1]
StopPlaceRef [0..1]
ScheduledStopPointRef [0..1]
LineRef [0..1]
AdjacentStopPlaceRef [0..1]
AdjacentStopPointRef [0..1]
EndStopPointRef [0..1]
ServiceJourneyRef [0..1]
MaximumInterchangeWindow [0..1]
ResourceFrame::Organisation
Used VALUE SETs include:
- Notices
- ProductCategory (VM-Art)
- CHTransportSubMode
ServiceFacilitySet
id
version
Description [0..1]
CommonFacilityGroup [0..*]
ServiceFacilityGroup [0..*]
CheckConstraintDelay
Generic::AvailabilityCondition
id
version
FromDate [0..1]
ToDate [0..1]
Generic::NoticeAssignment
id
version
NoticeRef [0..1]
ServiceFrame::Notice
id
version
Text [0..1]
TypeOfNotice [0..1]
VehicleJourney
InterchangeRule
id
version
timings [0..*]
FeederFilter [0..1]
DistributorFilter [0..1]
The following HRDF data contains different levels of granularity used for the mapping to CONNECTION, INTERCHANGE and INTERCHANGE RULE:
- UMSTEIGB
- UMSTEIGV
- UMSTEIGL
- UMSTEIGZ
Rules for SERVICE JOURNEY:
- id="ch:1:ServiceJourney:<Fahrplanperiode>-<VM-Nummer>-<Region>-<Laufnummer>"
CheckConstraintThroughput
SiteFrame::CheckConstraint
NoticedObjectRef
Interchange
id
version
StaySeated [0..1]
Planned [0..1]
Guaranteed [0..1]
MaximumWaitTime [0..1]
MinimumTransferTime [0..1]
MaximumTransferTime [0..1]
A COUPLED JOURNEY (use cases "Durchbindung") consists of two or more SERVICE JOURNEYs coupled through SERVICE JOURNEY INTERCHANGEs.
ServiceJourney
id
version
validityConiditions : AvailabilityCondition [0..*]
keyList [0..*] : KeyValue
Name [0..1]
TransportMode [0..1]
TransportSubmode [0..1]
noticeAssignments [0..*]
ServiceAlteration [0..1]
dayTypes [0..*] : DayTypeRef
LineRef [0..1]
trainNumbers [1] : TrainNumberRef
Origin [0..1] : ScheduledStopPointRef
Destination [0..1] : ScheduledStopPointRef
parts [0..*] : JourneyPart
calls [0..*] : Call
frequencyGroups [0..*] : JourneyFrequencyGroup
facilities [0..*] : ServiceFacilitySetRef
Interchange exception (use cases "Anschlussausnahme"):
- if avoidable
--> StaySeated = false
--> Guaranteed = notGuaranteed
- if not avoidable
--> StaySeated = false
--> Guaranteed = normallyGuaranteed
ResourceFrame::ValueSet
ServiceFrame::Connection
CoupledJourney
id
version
Description [0..1]
journeys [0..*] : ServiceJourneyRef
Rules for TRAIN NUMBER:
- id="ch:1:TrainNumber:<ForProductionID>"
HRDF models journeys in a way that at each point where the train composition changes, a new ServiceJourney starts and a new TRAIN NUMBER is assigned. Thus we only allow [1] TRAIN NUMBERs per SERVICE JOURNEY.
Example of journey with splitting:
- Bern --> Spiez, TrainNumber 4177.1
- Spiez --> Domodossola, TrainNumber 4277.1-3
- Spiez --> Zweisimmen, TrainNumber 6829.1
ServiceFrame::Line
TrainNumber
id
version
ForAdvertisement [0..1]
ForProduction [0..1]
FromJourney/ToJourney
JourneyMeeting
id
version
AtStopPointRef [0..1] : ScheduledStopPointRef
FromJourneyRef [1] : ServiceJourneyRef
ToJourneyRef [1] : ServiceJourneyRef
Description [0..1]
Reason [0..1]
ConnectingLineView [0..1] : LineRef
ConnectionRef [0..1]
StaySeated [0..1]
EarliestTime [0..1]
LatestTime [0..1]
MaximumWaitTime [0..1]
TransferDuration [0..1]
JourneyPart
id
version
Description [0..1]
ParentJourneRef [0..1] : ServiceJourneyRef
MainPartRef [1] : JourneyPartRef
TrainNumberRef [0..1]
FromStopPointRef [0..1] : ScheduledStopPointRef
ToStopPointRef [0..1] : ScheduledStopPointRef
StartTime [1]
EndTime [1]
facilities [0..1] : ServiceFacilitySetRef
journeyPartPositions : JourneyPartPosition [0..*]
MainPart
ServiceJourneyInterchange
id
version
StandardTransferTime [0..1]
MinimumTransferTime [0..1]
FromPointRef [1] : ScheduledStopPointRef
ToPointRef [1] : ScheduledStopPointRef
FromJourneyRef [1] : ServiceJourneyRef
ToJourneyRef [1] : ServiceJourneyRef
<<enumeration>>
Reason
joining
splitting
Used for the following cases:
- when vehicle coupling or separating (Flügelung) occurs
- when a change of LINE and OPERATOR occurs (border crossing)
- use case label is "geografische Einschränkung"
Call
id
order
version
VisitNumber [0..1]
ScheduledStopPointRef [0..1]
Arrival [0..1] : Arrival
Departure [0..1] : Departure
Frequency [0..1] : JourneyFrequency
DestinationDisplayRef [0..1]
Mapping of vehicle coupling or separating (Flügelung):
- Reason = "joining" for coupling
- Reason = "splitting" for separating
Arrival(Departure)
Time [0..1]
ForAlighting [0..1]
POSITION IN TRAIN = 1 denotes that the particular vehicle (of the corresponding JOURNEY PART) is at the very front of the coupled vehicle (with respect to the driving direction).
JourneyPartPosition
id
version
ScheduledStopPointRef [0..1]
PositionInTrain [0..*]
CallPart
JourneyPartRef [0..1]
journeyMeetings [0..*]
interchanges [0..*] : ServiceJourneyInterchangeRef
QuayAssignmentView [0..1] : PassengerStopAssignmentRef
noticeAssignments [0..*]
interchangeRules [0..*]
QUAY ASSIGNMENT VIEW either references a PASSENGER STOP ASSIGNMENT (if TRAIN STOP ASSIGNMENTs are used) or a QUAY directly with QUAY REF.
JourneyPartCouple
id
order
version
FromStopPointRef [1]
ToStopPointRef [1]
MainPartRef [1] : JourneyPartRef
journeyParts [0..*] : JourneyPartRef
TrainNumberRef [0..1]
FromPoint/ToPoint
ServiceFrame::ScheduledStopPoint
id
version
keyList [0..*] : KeyValue
StopType [0..1]
ServiceFrame::PassengerStopAssignment
id
order
version
ScheduledStopPointRef [0..1]
StopPlaceRef [0..1]
QuayRef [0..1]
trainElements [0..*] : TrainStopAssignment
SiteFrame::Quay
Used in cases where vehicle coupling or separating (Flügelung) occurs.
In the splitting example:
- Bern --> Spiez --> Domodossola
- Bern --> Spiez --> Zweisimmen
the two SERVICE JOURNEYs have a JOURNEY PART COUPLE consisting of the JOURNEY PART "Bern --> Spiez"
AtStopPoint
Only the HEADWAY JOURNEY GROUP is used.
JourneyFrequencyGroup
TemplateServiceJourney
ServiceFrame::DestinationDisplay
Included in the first CALL or when destination changes.
Journeys with frequencies are generally denormalized into different SERVICE JOURNEYs by the SBB system. Exceptions are cable cars and Seilbahnen.
HRDF "takt" etc. is used for the mapping.
HeadwayJourneyGroup
id
version
Description [0..1]
FirstDepartureTime [1]
LastDepartureTime [0..1]
DayOffset [0..1]
journeys [0..*]
ScheduledHeadwayInterval [0..1]
JourneyFrequency
id
version
Description [0..1]
ScheduledHeadwayInterval [0..1]
Will be filled with HRDF FPLAN *Z.
SERVICE JOURNEYs in a regular interval are grouped into a TEMPLATE SERVICE JOURNEY defined by a HEADWAY JOURNEY GROUP and FREQUENCIes.

10.1.1 Business Requirements

-

10.1.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	VersionFrame	TIMETABLE FRAME inherits from VERSION FRAME.	
•				
id	1:1	TimetableFrameIdType	Identifier of TIMETABLE FRAME.	
VehicleModes	0:*	VehicleModeEnum	Reference to vehicle transport MODEs TIMETABLE	
IGNORED AT IMPORT				
HeadwayService	0:1	xsd:xsd:boolean	Whether services of TIMETABLE are operated a headway services.	
IGNORED AT IMPORT				
Monitored	0:1	xsd:xsd:boolean	Whether services of TIMETABLE are monitored in real time.	
IGNORED AT IMPORT				
NetworkView	0:1	NetworkView	Reference to default NETWORK for TIMETABLE and derived values of NETWORK.	
IGNORED AT IMPORT				
LineView	0:1	LineView	Reference to default LINE for TIMETABLE and derived values of LINE.	
Contains the necessary line elements.				
OperatorView	0:1	OrganisationView	Reference to default OPERATOR for TIMETABLE and derived values of OPERATOR.	
Contains the necessary operator elements.				
ServiceCalendarFrameRef	0:1	ServiceCalendarFrameRef	Reference to default Service CALENDAR for TIMETABLE.	

DefaultMode	0:1	VehicleModeEnum	Reference to default Transport MODE for TIMETABLE.	
IGNORED AT IMPORT				
JourneyAccountingRef	0:1*	JourneyAccountingRef	Default JOURNEY ACCOUNTING values for JOURNEYs in frame.	
IGNORED AT IMPORT				
bookingTimes	0:*	AvailabilityCondition	Times at which bookings can be made for the services in the Timetable.	
IGNORED AT IMPORT				
timeDemandTypes	0:*	TimeDemandType	TIME DEMAND TYPEs in the frame.	
IGNORED AT IMPORT				
timeDemandTypeAssign-ments	0:*	TimeDemandTypeAssign-ment	TIME DEMAND TYPE ASSIGNMENTS in the frame.	
IGNORED AT IMPORT				
timingLinkGroups	0:*	GroupOfLinks	TIMING LINK GROUPs in the frame.	
IGNORED AT IMPORT				
vehicleJourneys	0:*	Journey	VEHICLE JOURNEYs & SERVICE JOUR-NEYS s in the frame.	
Contains the ServiceJourneys.				
frequencyGroups	0:*	FrequencyGroup	FREQUENCY GROUPs in the frame.	
IGNORED AT IMPORT				
groupsOfServices	0:*	GroupOfService	GROUP OF SERVICEs in the frame.	
journeyPartCouples	0:*	JourneyPartCouple	JOURNEY PART COUPLEs in the frame.	
IGNORED AT IMPORT				
coupledJourneys	0:*	CoupledJourney	COUPLED JOURNEYs in the frame.	
serviceFacilitySets	0:*	ServiceFacilitySet	SERVICE FACILITY SETs in the frame.	
typesOfService	0:*	TypeOfService	TYPEs OF SERVICE in the frame.	

flexibleServiceProperties	0:*	FlexibleServiceProperties	FLEXIBLE SERVICE PROPERTIES in the frame.	
notices	0:*	Notice	NOTICEs in the frame.	
noticeAssignments	0:*	NoticeAssignment	NOTICE ASSIGNMENTs in the frame.	
journeyMeetings	0:*	JourneyMeeting	JOURNEY MEETINGs in the frame.	
journeyInterchanges	0:*	Interchange	JOURNEY FREQUENCY GROUPs in the frame.	
interchangeRules	0:*	InterchangeRule	INTERCHANGE RULEs in the frame.	
journeyAccountings	0:*	JourneyAccounting	Default JOURNEY ACCOUNTING values for JOURNEYs in frame.	
NOT TO BE USED				

10.2 Journey

(NeTEx-2, 7.2.1.3.1)
NOT TO BE USED (Only its subclass SERVICE JOURNEY is used)
The JOURNEY and JOURNEY TIMEs model exchanges planned services and dead runs and their timings.

The daily operation of a vehicle is described by VEHICLE JOURNEYs. A VEHICLE JOURNEY is the defined movement of a vehicle using a specified JOURNEY PATTERN on a particular ROUTE. This movement is hence made between the first and the last POINTs IN JOURNEY PATTERN. Being defined for a DAY TYPE, a VEHICLE JOURNEY is a class of journeys that would take place at the same time on each day of a specific DAY TYPE.

JOURNEY defines common properties of a journey, such as SERVICE JOURNEY, TYPE OF SERVICE, JOURNEY ACCOUNTING, etc.

There is a JOURNEY class but it is only of value for the conceptual model. For the actual mapping we use the subclass SERVICE JOURNEY which inherits the JOURNEY elements.

10.2.1 Business Requirements

Elements of JOURNEY are used for SERVICE JOURNEY which is the only type of JOURNEY we use so far.

10.3 VehicleJourney

(NeTEx-2, 7.2.1)
NOT TO BE USED (We use only ServiceJourney)
The daily operation of a vehicle is described by VEHICLE JOURNEYs. A VEHICLE JOURNEY is the defined movement of a vehicle using a specified JOURNEY PATTERN on a particular ROUTE. This movement is hence made between the first and the last POINTs IN JOURNEY PATTERN. Being defined for a DAY TYPE, a VEHICLE JOURNEY is a class of journeys that would take place at the same time on each day of a specific DAY TYPE.

There are two different main types of VEHICLE JOURNEYs: passenger-carrying SERVICE JOURNEYs and non-service DEAD RUNs.
- *A SERVICE JOURNEY is a VEHICLE JOURNEY on which passengers will be allowed to board or alight from vehicles at stops. These journeys are usually published and known by passengers.*
- *A DEAD RUN may be necessary for the vehicle to proceed, from the PARKING POINT it was parked at, to the first STOP POINT of the JOURNEY PATTERN where it will start its service operation. On the opposite direction, a DEAD RUN may relate the last STOP POINT the vehicle has stopped at (finishing its service) to the PARKING POINT where it will be parked. A DEAD RUN may also occur when a vehicle changes from one ROUTE to another one in order to continue its service there, or for other various reasons.*

10.3.1 Business Requirements

All VEHICLE JOURNEY elements are inherited from SERVICE JOURNEY. Apart from that, we only use the VEHICLE JOURNEY tags to imbed the SERVICE JOURNEYs:

```
<TimetableFrame id="ch:1:TimetableFrame:7037-51090-ttfr" version="any">
    <vehicleJourneys>
        <ServiceJourney id="ch:1:ServiceJourney:51090-7037-2018-1a" version="any">
        ...
```

```
        </ServiceJourney>
    </vehicleJourneys>
```

10.4 ServiceJourney

(NeTEx-2, 7.2.2.1)
A SERVICE JOURNEY is a VEHICLE JOURNEY, for one specified DAY TYPE, on which passengers will be allowed to board or alight from vehicles at stops. There are several different possible ways to define SERVICE JOURNEYs, in particular the two following:

- *As the service between an origin and a destination, as advertised to the public.*
- *As the longest service during which a passenger is allowed to stay on the same vehicle.*

In addition to the distinction between SERVICE JOURNEYs and DEAD RUNs, operators may wish to classify VEHICLE JOURNEYs by further criteria. For these purposes a TYPE OF SERVICE may be assigned to a VEHICLE JOURNEY, which would express other common properties (e.g. “journey at the maximum load period”).

A default VEHICLE TYPE may be proposed for a journey chosen according to the time of day at which a SERVICE JOURNEY takes place, and the ROUTE and JOURNEY PATTERN it covers. The proposed VEHICLE TYPE will preferably be taken into account by the scheduling algorithm used to compile blocks of vehicle operation. The choice of such a preference may take into account a ranked list of VEHICLE TYPEs for each SERVICE JOURNEY PATTERN. This is described by the entity VEHICLE TYPE PREFERENCE, depending on a particular SERVICE JOURNEY PATTERN, for which a priority ‘rank’ is given for each VEHICLE TYPE, for each DAY TYPE and TIME DEMAND TYPE.

SERVICE JOURNEY INTERCHANGE (the scheduled possibility for transfer of passengers between two SERVICE JOURNEYs at the same or different STOP POINTs) occurring on the SERVICE JOURNEY and facilities (grouped in a SERVICE FACILITY SET) available for the SERVICE JOURNEY, are also important related information, especially when advertising to the public.

10.4.1 Business Requirements

Most of public transport services are operated in a classical way, on a LINE grouping two or more SERVICE JOURNEY PATTERNs, along which passengers may board or alight at fixed stop points, paying fares according to the fare system in use. However, some other types of service may be offered (school services, occasional services, demand-responsive services, etc.). They are usually named “special” services.

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:ServiceJourney:<AdminOrg>:<Technical_ID>	• SNCF will have TrainNumbers with 6 digits. • Even when there are different Operators, the TrainNumber must be unique. For France, journeys with different endings of the id (parity) (e.g. 701 and 702) may represent the same ServiceJourney. • Journeys from France or from the EFZ may have different IDs (especially SNCF data will not be bound to one period) • Through coaches are also ServiceJourneys. The id is artifically generated and looks like "ch:1:ServiceJourney:<Fahrplanperiode>:dc:<generated_key>"	Yes	Built from Attributes by Converter	ch:1:ServiceJourney:11-18404-101-1
ch:1:sjyid:<AdminOrg>:<Technical_ID>	• We will switch to the SJYID (Swiss Journey ID) as soon as possible. Meaning that <Object_name>="ServiceJourney" will be replaced with <ID_name>="sjyid" in the future. • The <Technical_ID> of the SJYID is still under discussion.			

Table 44: ServiceJourney ID definition.

In Switzerland a SERVICE JOURNEY is always mapped with exactly one TRAIN NUMBER (even though NeTEx allows more than one) because HRDF models journeys in a way that at each point where the train composition changes, a new SERVICE JOURNEY starts and thus a new TRAIN NUMBER is assigned.

10.4.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	Journey	SERVICE JOURNEY inherits from JOURNEY. It includes elements from VEHICLE JOURNEY.	
• id				

• version • responsibilitySetRef				
id	1:1	ServiceJourneyIdType	Identifier of SERVICE JOURNEY.	ch:1:ServiceJourney:2018-723-0000-101-1
See Table 44: ServiceJourney ID definition.				
responsibilitySetRef	1:1	ResponsibilitySetIdType	ResponsibilitySet of SERVICE JOURNEY.	ch:1:responsibilitySetRef="ch:1:ResponsibilitySet:SBB_SBB"
The ResponsibilitySet can only be referenced as an attribute.				
validityConditions	0:*	+AvailabilityConditionRef	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”).	<validityConditions> <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:17" version="any" /> </validityConditions>
AvailabilityCondition with ValidDayBits (BITFELD) replaces DayType in Swiss Public Transport. The AvailabilityConditions are centrally stored and only referenced here. ValidDayBits must be correctly set.				
SNCF intends to use AvailabilityCondition with ValidDayBits directly on the ServiceJourney, as opposed to indirectly on DayTypes of the journey.				
keyList	0:1	+KeyValue	KEY LIST with the KEY VALUEs beloning to the SERVICE JOURNEY. Will contain the SJYID.	
The keyLists will contain a single KeyValue with the SJYID (Swiss Journey ID).				
Name	0:1	MultilingualString		
Inherited from LINK SEQUENCE				
Used by SNCF				
ShortName	0:1	MultilingualString		
Inherited from LINK SEQUENCE				
Used by SNCF				
Description	0:1	xsd:MultilingualString	Description of SERVICE JOURNEY.	

PrivateCode	0:1	PrivateCodeType	Private code of SERVICE JOURNEY.	
NOT TO BE USED We want the PublicCode instead.				
TransportMode	0:1	VehicleModeEnum	Transport MODE of JOURNEY	rail
TransportSubMode	0:1	TransportSubmode	Transport Sub MODE of JOURNEY	
ExternalVehicleJourneyRef	0:1	ExternalObjectRef	An alternative code that uniquely identifies the VEHICLE JOURNEY, specifically for use in AVMS systems. NOTE: For VDV compatibility.	
NOT TO BE USED				
TypeOfProductCategoryRef	0:1	TypeOfProductCategory-Ref	PRODUCT CATEGORY of a JOURNEY.	
TypeOfServiceRef	0:1	TypeOfServiceRef	TYPE OF SERVICE of JOURNEY.	
Indicates if journey is a public passenger transport, a through coach (with JourneyParts) or garage run. See section 10.23.				
LinkSequenceProjectionRef	0:1	LinkSequenceProjection-Ref	Reference to LINK SEQUENCE PROJECTION to use to PROJECT JOURNEY onto map, etc.	
NOT TO BE USED				
Monitored	0:1		Whether the journey will be monitored in real-time.	
NOT TO BE USED				
AccessibilityAssessment	0:*		ACCESSIBILITY ASSESSMENT that apply to SERVICE JOURNEY.	
NOT TO BE USED				
journeyAccountings	0:*	+JourneyAccounting	JOURNEY ACCOUNTINGs that apply of JOURNEY.	

<table>
<tr><td colspan="5">NOT TO BE USED</td></tr>
<tr><td>noticeAssignments</td><td>0:*</td><td>+NoticeAssignment</td><td>NOTICE ASSIGNMENTs that apply to JOURNEY.</td><td></td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>ServiceAlteration</td><td>0:1</td><td>ServiceAlterationEnum</td><td>Status to journey - planned, cancelled, extraJourney</td><td>planned</td></tr>
<tr><td colspan="5">When empty no special alteration occurred.
(NeTEX-2, 7.2.2.4.2.1)

For the time being we will model this the following way: The ServiceJourney will get the ServiceAlteration=”changed” and only the part of the ServiceJourney is transferred that really is planned. A Notice will be added that it is a partial cancellation. One of the big problems with ServiceAlteration is that it needs a reference data set. It is not always clear what this should be.

When *I ZO is set, then it is an extra journey and ServiceAlteration can be set to extraJourney.

The following figure shows the allowed values for ServiceAlteration (ServiceAlterationEnum).

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>extraJourney</td><td>Journey is an addition to the original planned schedule.</td></tr>
<tr><td>cancellation</td><td>Journey is a cancellation of a journey in the planned schedule. LATER</td></tr>
<tr><td>planned</td><td>Journey is as planned.</td></tr>
</table>

LATER: In HRDF partial cancellation will be modeled with "*I“-Lines. One way to do this would be with DatedJourney and DatedCall. For one given day a new Journey is created. This looks like ServiceJourney and Call. It doesn’t need to be complete and it would use ServiceAlteration. It is also possible to write several.</td></tr>
<tr><td>DepartureTime</td><td>0:1</td><td>xsd:time</td><td>Time of departure.</td><td></td></tr>
<tr><td colspan="5"></td></tr>
<tr><td colspan="5"></td></tr>
<tr><td>DepartureDayOffset</td><td>0:1</td><td>DayOffsetType</td><td>Day offset if day of departure time of VEHICLE JOURNEY differs from the current OPERATING DAY.</td><td></td></tr>
</table>

Frequency	0:*	JourneyFrequency	Headway frequencies for VEHICLE JOURNEY.	
JourneyDuration	0:1	xsd:duration	Duration of VEHICLE JOURNEY.	
NOT TO BE USED				
dayTypes	0:1	DayTypeRef	Reference to DAY TYPE on which VEHI-CLE JOURNEY runs.	
NOT TO BE USED				
RouteRef	0:1	RouteRef	Reference to ROUTE on which VEHICLE JOURNEY runs.	
LATER				
JourneyFrequencyGroupRef	0:1	JourneyFrequen-cyGroupRefStructure	FREQUENCY GROUP of VEHICLE JOURNEY	
LATER				
VehicleTypeRef	0:1	VehicleTypeRef	Reference to TYPE OF VEHICLE to use on of SERVICE JOURNEY.	
LATER				
OperationalContextRef	0:1	OperationalContext-RefStructure	Reference to an OPERATIONAL CON-TEXT.	
NOT TO BE USED				
PublicCode	0:1	xsd:normalizedString	Public code for JOURNEY.	
Field has optional multiplicity but must be filled if data is available. It contains the Fahrtnummer, i.e., the original journey number from HRDF (Z-line).				
OperatorRef	0:1	OrganisationRefStructure	Reference to an OPERATOR or more de-tailed OPERATOR VIEW.	
NOT TO BE USED The connection is made through the ResponsibilitySetAssignment in the attributes of the ServiceJourney.				
LineRef	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.	
DirectionTypeEnum: • outbound • inbound • clockwise • anticlockwise				
JourneyPatternView	0:1	JourneyPatternView	Reference to JOURNEY PATTERN of SERVICE JOURNEY and derived values of PATTERN.	
NOT TO BE USED				
groupsOfServices	0:*	GroupOfServices	GROUP OF SERVICEs to which SERVICE JOURNEY belongs.	
NOT TO BE USED				
timeDemandTypes	0:*	TimeDemandTypeRef	TIME DEMAND TYPEs referenced by VEHICLE JOURNEY.	
NOT TO BE USED				
trainNumbers	1:1	TrainNumberRefStructure	Reference to the TRAIN NUMBER of the SERVICE JOURNEY.	<trainNumbers> <TrainNumberRef ref="ch:1:TrainNumber:51090-7037-0000-2018" version="any" /> </trainNumbers>
We strictly map one TRAIN NUMBER per SERVICE JOURNEY. If two vehicles with different TRAIN NUMBERs join, the compound train receives a single TRAIN NUMBER. *I RT.				
SNCF has train numbers that have 4 digits for TGV and 5-6 digits for TER. All TER going to Switzerland have only 5 digits. In Switzerland train number are currently a maximum of 5 digits long. However, in future they will be 6 as well.				
Origin	0:1	JourneyEndpoint	Origin of SERVICE JOURNEY.	
Must be the same as in the first Call.				

Destination	0:1	JourneyEndpoint	Destination of SERVICE JOURNEY.	
Must be the same as in the last Call.				
Print	0:1	xsd:boolean	Whether this journey should be visible to public in print channels.	
LATER				
Dynamic	0:1	DynamicAdvertisemen-tEnum	When this journey should be visible to public in dynamic channels.	
NOT TO BE USED				
passingTimes	0:*	TimetabledPassingTime	TIMETABLED PASSING TIMEs for VE-HICLE JOURNEY.	
NOT TO BE USED				
parts	0:*	JourneyPart	JOURNEY PARTs for VEHICLE JOUR-NEY.	
calls	0:*	Call	CALLs made by SERVICE JOURNEY.	
facilities	0:*	ServiceFacilitySetRef	Reference to ServiceFacilitySet of ser-viceFacilitySets in TimetableFrame.	
checkConstraints	0:*	CheckConstraint	CHECK CONSTRAINTs which apply to SERVICE JOURNEY, check in time, se-curity time. These are advisory and not for journey planning.	
Contains the CI/CO information from HRDF (Checkin/-out). For some Journey (and not in general for every StopPoint there can be added a time, that has to be considered after arrival (or before departure), when the connection is to be calculated.				
equipments	0:*	vehicleEquipment		VEHICLE EQUIPMENT availa-ble on service.
LATER				
FlexibleServiceProperties	0:1	FlexibleServiceProperties	Flexible properties of SERVICE JOUR-NEY. Choice between REFERENCE or VIEW.	<FlexibleServiceProperties ver-sion="1" id="hde:sj_24o_02"> <TypeOfFlexibleServiceRef ref="myfs" ver sion="any"/>

				<BookingMethods>online callOffice</BookingMethods> <BookingAccess>public</BookingAccess> <LatestBookingTime>16:00:00Z</LatestBookingTime> <MinimumBookingPeriod>PT2H</MinimumBookingPeriod> </FlexibleServiceProperties>
Needed for services on demand. May contain the phone number.				

10.4.3 Example

```
<vehicleJourneys>
  <ServiceJourney id="ch:1:ServiceJourney:66358-7038-0000-2018-3" version="any">
    <!--Journey that decouples from previous Journey and leaves Genève to Genève-Aéroport-->
    <Name lang="en">IR|Genève to Genève-Aéroport on Tu/We/Th operation</Name>
    <TransportMode>rail</TransportMode>
    <TransportSubmode>
      <RailSubmode>regionalRail</RailSubmode>
    </TransportSubmode>
    <ServiceAlteration>planned</ServiceAlteration>
    <!--DAY TYPE is the element that distinguishes a Journey (or group of Journey's) from Journey's with another
QUAY combination! DayType:4566 references the operatingDays where quay combination 1 (departure in Genève on quay 2)
is in effect and DayType:5347 stands for quay combination 2 (departure in Genève on quay 7).-->
    <dayTypes>
      <DayTypeRef ref="ch:1:DayType:5347" version="any" />
    </dayTypes>
    <LineRef ref="42-53-_-j18" version="any" />
    <trainNumbers>
      <TrainNumberRef ref="ch:1:TrainNumber:66358-232-0000-2018" version="any" />
      <TrainNumberRef ref="ch:1:TrainNumber:51089-7036-0000-2018" version="any" />
    </trainNumbers>
```

```xml
    <Origin>
      <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501008-3" version="any" />
    </Origin>
    <Destination>
      <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501026-5" version="any" />
    </Destination>
    <parts>
      <JourneyPart id="ch:1:JourneyPart:SJ-66358-7038-0000-2018-3-JP-1" version="any">
        <Description>Versoix to Genève</Description>
        <MainPartRef ref="ch:1:JourneyPart:SJ-66358-7038-0000-2018-3-JP-1" version="any" />
        <FromStopPointRef ref="ch:1:ScheduledStopPoint:8501022-1" version="any" />
        <ToStopPointRef ref="ch:1:ScheduledStopPoint:8501008-3" version="any" />
        <StartTime>23:56:00</StartTime>
        <EndTime>00:35:00</EndTime>
        <EndTimeDayOffset>1</EndTimeDayOffset>
        <facilities>
          <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:general-0" version="any"></ServiceFacilitySetRef>
          <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:general-4" version="any"></ServiceFacilitySetRef>
          <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:general-1" version="any"></ServiceFacilitySetRef>
        </facilities>
        <journeyPartPositions>
          <JourneyPartPosition id="ch:1:JourneyPartPosition:SJ_3-position2Annemasse" order="1" version="any">
            <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501022-1" version="any" />
            <PositionInTrain>1</PositionInTrain>
          </JourneyPartPosition>
          <JourneyPartPosition id="ch:1:JourneyPartPosition:SJ_3-position2Genève-Aéroport" order="2" version="any">
            <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501022-1" version="any" />
            <PositionInTrain>3</PositionInTrain>
          </JourneyPartPosition>
        </journeyPartPositions>
      </JourneyPart>
      <JourneyPart id="ch:1:JourneyPart:SJ-66358-7038-0000-2018-3-JP-2" version="any">
        <Description>Genève to Genève-Aéroport</Description>
        <MainPartRef ref="ch:1:JourneyPart:SJ-66358-7038-0000-2018-3-JP-1" version="any" />
        <TrainNumberRef ref="ch:1:TrainNumber:66358-232-0000-2018" version="any" />
        <FromStopPointRef ref="ch:1:ScheduledStopPoint:8501008-3" version="any" />
        <ToStopPointRef ref="ch:1:ScheduledStopPoint:8501026-5" version="any" />
        <StartTime>00:36:00</StartTime>
        <StartTimeDayOffset>1</StartTimeDayOffset>
```

```xml
        <EndTime>00:44:00</EndTime>
        <EndTimeDayOffset>1</EndTimeDayOffset>
        <facilities>
          <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:general-0" version="any"></ServiceFacilitySetRef>
          <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:general-4" version="any"></ServiceFacilitySetRef>
        </facilities>
      </JourneyPart>
    </parts>
    <calls>
      <Call id="ch:1:Call:63473-7038-0000-2018-3-1" order="1" version="any">
        <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501022-1" version="any" />
        <Departure>
          <Time>23:56:00Z</Time>
        </Departure>
        <DestinationDisplayRef ref="ch:1:DestinationDisplay:8501022" version="any"></DestinationDisplayRef>
      </Call>
      <Call id="ch:1:Call:63473-7038-0000-2018-3-2" order="2" version="any">
        <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501008-3" version="any" />
        <!--This Call begins where the splitting in the previous VehicleJourney in Genève ends. I assume Arrival is
on the Quay where splitting takes place.-->
        <Arrival>
          <Time>00:35:00</Time>
          <DayOffset>1</DayOffset>
          <JourneyPartRef ref="ch:1:JourneyPart:SJ-66358-7038-0000-2018-3-JP-1" version="any" />
          <journeyMeetings>
            <JourneyMeetingRef ref="ch:1:JourneyMeeting:Genève_arr-tn66358_splitFrom_tn51090" version="any" />
          </journeyMeetings>
        </Arrival>
        <Departure>
          <Time>00:36:00</Time>
          <DayOffset>1</DayOffset>
          <JourneyPartRef ref="ch:1:JourneyPart:SJ-66358-7038-0000-2018-3-JP-2" version="any" />
          <QuayAssignmentView>
            <PassengerStopAssignmentRef ref="ch:1:PassengerStopAssignment:8501008-3C" version="" />
            <QuayName>Voie 3C</QuayName>
          </QuayAssignmentView>
        </Departure>
        <DestinationDisplayRef ref="ch:1:DestinationDisplay:8501022" version="any"></DestinationDisplayRef>
      </Call>
```

```xml
      <Call id="ch:1:Call:63473-7038-0000-2018-3-3" order="3" version="any">
        <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501026-5" version="any" />
        <Arrival>
          <Time>00:44:00</Time>
          <DayOffset>1</DayOffset>
        </Arrival>
      </Call>
    </calls>
  </ServiceJourney>
</vehicleJourneys>
```

10.4.4 Hints

The usage of ResponsibilitySets is defined in section 5.6.

NeTEx does not know the term "partial line". In the different planning systems there is the case of a "line that is operated by different organisations" which is handeled differently:

- There exists internally two different lines, that have the same public line number
- Sometimes different organisations are assigned on a per ServiceJourney basis

The VDV 462 working group has decided to build the NeTEX- ServiceJourney id in alignment with VDV 433 and the field "Partial line" to fill with the correct key of the responsible organisations. However, in the case of multiple partial lines there are not multiple line elements generated, meaning the the NeTEx line is equivalent to the VDV 433 line and not the partial line.
We have the following syntax for object IDs:
ch:1:ServiceJourney:<Fahrplanperiode>-<VM-Nummer>-<Region>-<Laufnummer>

10.4.5 ThroughCoach

See also the Business information of JourneyPart (section 10.9.1) to understand how through coaches are formed. An individual ServiceJourney is generated for a through coach or "Kurswagen". The through coach generally inherits the Calls from the coupled/effective ServiceJourneys but may have individual one.

ThroughCoach journey	Description
Name	Through coach TrainNumber / VM Nr.
TransportMode	Fill in normal-/narrow-gauge

TransportSubmode	Fill in normal-/narrow-gauge
DirectionType	Default value “outbound”
TypeofService	ThroughCoach
trainNumbers	Empty or through coach TrainNumber / VM Nr.
Origin	References the first BP of the first effective ServiceJourney
Destination	References the last BP of the complete ServiceJourney
JourneyParts	Must reference the coupled/effective ServiceJourneys
VP	In the case of differences depending on VP, a through coach for each VP must be generated (to prevent overlapping)

Table 45: ThroughCoach ServiceJourney - filled values.

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 and DEAD RUNs exchanged with NeTEx.
A CALL provides a view of a POINT IN JOURNEY PATTERN that assembles data related to the visit to a stop of a VEHICLE JOURNEY at each SCHEDULED STOP POINT of the journey’s SERVICE PATTERN and possibly other POINT IN JOURNEY PATTERNs (TIMING POINTS). It additionally can include derived data in a form convenient for data exchange and processing of journeys by displays, including:

- *PASSING TIMEs, grouped by arrival and departure*
- *Stop usage information (passthrough, no boarding, etc.)*
- *DESTINATION DISPLAY and VIA information*
- *STOP ASSIGNMENTs to specific QUAYs i.e. platforms*
- *Visit number (order within the VEHICLE JOURNEY, including repeated visits)*
- *Referenced entities and their derived properties, such as SCHEDULED STOP POINT, JOURNEY PARTs, SERVICE JOURNEY INTERCHANGES, SERVICE LINKs etc.*
- *NOTICEs relating to the stop*

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**	**Example**
::>	::>	VersionedChild	CALL inherits from VERSIONED CHILD	
Attributes: • id • order • version				
id	1:1	CallIdType	Identifier of CALL.	
Extensions	0:1	ExtensionStructure	Used for Facility changes.	<Extensions> <facilities> <ServiceFacilitySetRef ref="ch:1:ServiceFacil-itySet:RR" version="any" /> </facilities> </Extensions>
We need an extension to add some Facilities directly on the Call. The following data from HRDF will be copied into the appropriate ServiceFacilities: • Halt auf Verlangen • Reservierung obligatorisch • Einstieg nur nach telefonischer Voranmeldung • GRUPPEN: Reservierung obligatorisch • Einstieg nur mit Reservierung, siehe www.fahrplanfelder.ch • Halt nur zum Aussteigen • 1 Zug-2 Ziele: bitte Anschriften beachten • Reservierung: siehe www.postauto.ch • Bahnersatz				

• Saisonale Haltestelle • VELOS: Kein Selbstverlad • VELOS: Beförderung nicht möglich • Einstieg nur mit Reservierung, siehe www.postauto.ch See example in section 10.5.3 below.				
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.	200
ScheduledStopPointRef (P) StopPointInJourney-PatternViewPropertiesGroup	0:1	ScheduledStopPoin-tRefStructure	Reference to the SCHEDULED STOP POINT visited by CALL. May include derived data.	
SBB always uses a ScheduledStopPointRef here.				
OnwardServiceLinkRef (P) StopPointInJourney-PatternViewPropertiesGroup.	0:1	ServiceLinkRefStructure	Reference to the next SERVICE LINK followed after this CALL.	
IGNORED AT IMPORT				
TimingPointStatus (P) StopPointInJourney-PatternViewPropertiesGroup.	0:1	TimingPointStatusEnum	Timing Status of CALL.	
NOT TO BE USED				
ServiceJourneyRef	0:1	ServiceJourneyRef	Reference to SERVICE JOURNEY containing CALL.	
NOT TO BE USED				
PointInJourneyPatternRef	0:1	PointInJourneyPatternRef	POINT IN JOURNEY PATTERN corresponding to CALL.	
IGNORED AT IMPORT				

Arrival	0:1	Arrival	Arrival part of CALL.	
Departure	0:1	Departure	Departure part of CALL.	
Frequency	0:1	JourneyFrequency	Frequency information for CALL.	
IGNORED AT IMPORT				
DestinationDisplayRef	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.				
vias	0:*	DestinationDisplayView	Set of DESTINATION DISPLAY to use to show as onward VIA points associated with the CALL.	
VIAS in a CALL are used for Border points:				

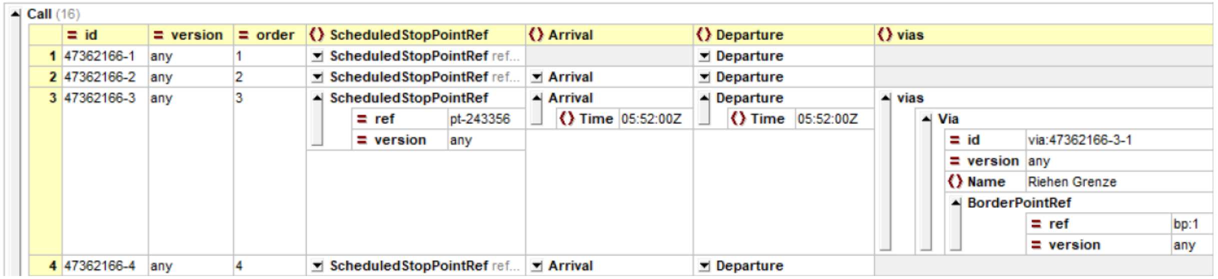


Figure 30: VIA usage in CALL for a technical border point.

The element Via\Name” is mandatory and contains the name of the border point.
Also general information on the Link can be given here. In the minimal form the Via element just contains a text.

ChangeOfDestinationDisplay	0:1	xsd:boolean	Whether DESTINATION DISPLAY changes at this point.	
IGNORED AT IMPORT Change is true on the first call and on the first element that has a new value (for each new value).				

ChangeOfServiceRequirements	0:1	xsd:boolean	Whether SERVICE REQUIREMENTS change at this point.	
IGNORED AT IMPORT				
noticeAssignments	0:*	NoticeAssignmentView	NOTICE ASSIGNMENTs, footnotes etc. associated with the CALL. May include derived data.	
IGNORED AT IMPORT				
RequestStop	0:1	xsd:boolean	Whether the stop is a Request Stop.	
StopUse	0:1	StopUseEnum	Activity at stop. Used for special Stop-Points like “Saligans” in which case the vehicle only stops for a vehicle inter-change and no passenger boarding.	
StopUseEnum: • access • interchangeOnly • passthrough • noboarding				
equipments	0:*	VehicleEquipments	VEHICLE EQUIPMENT available on service.	
IGNORED AT IMPORT				
Note		MultilingualString	Arbitrary note associated with the CALL. For internal use. Footnotes etc., should be specified with NOTICEs.	
IGNORED AT IMPORT				

10.5.3 Example

```
<Call id="ch:1:Call:ServiceJourney:02315-DB-2-XXXXX:XXXXX_2" order="2" version="any">
  <Extensions>
    <facilities>
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:X" version="any" />
```

```xml
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:RR" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:XR" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:GR" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:XT" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:SD" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:FL" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:RQ" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:BE" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:SH" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:VN" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:VX" version="any" />
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:XP" version="any" />
    </facilities>
  </Extensions>
  <ScheduledStopPointRef ref="de:1:ScheduledStopPoint:3" version="any" />
  <Arrival>
    <Time>13:59:00Z</Time>
    <ForAlighting>true</ForAlighting>
  </Arrival>
  <Departure>
    <Time>14:13:00Z</Time>
    <!-- According to the Mappingtable, SD "Halt nur zum Aussteigen" is mapped by ForBoarding=false instead of a Facility -->
    <ForBoarding>false</ForBoarding>
  </Departure>
  <!-- According to the Mappingtable BE, FL and SH are mapped by Notice instead of Facilities -->
  <noticeAssignments>
    <NoticeAssignment id="ch:1:NoticeAssignment:Notice:BE:Call:ServiceJourney:00018-DB-1-XXXXX:XXXXX_2" order="1" version="any">
      <NoticeRef ref="ch:1:Notice:BE" version="any" />
    </NoticeAssignment>
    <NoticeAssignment id="ch:1:NoticeAssignment:Notice:FL:Call:ServiceJourney:00018-DB-1-XXXXX:XXXXX_2" order="2" version="any">
      <NoticeRef ref="ch:1:Notice:FL" version="any" />
    </NoticeAssignment>
    <NoticeAssignment id="ch:1:NoticeAssignment:Notice:SH:Call:ServiceJourney:00018-DB-1-XXXXX:XXXXX_2" order="3" version="any">
      <NoticeRef ref="ch:1:Notice:SH" version="any" />
    </NoticeAssignment>
```

```
  </noticeAssignments>
  <!-- According to the Mappingtable, X "Halt auf Verlangen" is mapped by RequestStop instead of a Facility -->
  <RequestStop>true</RequestStop>
  <StopUse>access</StopUse>
</Call>
```

10.5.4 Hints

-

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	Example
Time	1:1	xsd:time	Latest Time of Arrival.	<Time>06:31:00</Time>
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.	false
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.				
CallPartGroup	0:1		Common elements, e.g. NOTICEs, QUAY ASSIGNMENT, INTERCHANGEs and	

			JOURNEY PART associated with Arrival part. of CALL. Multiplicity counts for each element of the Group.	
See CallPartGroup, Some elements are mandatory business-wise.				

10.6.3 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	Example
Time	1:1	xsd:time	Earliest time of departure.	<Time>06:31:00</Time>
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.	
It is possible that a journey already starts with an offset > 0.				
ForBoarding	1:1	xsd:boolean	Whether boarding is allowed for CALL.	false
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.				

WaitTime	0:*	xsd:duration	Time to wait at stop after arrival before departure.	
IGNORED AT IMPORT				
CallPartGroup	0:1		Common elements, e.g. NOTICEs, QUAY ASSIGNMENT, INTERCHANGEs and JOURNEY PART associated with departure part of CALL. Multiplicity counts for each element of the Group.	
See CallPartGroup. Some elements are mandatory business-wise.				

10.7.3 Example

-

10.8 CallPartGroup

(NeTEx-2, 7.2.14.7)
CallPart describes common properties of an Arrival or Departure of a CALL. The elements are then put into Arrival and Departure.

10.8.1 Business Requirements

The CALL PART contains important information such as QUAY arrival/departure information, NOTICEs linked with the particular CALL, INTERCHANGE information and, indirectly through QUAY ASSIGNMENT VIEW, information about the TRAIN composition on QUAY (see TRAIN STOP ASSIGNMENT).

10.8.2 Structure

Element	Usage	Structure	Description	Example
JourneyPartRef	0:1	JourneyPartRef	JOURNEY PART to which CALL belongs.	

journeyMeetings	0:*	JourneyMeetingRef	JOURNEY MEETINGs of this journey at this specific CALL PART.	
Interchanges	0:*	ServiceJourneyInterchangeRef	INTERCHANGE of this journey at this specific CALL PART.	<interchanges> <ServiceJourneyInterchangeRef ref="ch:1:ServiceJourneyInter-change:versoix_vj51090-7037-0000-2018-1" version="any" /> </interchanges>
NOT TO BE USED				
interchangeRules	0:*	InterchangeRule	INTERCHANGE RULEs of this jour-ney at this specific CALL PART.	
NOT TO BE USED				
TimeDemandTypeRef	0:1	TimeDemandTypeRef	TIME DEMAND TYPE of this journey at this specific CALL.	
NOT TO BE USED				
DutyPartRef	0:1	DutyPartRef	DUTY that applies from this CALL on-wards.	
NOT TO BE USED				
QuayAssignmentView	0:1	PassengerStopAssignmentRef	Assignment to a QUAY for this CALL PART.	<QuayAssignmentView> <PassengerStopAssignmentRef ref="ch:1:PassengerStopAssign-ment:8501015:1A:05683" ver-sion="any" /> <QuayName>1A</QuayName> </QuayAssignmentView>

AccessibilityAssessment	0:1	AccessibilityAssessmentStructure	The accessibility characteristics of the CALL. Described by ACCESSIBILITY LIMITATIONs, and/or a set of SUITABILITies.	
LATER				
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.	
LATER				
noticeAssignments	0:*	NoticeAssignmentView	NOTICEs that apply at this specific CALL PART.	

10.8.3 Example

```
<Call id="ch:1:Call:51090-7037-000-2018-1b-3" order="1" version="any">
  <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501022-2" version="any" />
  <Departure>
    <Time>23:56:00Z</Time>
    <interchanges>
      <ServiceJourneyInterchangeRef ref="ch:1:ServiceJourneyInterchange:versoix_vj51090-7037-0000-2018-1" version="any" />
    </interchanges>
    <QuayAssignmentView>
      <PassengerStopAssignmentRef ref="ch:1:PassengerStopAssignment:8501022-2" version="" />
      <QuayName>Voie 2</QuayName>
    </QuayAssignmentView>
  </Departure>
  <DestinationDisplayRef ref="ch:1:DestinationDisplay:8501022" version="any"></DestinationDisplayRef>
```

```xml
</Call>
<Call id="ch:1:Call:51090-7037-000-2018-1b-4" order="2" version="any">
  <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501008-3" version="any" />
  <Arrival>
    <Time>00:30:00</Time>
    <DayOffset>1</DayOffset>
    <JourneyPartRef ref="ch:1:JourneyPart:SJ-51090-7037-0000-2018-1b-JP-1" version="any" />
  </Arrival>
  <Departure>
    <Time>00:30:00</Time>
    <DayOffset>1</DayOffset>
    <JourneyPartRef ref="ch:1:JourneyPart:SJ-51090-7037-0000-2018-1b-JP-2" version="any" />
  </Departure>
</Call>
```

10.8.4 Hints

-

10.9 JourneyPart

(NeTEx-2, 7.2.9.4.1)
LATER
A part of a VEHICLE JOURNEY created according to a specific functional purpose, for instance in situations when vehicle coupling or separating occurs.

10.9.1 Business Requirements

JourneyPart has an artificially generated id because the same JourneyPart may be used in several ServiceJourneys. Otherwise the ServiceJourney key could be used as part of the id.

Every ServiceJourney must have a unique geography and ValidDayBits / VP (no overlapping), which means that:

- A JourneyPart is generated for each journey-based *A line and geographical characteristic in HRDF.
- A JourneyPart is generated for each relevant journey-based ***I** line and geographical characteristic in HRDF.
- If a journey has more than one *G line, a JourneyPart is generated.
- If a journey has an alternative VM number stored on the ticker line, this is mapped to the relevant partition using JourneyPart.

- A corresponding ServiceJourneyPart must be generated for a through coach (independent ServiceJourney) with different JourneyParts of different ServiceJourneys (different *Z lines) are referenced by the through coach ServiceJourney.

It follows the primary reasons for the partitioning of a ServiceJourney:

PurposeOfJourneyPartition	Description
Coupling	A JourneyPart is needed where two vehicles of different journeys meet and a through coarch ServiceJourney is formed.
FacilityChange	A ServiceJourney has not the same Facilities or Notices (*A attributes) across its geography. See the example below.

Table 46: PurposeOfJourneyPartition – Allowed values.

For an example of journey partitioning because of FacilityChange, consider the following situation:

- A ServiceJourney across ScheduledStopPoints **A-B-C-D-E**
    - with a Facility (Attribute) “WR” on partition **A-B-C**
    - with a Facility or Notice (Attribute) “Minibar” on partition **B-C-D-E**
- JourneyPartition for geography **A-B** with “WR”
- JourneyPartition for geography **B-C** with “WR” and “Minibar”
- JourneyPartition for geography **C-E** with “Minibar”

Resulting in three JourneyParts (and no geographical overlapping), each with PurposeOfJourneyPartition=FacilityChange.

In the case of “Coupling”, all necessary JourneyParts (with their respective PurposeOfJourneyPartition’s) are defined in the through coach journey, and then a reference to the TypeOfService “ThroughCoach” is made.

10.9.1.1 ThroughCoach Example

An example from INFO+ of a through coach and geographic covering shall be given. Consider tthe following ServiceJourneys (see also figures):

ServiceJourney	DayTypes	TypeOfService	Origin	Destination
18	17	PublicJourney	Dagebüll Mole	Niebüll
2315	17	PublicJourney	Westerland (Sylt)	Frankfurt (Main) Hbf
39	15	ThroughCoach	Dagebüll Mole	Frankfurt (Main) Hbf

Where a coupling takes place in Niebüll. ServiceJourney 18 joins with journey 2315 which is the main journey.

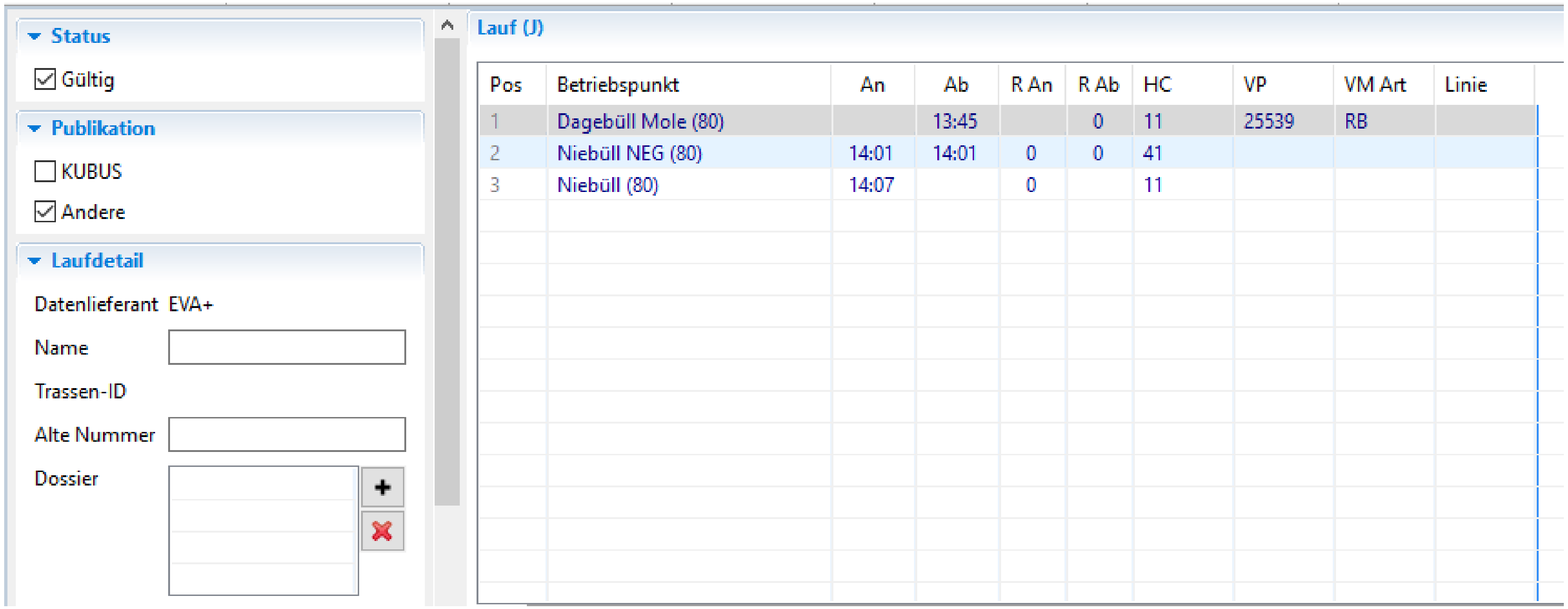
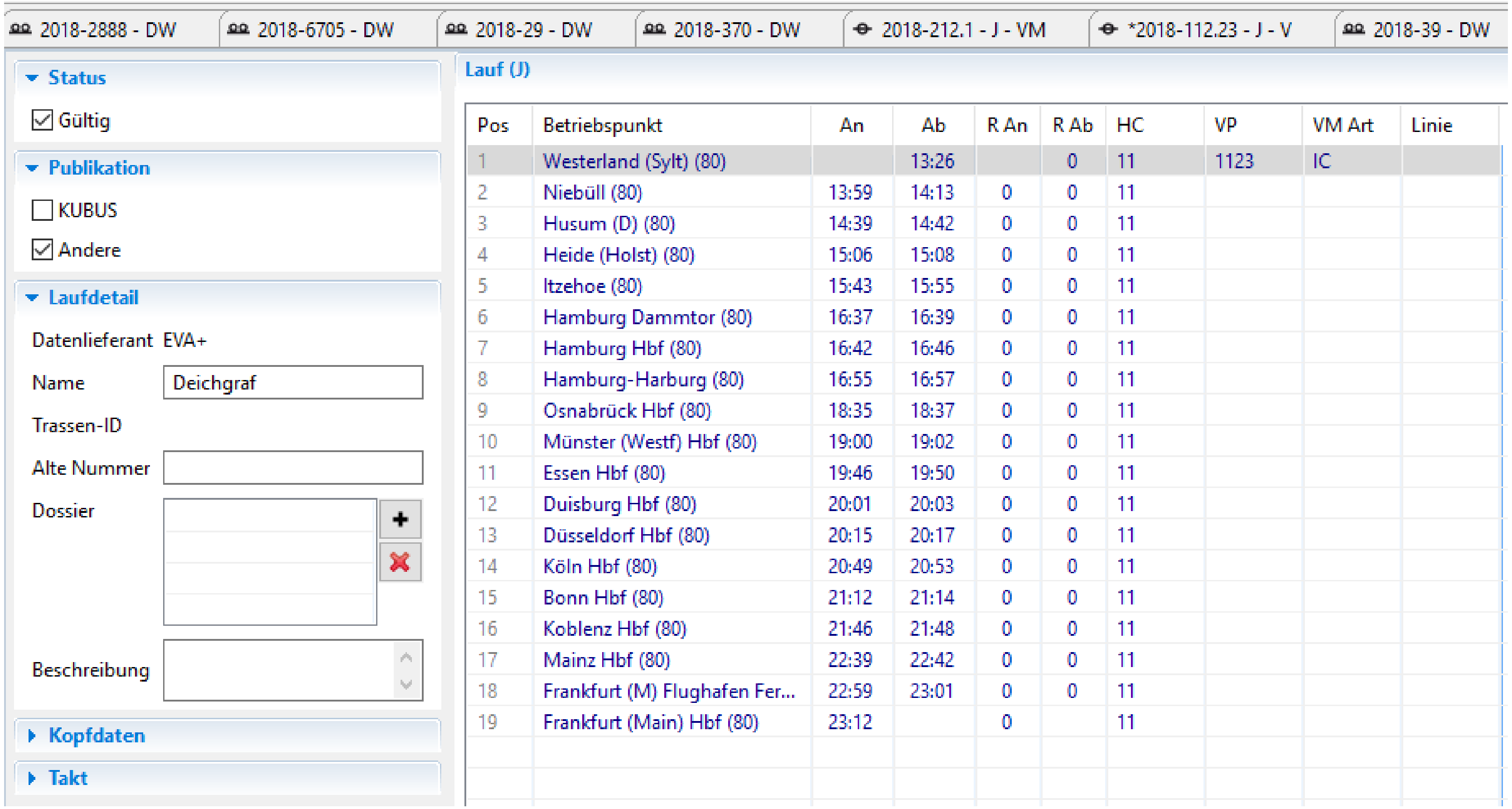


Figure 31: Journey with VM Nr. 18 and N0____ We assume VP17 for the sake of simplicity.



Pos	Betriebspunkt	An	Ab	R An	R Ab	HC	VP	VM Art	Linie
1	Westerland (Sylt) (80)		13:26		0	11	1123	IC	
2	Niebüll (80)	13:59	14:13	0	0	11			
3	Husum (D) (80)	14:39	14:42	0	0	11			
4	Heide (Holst) (80)	15:06	15:08	0	0	11			
5	Itzehoe (80)	15:43	15:55	0	0	11			
6	Hamburg Dammtor (80)	16:37	16:39	0	0	11			
7	Hamburg Hbf (80)	16:42	16:46	0	0	11			
8	Hamburg-Harburg (80)	16:55	16:57	0	0	11			
9	Osnabrück Hbf (80)	18:35	18:37	0	0	11			
10	Münster (Westf) Hbf (80)	19:00	19:02	0	0	11			
11	Essen Hbf (80)	19:46	19:50	0	0	11			
12	Duisburg Hbf (80)	20:01	20:03	0	0	11			
13	Düsseldorf Hbf (80)	20:15	20:17	0	0	11			
14	Köln Hbf (80)	20:49	20:53	0	0	11			
15	Bonn Hbf (80)	21:12	21:14	0	0	11			
16	Koblenz Hbf (80)	21:46	21:48	0	0	11			
17	Mainz Hbf (80)	22:39	22:42	0	0	11			
18	Frankfurt (M) Flughafen Fer...	22:59	23:01	0	0	11			
19	Frankfurt (Main) Hbf (80)	23:12		0		11			

Figure 32: Journey with VM Nr. 2315 and TU80____ We assume VP17 for the sake of simplicity.

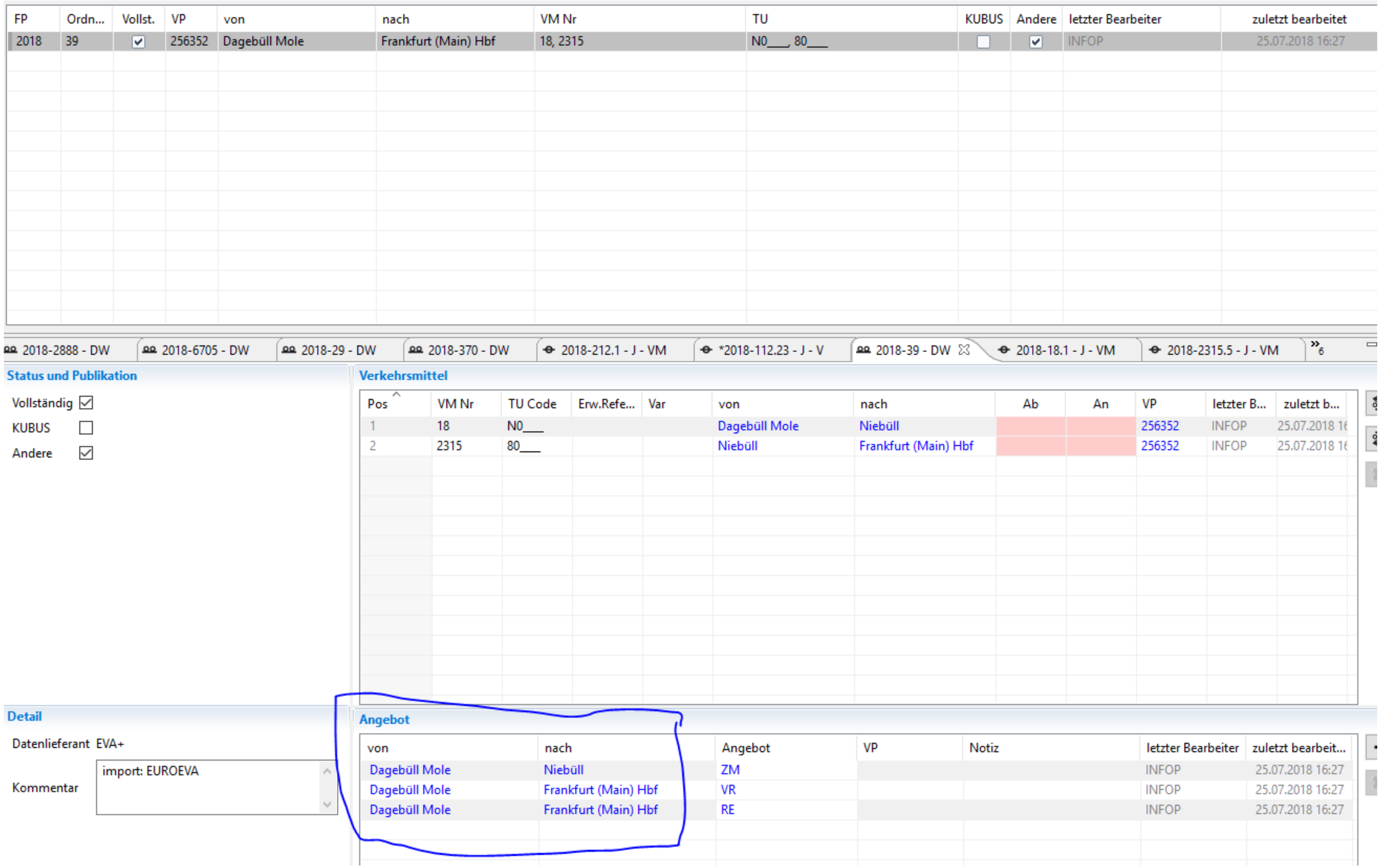


Figure 33: A through coach from Dagebüll Mole to Frankfurt (Main) Hbf, formed in Niebüll where journey 18 joins the main journey 2315.

Figure 33 shows that the resulting through coach has a Facility/Notice «ZM» before coupling, and the Facilities «VR» and «RE» after coupling. To account for the Facility change and the through coach in general, the following JourneyParts must be defined:

ServiceJourney 18:

JourneyPart	PurposeOfJourneyPartition	MainPartRef	FromStopPointRef	ToStopPointRef	Facilities	TrainNumberRef
18 part 1	Coupling	18 part 1	Dagebüll Mole	Niebüll	empty	empty

ServiceJourney 2315:

JourneyPart	PurposeOfJourneyPartition	MainPartRef	FromStopPointRef	ToStopPointRef	Facilities	TrainNumberRef
2315 part 1	Coupling	2315 part 1	Westerland (Sylt)	Niebüll	empty	empty
2315 part 2	Coupling	2315 part 1	Niebüll	Frankfurt (Main) Hbf	empty	empty

ServiceJourney 39:

JourneyPart	PurposeOfJourneyPartition	MainPartRef	FromStopPointRef	ToStopPointRef	Facilities	TrainNumberRef
39 part 1	Coupling	18 part 1	Dagebüll Mole	Niebüll	ZM, VR, RE	empty
39 part 2	Coupling	2315 part 1	Niebüll	Frankfurt (Main) Hbf	VR, RE	empty

- The TrainNumber is empty in all the JourneyParts because it is defined on the ServiceJourney and does not change in the individual JourneyParts.
- We assume that the individual Journey do not have Facilities (but they might have).
- Since the Facilities «VR» and «RE» are present across the full geography, we can define them on the ServiceJourney instead of the individual JourneyParts

JourneyParts are also used in cases where a ServiceJourney crosses a border because it might change its Line and it will probably be operated by different transport organisations. To specify such changes of the Line, Operator and ProductCategory within a JourneyPart, we will use an Extension. See the example in section Example10.9.3.

“Flügelzüge” (splitting / joining) as well as “Kurswagen” (through coaches) are other scenarios where JourneyParts (and also Journey-PartCouples) are used.

10.9.1.2 Splitting & Joining Example

LATER

Note that a NeTEx export from HRDF does not use the mapping processes specified in this section. The purpose of this chapter is to demonstrate another approach for the mapping of journey coupling, as for example the splitting or joining of vehicles. The following approach is more in line with the CEN-profile but is not applicable to the current HRDF data.

In NeTEx the two journeys in the Spiez railway station are separated into journey parts with the “parts”-element in ServiceJourney.
The continuous journey Bern to Domodossola is separated into two parts. For each part the start and end place and times are provided:

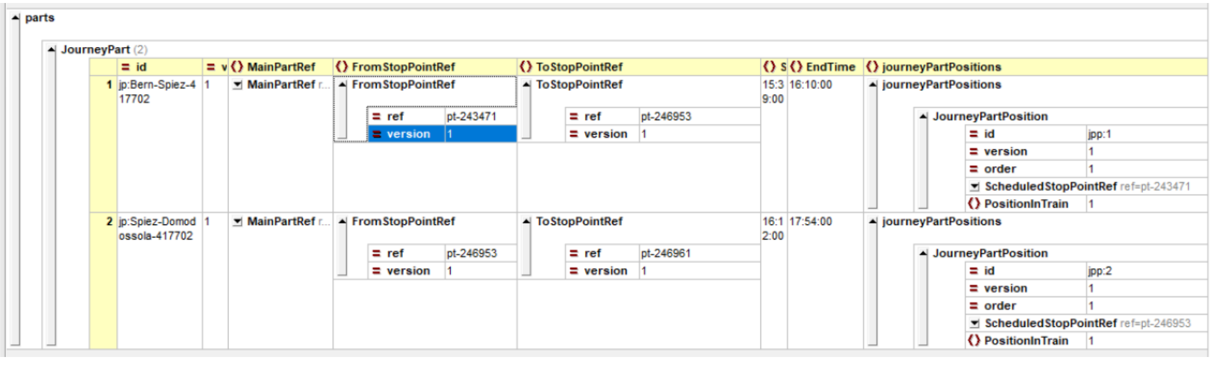


Figure 34: Parts element for JOURNEY Bern - Spiez - Domodossola.

The same happens for the journey to Zweisimmen:

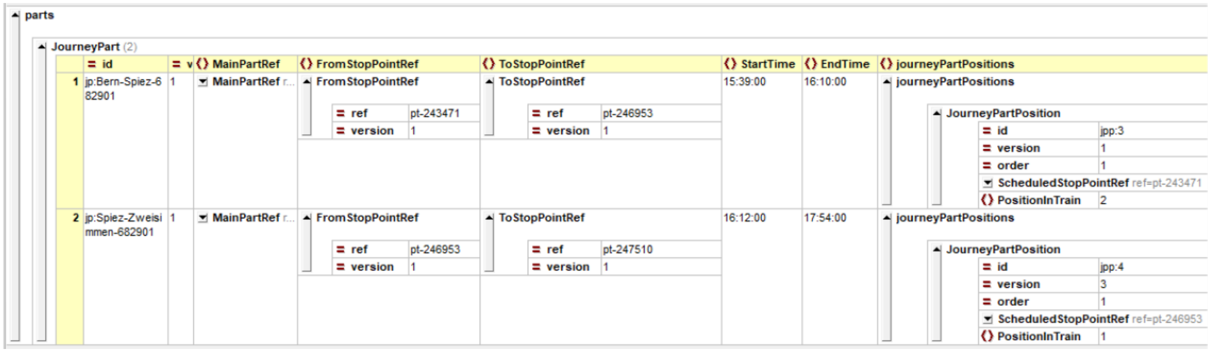


Figure 35: Parts element for JOURNEY from Bern -Spiez - Zweisimmen.

The element JourneyPartPositions indicates in with position of a train composition a given train part is. In the example it is assumed that the part to Zweisimmen is the second part.

The element JourneyPartPositions can have multiple position informations. This is used for the case when – with arrival in a railway terminus station – the sequence of the train parts changes.

The reference MainPartRef points to the main part of the train composition, this can also mean the JourneyPart of a different Journey. All train parts that reference the same MainPartRef are the coupled parts. NeTEx provides an additional element: With the element Journey-PartCouples in the TimetableFrame the relation can be made explicit, which parts are coupled with what other parts in other ServiceJour-neys:

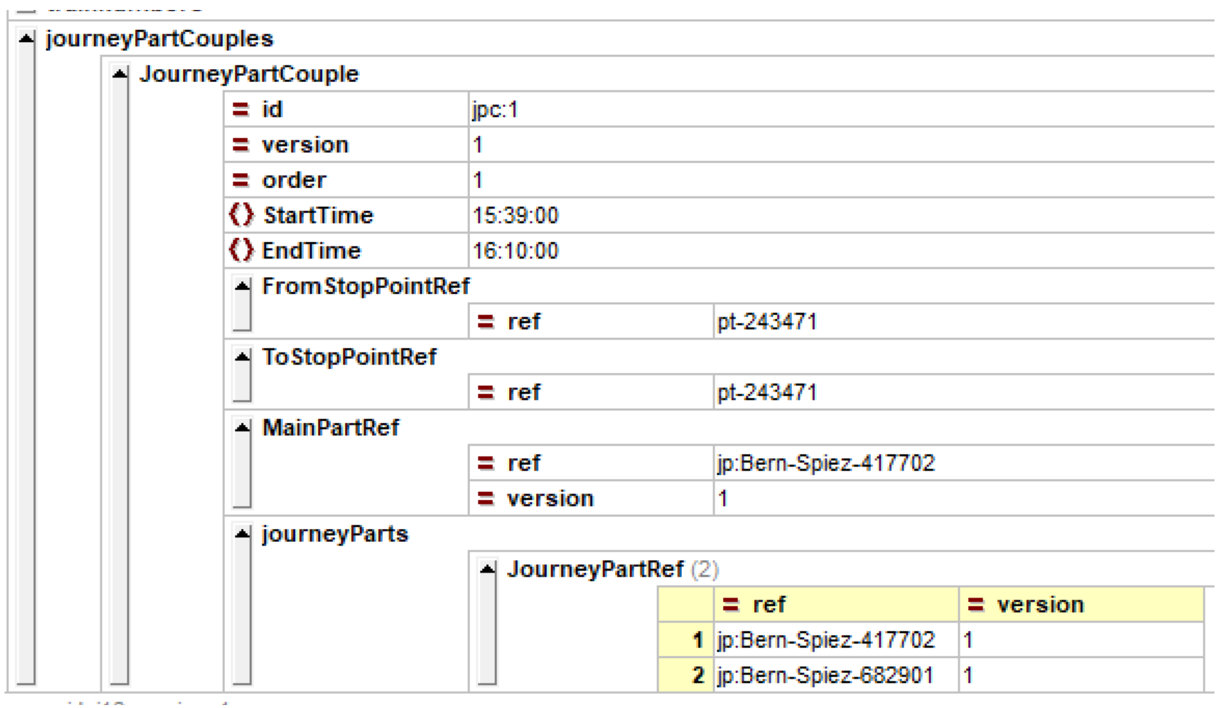


Figure 36: Element "JourneyPartCouple" indicates what parts of a journey are coupled with what parts of what other journey.

StartTime/EndTime and FromStopPointRef and ToStopPointRef are redundant, but they must be identical to the referenced JourneyParts.

The complete journey Bern -> Brig -> Domodossola exists in two variants (with or without stop in Preglia). Therefore two JourneyPartCouples are necessary, even when the varaints are not different in the section Brig -> Spiez.

10.9.2 Structure

Element	Usage	Structure	Description	Example
Attributes: • id • version				

::>	::>	DataManagedObject	JOURNEY PART inherits from DATA MANAGED OBJECT.	
id	1:1	JourneyPartIdType	Identifier of JOURNEY PART.	<JourneyPart id="ch:1:Journey-Part:SJ-51090-7037-0000-2018-2-JP-2" version="any">
Extensions	0:1	ExtensionStructure	Used for changes in Operator, Line and ProductCategory (VM-Art).	<Extensions> <OperatorRef ref="ch:1:Opera-tor:11" version="any" /> <LineRef ref="ch:1:Line:80920_.j18" ver-sion="any" /> <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCate-gory:RB" version="any" /> </Extensions>
To keep compatibility to the HRDF format in Switzerland, we need an OperatorRef, LineRef and a TypeOfProductCategoryRef we need to be able to change information on the JourneyPart that was not possible to be done in pure NeTEx. See example in section 10.9.3 below.				
Description	0:1	xsd:MultiligualString	Description of a JOURNEY PART.	<Description>Genève to Anne-masse</Description>
IGNORED AT IMPORT				
ParentJourneyRef	0:1	VehicleJourneyRefStructure	Parent VEHICLE JOURNEY to which JOURNEY PART belongs.	
We will always only use ServiceJourneyRefs (VehicleJourney is a parent of ServiceJourney).				
MainPartRef	1:1	JourneyPartRefStructure	Parent VEHICLE JOURNEY to which JOURNEY PART belongs.	<MainPartRef version="any" ref="ch:1:JourneyPart:SJ-51090-7037-0000-2018-2-JP-1" />

JourneyPartCoupleRef	0:1	JourneyPartCoupleRefStructure	REFERENCE to JOURNEY PART COUPLE of JOURNEY that JOURNEY PART joins.	
TrainNumberRef	0:1	TrainNumberRefStructure	REFERENCE to JOURNEY PART COUPLE of JOURNEY that JOURNEY PART joins.	<TrainNumberRef ref="ch:1:TrainNumber:51089-7036-0000-2018" version="any" />
Used for changes in TrainNumber (related to SNCF “parité des Trains”).				
FromStopPointRef	0:1	ScheduledStopPointRefStructure	REFERENCE to from start SCHEDULED STOP POINT for JOURNEY PART.	<FromStopPointRef ref="ch:1:ScheduledStopPoint:8501008:2:225236" version="any" />
ToStopPointRef	0:1	ScheduledStopPointRefStructure	REFERENCE to end SCHEDULED STOP POINT for JOURNEY PART.	<ToStopPointRef ref="ch:1:ScheduledStopPoint:8702312:7:225239" version="any" />
StartTime	1:1	xsd:time	Start time of a JOURNEY PART.	<StartTime>00:30:00</StartTime>
EndTime	1:1	xsd:time	End time of a JOURNEY PART.	<EndTime>01:00:00</EndTime>
EndTimeDayOffset	0:1	DayOffsetType	Number of days after journey start time that end time is	<EndTimeDayOffset>1</EndTimeDayOffset>

PurposeOfJourneyPartitionRef	0:1	PurposeOfJourneyPartitionRef-Structure	PURPOSE of JOURNEY PARTITION. See section 5.2.1.	<PurposeOfJourneyPartitionRef ref="hde:coupling">coupling</PurposeOfJourneyPartitionRef>
Allowed are : • Coupling • FacilityChange See section 5.2.1 for Business Requirements.				
facilities	0:*	+ServiceFacilitySetRef	Facilities available during a JOURNEY PART.	
journeyPartPositions	0:1	journeyPartPositions	Positions in Train of JOURNEY PART	See next section.
LATER				

10.9.3 Example

```
<parts>
  <JourneyPart id="ch:1:JourneyPart:ServiceJourney:00370-DB-3-XXXXX:XXXXX_1" version="any">
    <Extensions>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
      <LineRef ref="ch:1:Line:80920_.j18" version="any" />
      <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:RB" version="any" />
    </Extensions>
    <MainPartRef ref="ch:1:JourneyPart:ServiceJourney:00370-DB-3-XXXXX:XXXXX_2" version="any" />
    <TrainNumberRef ref="ch:1:TrainNumber:00001" version="any" />
    <FromStopPointRef ref="ch:1:ScheduledStopPoint:1" version="any" />
    <ToStopPointRef ref="ch:1:ScheduledStopPoint:2" version="any" />
    <StartTime>07:00:00</StartTime>
    <StartTimeDayOffset>0</StartTimeDayOffset>
    <EndTime>10:58:00</EndTime>
    <EndTimeDayOffset>0</EndTimeDayOffset>
    <PurposeOfJourneyPartitionRef ref="ch:1:PurposeOfJourneyPartition:Coupling" version="any"/>
    <facilities>
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:RE" version="any"></ServiceFacilitySetRef>
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:VR" version="any"></ServiceFacilitySetRef>
```

```
    </facilities>
  </JourneyPart>
  <JourneyPart id="ch:1:JourneyPart:ServiceJourney:00370-DB-3-XXXXX:XXXXX_2" version="any">
    <Extensions>
      <OperatorRef ref="ch:1:Operator:11" version="any" />
      <LineRef ref="ch:1:Line:80920_.j18" version="any" />
      <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:RB" version="any" />
    </Extensions>
    <MainPartRef version="any" ref="ch:1:JourneyPart:ServiceJourney:00370-DB-3-XXXXX:XXXXX_2" />
    <TrainNumberRef ref="ch:1:TrainNumber:00002" version="any" />
    <FromStopPointRef ref="ch:1:ScheduledStopPoint:3" version="any" />
    <ToStopPointRef ref="ch:1:ScheduledStopPoint:4" version="any" />
    <StartTime>11:16:00</StartTime>
    <StartTimeDayOffset>0</StartTimeDayOffset>
    <EndTime>19:40:00</EndTime>
    <EndTimeDayOffset>0</EndTimeDayOffset>
    <PurposeOfJourneyPartitionRef ref="ch:1:PurposeOfJourneyPartition:Coupling" version="any"/>
    <facilities>
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:RE" version="any"></ServiceFacilitySetRef>
      <ServiceFacilitySetRef ref="ch:1:ServiceFacilitySet:VR" version="any"></ServiceFacilitySetRef>
    </facilities>
  </JourneyPart>
</parts>
```

10.9.1 Hints

-

10.10 JourneyPartPosition

(NeTEx-2, 7.2.9.4.5)

LATER

Position in train of JOURNEY PART from a given stop. May change in the course of the journey as train components are coupled and uncoupled.

The integer value POSITION IN TRAIN corresponds to the order of the JOURNEY PARTs. The value “1” would mean that the particular vehicle (of the corresponding JOURNEY PART) is at the very front of the coupled vehicle (with respect to the driving direction). “2” would mean at the second position and so on.

10.10.1 Business Requirements

-

10.10.2 Structure

Element	Usage	Structure	Description	Example
Attributes: • id • version				
::>	::>	DataManagedObject	JOURNEY PART POSITION inherits from VERSIONED CHILD.	
id	1:1	IdType	Identifier of JOURNEY PART POSITION.	<JourneyPartPosition id="ch:1:JourneyPartPosition:SJ_2-position2Genève-Aéroport" order="2" version="any">
ParentJourneyPartRef	0:1	ParentJourneyPartRef	Reference to parent JOURNEY PART.	
ScheduledStopPointRef	0:1	ScheduledStopPointRef	SCHEDULED STOP POINT from which the position is valid.	<ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501023:1:225231" version="any" />

PositionInTrain	0:*	xsd:integer	Position of JOURNEY PART in TRAIN - from specified SCHEDULED STOP POINT until otherwise stated.	<PositionInTrain>1</PositionIn-Train>
LATER				

10.10.3 Example

```
<journeyPartPositions>
  <JourneyPartPosition id="ch:1:JourneyPartPosition:SJ_2-position2Annemasse" order="1" version="any">
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501023-1" version="any" />
    <PositionInTrain>1</PositionInTrain>
  </JourneyPartPosition>
  <JourneyPartPosition id="ch:1:JourneyPartPosition:SJ_2-position2Genève-Aéroport" order="2" version="any">
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8501023-1" version="any" />
    <PositionInTrain>3</PositionInTrain>
  </JourneyPartPosition>
</journeyPartPositions>
```

10.10.1 Hints

-

10.11 JourneyPartCouple

(NeTEx-2, 7.2.9.4.3)
LATER
Two or more JOURNEY PARTs of different VEHICLE JOURNEYs served simultaneously by a train set up by coupling their single vehicles.

10.11.1 Business Requirements

See also the Business information of JourneyPart (section 10.9.1) and CoupledJourney (section 10.13.1) to understand the usage of JourneyPartCouple.

We don’t use JourneyPartCouple currently (neither CoupledJourneys) but we will use them in the future for so called “Kurswagen” (KW), i.e. through coaches.

In NeTEx there is no explicit modelling of through coaches. If the idea is only to model the fact that a continuous journey exists between the start of the first journey to the end of the last journey, then all concerned journeys can be meshed together with JourneyMeeting elements.

This is not quite precise, then the connection does not exist for all parts of the trains and the internal interchange is not shown. Also the position of the through coaches is not shown. The technical correct representation is done also with JourneyPartCouple:

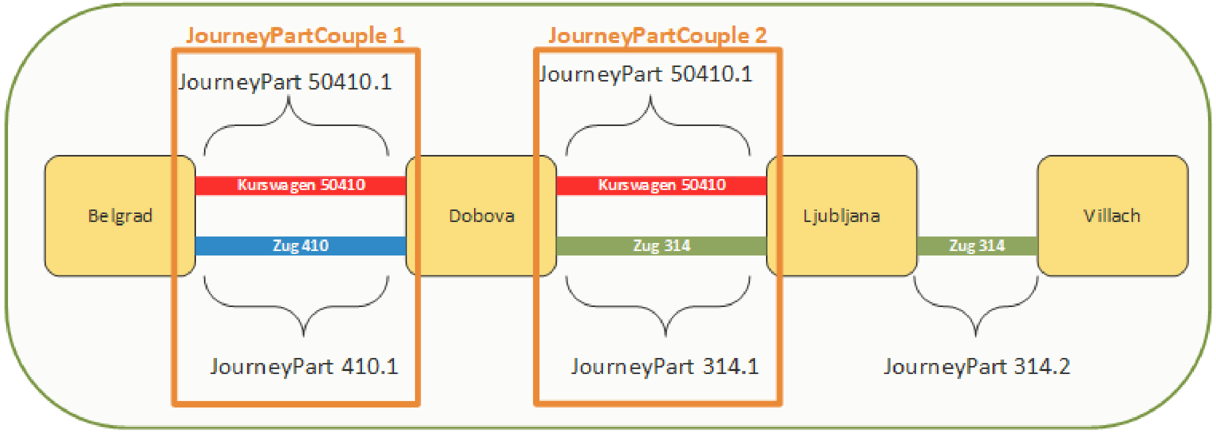


Figure 37: Illustrated JourneyPartCouple example.

The through coache is modelled as its own journey. The stops where the coupling occurs are connected with JourneyPart elements. These elements are then connected with the JourneyPartCouple elements.

10.11.2 Structure

Element	Usage	Structure	Description	Example
Attributes: • id • order • version				

::>	::>	DataManagedObject	JOURNEY PART COUPLE inherits from DATA MANAGED OBJECT.	
id	1:1	JourneyPartCoupleIdType	Identifier of JOURNEY PART COUPLE.	
Description	0:1	xsd:MultiligualString	Description of a JOURNEY PART COUPLE.	
IGNORED AT IMPORT				
StartTime	0:1	xsd:time	Start time of JOURNEY PART.	<StartTime>23:37:00</StartTime>
EndTime	1:1	xsd:time	End time of JOURNEY PART.	<EndTime>01:00:00</EndTime>
FromStopPointRef	0:1	ScheduledStopPointRefStructure	Point at which this JOURNEY PART starts.	<FromStopPointRef version="any" ref="ch:1:ScheduledStopPoint:8501023:1:225231" />
ToStopPointRef	0:1	ScheduledStopPointRefStructure	Point at which this JOURNEY PART ends.	<ToStopPointRef version="any" ref="ch:1:ScheduledStopPoint:8702312:7:225239" />
BlockRef	0:1	BlockRefStructure	Reference to BLOCK associated with JOURNEYPART COUPLE.	
NOT TO BE USED				

MainPartRef	0:1	JourneyPartRefStructure	Main Journey JOURNEY PART of coupling.	<MainPartRef ref="ch:1:JourneyPart:SJ-51090-7037-0000-2018-1-JP-1" version="any" />
journeyParts	0:1	+JourneyPart	JOURNEY PARTs in JOURNEY PART COUPLE.	
TrainNumberRef	1:1	TrainNumberRefStructure	Start time of a JOURNEY PART.	<TrainNumberRef ref="ch:1:Train-Number:51090-7037-0000-2018" version="any" />

10.11.3 Example

```
<journeyPartCouples>
    <!--The JourneyPart's Coppet-Genève and Versoix-Genève share Trains and ServiceFacilities until Genéve where the trains decouple.-->
    <JourneyPartCouple id="ch:1:JourneyPartCouple:jpc_vj2-3" order="1" version="any">
      <StartTime>23:56:00</StartTime>
      <EndTime>00:35:00</EndTime>
      <FromStopPointRef ref="ch:1:ScheduledStopPoint:8501022-1" version="any" />
      <ToStopPointRef ref="ch:1:ScheduledStopPoint:8501008-3" version="any" />
      <MainPartRef ref="ch:1:JourneyPart:SJ-51090-7037-0000-2018-2-JP-1" version="any" />
      <journeyParts>
        <JourneyPartRef ref="ch:1:JourneyPart:SJ-51090-7037-0000-2018-2-JP-1" version="any" />
        <JourneyPartRef ref="ch:1:JourneyPart:SJ-66358-7038-0000-2018-3-JP-1" version="any" />
      </journeyParts>
      <TrainNumberRef ref="ch:1:TrainNumber:51089-7036-0000-2018" version="any" />
    </JourneyPartCouple>
</journeyPartCouples>
```

10.11.4 Hints

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10.12 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 (school, spectacle, etc.).*
- *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 INTER-CHANGEs.*
- *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.

10.12.1 Business Requirements

We use JourneyMeetings together with its element Reason for so called “Flügelung” (splitting/joining) and other StaySeated scenarios, or more specific, for the mapping of HRDF DURCHBI. DURCHBI provides data for the following scenarios:

- **Splitting / Joining:**
  A DURCHBI entry may indicate "Flügelungen", i.e., cases where either two separate vehicles join each other to form a new journey, or two vehicles decouple/split to form at least two separate journeys. This is generally already apparent in HRDF DUCHBI because

in such scenarios a one-to-many relation (one journey splits into multiple journeys) or a many-to-one relation (multiple journeys join each other) is necessary. See also the following example of a Train splitting at StopPlace "Spiez" (Figure 38 and Figure 39).

- **Change of Tariff Section:**
  A DURCHBI entry may indicate that two journeys are coupled together, and that the region attribute / tariff section changes in between those journeys. For example, in cases where a bus stops at a certain StopPlace and is assigned to another tariff section, but passenger may stay seated to continue the journey. These cases are not apparent in HRDF DURCHBI itself. To find out whether a given DURCHBI entry corresponds to such a case, one has to first match the two journey/operator tuples with the respective entries in FPLAN. One must then ascertain whether those journeys have different *I RN attributes (also called region code or PLADIS number). See Figure 40 and Figure 41 for an example.
- **Change of Line or other reasons:**
  A DURCHBI entry may indicate that two journeys are coupled together, and that the Line or Attributes change in between those journeys (while *I RN, i.e. the region code, stays constant or is absent). For example, in cases where a bus stops at a certain StopPlace and is assigned to another Line, but passenger may stay seated to continue the journey. Another example would be a train that is assigned to another Line and Operator while crossing a border. These cases are not apparent in HRDF DURCHBI itself. To find out whether a given DURCHBI entry corresponds to such a case, one has to first match the two journey/operator tuples with the respective entries in FPLAN. One must then ascertain whether those journeys have different line numbers (*L attributes) or contain a border point (*GR attribute).

10.12.1.1 DURCHBI (HRDF)

DURCHBI describes the coupling of ServiceJourneys at a given StopPlace (with a given validity in form of ValidDayBits), and provides the following information (examples are given in brackets):

- TrainNumber / *Z value ("Fahrtnummer) of the first journey (000013)
- Operator of the first journey (000823)
- The last StopPlace of the first journey (8573205)
- TrainNumber / *Z value ("Fahrtnummer") of the second journey (099020)
- Operator of the second journey (000801)
- Validity (called "Verkehrsperiode" or VP *) that points to the ValidDayBits (000264)
- The first StopPlace of the second journey (8500897)
- Further references (for better FPLAN matching) as comments after the "%" symbol

```
000004 000801 8573205 000289 000801 000000 8573205    % Zuweisung ohne erweiterte Referenz
000004 000823 8500899 000020 000823 000264 8500899    % 00899 50906T R 50914T R 01:15 - 04:00  01:15 - 04:00
000006 000801 8573205 000298 000801 000000 8573205    % Zuweisung ohne erweiterte Referenz
```

```
000006 000823 8500899 000022 000823 000264 8500899    % 00899 50906T R 50914T R 01:15 - 04:00  01:15 - 04:00
000008 000801 8573205 000307 000801 000000 8573205    % Zuweisung ohne erweiterte Referenz
000013 000823 8500897 000003 000823 000264 8500897    % 00897 50914T H 50906T H 01:15 - 04:00  01:15 - 04:00
000015 000823 8500897 000005 000823 000264 8500897    % 00897 50914T H 50906T H 01:15 - 04:00  01:15 - 04:00
000019 000801 8573205 000359 000801 000000 8573205    % Zuweisung ohne erweiterte Referenz
000020 000801 8570884 099020 000801 000000 8570884    % Les Agettes, garage
000022 000801 8573205 000374 000801 000000 8573205    % Zuweisung ohne erweiterte Referenz
```

* The VP / bitfield-number corresponds to ValidDayBits in NeTEx (or more precisely, the VP is represented by an AvailabilityCondition that contains the ValidDayBits). VP examples are "000000" (meaning "always" or "every single day of the timetable year") or "000015" meaning only weekdays (including holidays). See also chapter 9.3.1 for more details.

10.12.1.2 Reason of JourneyMeeting

Whether the NeTEx element “Reason” is omitted or set to splitting, joining or tariffSection depends on the *Z values (TrainNumbers) and the StopPlaces ("Betriebspunkte") of the DURCHBI rows/entries as well as on the corresponding (i.e. matched) journeys in FPLAN:

- If multiple DURCHBI rows have different TrainNumbers in the first column and the same TrainNumber in the fourth column (for the same StopPlace), then those rows are mapped to a NeTEx JourneyMeeting with “Reason=**joining**”. See Figure 38 and Figure 39 for an example.
- If multiple DURCHBI rows have the same TrainNumber in the first column and different TrainNumbers in the fourth column (for the same StopPlace), then those rows are mapped to a JourneyMeeting with “Reason=**splitting**”.
- If a DURCHBI row has a unique combination of TrainNumber (*Z value), Operator and StopPlace (see Figure 40), then the row is mapped to a JourneyMeeting with "Reason=**tariffSection**" or Reason is omitted altogether. Unique combination may also mean that the matching process, i.e. finding the exact journey variants in FPLAN that correspond to the DURCHBI TrainNumbers, results in a single journey for each of the *Z values. Whether Reason is omitted or set to tariffSection depends on the *I RN attribute in FPLAN (see section 10.12.1 for an explanation and examples). Figure 40 and Figure 41 illustrate a tariffSection example.

10.12.1.3 DURCHBI Example (HRDF)

In HRDF journeys are modelled in a way that a new journey starts at each point where the train composition changes. A HRDF journey that splits into two new journeys (a so called "Flügelung" scenario) could have the following DURCHBI entries:

```
004161 000033 8507483 004261 000033 000000 8507483
004161 000033 8507483 006813 000033 000000 8507483
```

Figure 38: Excerpt from HRDF DURCHBI showing a journey that splits into two separate journeys at the StopPlace 8507483 (Spiez).

This example scenario can be described as follows:

- A Journey (from Bern → Spiez) with TrainNumber 004161 and Operator code 000033 splits into the following two journeys (in Spiez):
  - A Journey with TrainNumber 004261 and the same Operator, with directions Spiez → Brig → Domodossola (I)
  - A Journey with TrainNumber 006813 and the same Operator, with directions Spiez → Zweisimmen

The complete HRDF example is illustrated in Figure 39.

The VP "000000" indicates that the DURCHBI entries are valid "always", or more precisely for whatever ValidityPeriods that are referenced in the matching FPLAN journeys. This is illustrated in the following figure as well as the NeTEx example.

Note that the journey with *Z=4261 (Spiez → Brig → Domodossola) exists in FPLAN in two variants (variant number 101 and 102), and that those two variants are valid for different ValidityPeriods (called “Verkehrsperiode” or VP in HRDF). In this example (see also the following figure) the journey “*Z 004261 000033   101” is valid from Monday to Saturday (VP “000075”) whereas the journey “*Z 004261 000033   102” is valid only on Sunday (VP “000066”). As a result, the respective JourenyMeetings each reference an AvailabilityCondition with ValidDay-Bits equal to the corresponding HRDF BITFELD number (which is matched with the VP in FPLAN).

```
004161 000033 8507483 004261 000033 000000 8507483
004161 000033 8507483 006813 000033 000000 8507483
```

HRDF DURCHBI

HRDF FPLAN

```
*Z 004161 000033   101
*G RE  8507000 8507483
*A VE 8507000 8507483
*A BK 8507000 8507483
*A FL 8507000 8507483
*A R  8507000 8507483
*I ZN                         000006429
*R H
8507000 Bern                          00739
8507006 Münsingen              00749  00750
8507100 Thun                   00759  00801
8507483 Spiez                  00810
```

Splitting / Decoupling

```
*Z 006813 000033   101
*G R   8507483 8507290
*A VE 8507483 8507290
*A BK 8507483 8507290
*A R  8507483 8507290
*A X  8507299 8507299
*A X  8507288 8507288
*A X  8507287 8507287
*A X  8507286 8507286
*A X  8507294 8507294
*A X  8507284 8507284
*I ZN                         000006429
*R H
0507403 Spiez                         00012
8507299 Lattigen bei Spiez     00815  00815
8507288 Eifeld                 00816  00816
8507298 Wimmis                 00819  00819
8507287 Burgholz               00822  00822
8507297 Oey-Diemtigen          00824  00824
8507296 Erlenbach im Simment   00828  00829
8507286 Ringoldingen           00831  00832
8507295 Därstetten             00834  00834
8507294 Weissenburg            00836  00836
8507293 Oberwil im Simmental   00843  00843
8507284 Enge im Simmental      00845  00845
8507292 Boltigen               00849  00850
8507290 Zweisimmen             00859
```

```
*Z 004261 000033   101
*G RE  8507483 8301003
*A VE 8507483 8301003 000075
*A BK 8507483 8301003
*A R  8507483 8301003
*A X  8507481 8507481 000075
*A X  8507473 8507473 000075
*I ZN                         000006429
*R H
8507483 Spiez                         00812
8507481 Mülenen                00817  00817
8507480 Reichenbach im Kande   00819  00819
8507478 Frutigen               00824  00825
8507475 Kandersteg             00840  00841
0000136 Lötschberg-Bergstrec -00847 -00847
8507474 Goppenstein            00854  00855
8507473 Hohtenn                00900  00900
8507472 Ausserberg             00906  00906
8501609 Brig                   00920  00922
0000142 Simplontunnel         -00928 -00928
8501952 Iselle di Trasquera    00935  00936
8501951 Varzo                  00941  00941
8301003 Domodossola (I)        00954
```

```
*Z 004261 000033   102
*G RE  8507483 8301003
*A VE 8507483 8301003 000066
*A BK 8507483 8301003
*A R  8507483 8301003
*A X  8507481 8507481 000066
*A X  8507473 8507473 000066
*I ZN                         000006429
*R H
8507483 Spiez                         00812
8507481 Mülenen                00817  00817
8507480 Reichenbach im Kande   00819  00819
8507478 Frutigen               00824  00825
8507475 Kandersteg             00840  00841
0000136 Lötschberg-Bergstrec -00847 -00847
8507474 Goppenstein            00854  00855
8507473 Hohtenn                00900  00900
8507472 Ausserberg             00906  00906
8501609 Brig                   00920  00922
0000142 Simplontunnel         -00928 -00928
8501952 Iselle di Trasquera    00935  00936
8501951 Varzo                  00941  00941
8301003 Domodossola (I)        00954
```

Figure 39: HRDF example of a splitting scenario that is represented in NeTEx as a JOURNEY MEETING.

The example above would be mapped to the following JourneyMeetings (keep in mind that we use simplified IDs here):

```xml
<JourneyMeeting id="ch:1:JourneyMeeting:022948f1-76fc-4ad8-afdb-2267ad7331b4" version="any">
  <AtStopPointRef ref="ch:1:ScheduledStopPoint:8507483" version="any" />
  <FromJourneyRef ref="ch:1:ServiceJourney:33:4161-101" version="any" />
  <ToJourneyRef ref="ch:1:ServiceJourney:33:6813-101" version="any" />
  <EarliestTime>08:10:00</EarliestTime>
  <LatestTime>08:12:00</LatestTime>
  <Reason>splitting</Reason>
</JourneyMeeting>
<JourneyMeeting id="ch:1:JourneyMeeting:02124ea1-1476-4a10-4h63-ef4e2e24fhs3" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityConditionRef:75" version="any" />
  </validityConditions>
  <AtStopPointRef ref="ch:1:ScheduledStopPoint:8507483" version="any" />
  <FromJourneyRef ref="ch:1:ServiceJourney:33:4161-101" version="any" />
  <ToJourneyRef ref="ch:1:ServiceJourney:33:4261-101" version="any" />
  <EarliestTime>08:10:00</EarliestTime>
  <LatestTime>08:12:00</LatestTime>
  <Reason>splitting</Reason>
</JourneyMeeting>
<JourneyMeeting id="ch:1:JourneyMeeting:02124ea1-1476-4a10-a1a3-ef4e2e24fba4" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityConditionRef:66" version="any" />
  </validityConditions>
  <AtStopPointRef ref="ch:1:ScheduledStopPoint:8507483" version="any" />
  <FromJourneyRef ref="ch:1:ServiceJourney:33:4161-101" version="any" />
  <ToJourneyRef ref="ch:1:ServiceJourney:33:4261-102" version="any" />
  <EarliestTime>08:10:00</EarliestTime>
  <LatestTime>08:12:00</LatestTime>
  <Reason>splitting</Reason>
</JourneyMeeting>
```

Careful:

HRDF DURCHBI only provides a StopPlace reference without the Quay (at which the splitting/joining actually happens). However, a JourneyMeeting can be assigned to a specific Call (and therefore Quay) by referencing it inside the Arrival and/or Departure element of Call (see section 10.8). Having said that, we don't use this reference in Switzerland (SNCF does).

Now, consider the following DURCHBI example:

```
000501 000801 8579362 000104 000801 000000 8579362    % Oberwald, Bahnhof
000501 000801 8580362 000502 000801 000000 8580362    % Wohlen AG, Schulen Junkholz
000501 000801 8581040 000502 000801 000000 8581040    % Igis, Castaletweg
000501 000801 8588518 000502 000801 000000 8588518    % Bramois, Institut
000501 000801 8588518 019002 000801 000000 8588518    % Bramois, Institut
```

Figure 40: Excerpt from HRDF DURCHBI showing a more complex scenario for which a matching in FPLAN with the TrainNumber and Operator yields countless results.

If you search for the journey "*Z 000501 000801" in FPLAN, you get 13 hits, even more for "*Z 000104 000801" (31 hits). How do we match the DURCHBI journeys in FPLAN? The following process can be used:

1) Match the DURCHBI journey in FPLAN with the TrainNumber and Operator (for example "*Z 000501 000801").
2) Match the resulting journeys with the StopPlace information provided in the DURCHBI entry (called “Betriebspunkt” or BP in HRDF).
3) If there still exist multiple possibilies, or for validation purposes, match the ValidDayBits of the resulting journeys (called “Verkehrsperiode” or VP in HRDF). More precisely, the ValidDayBits or hex value of the VP (in BITFELD) of the two journeys in the DURCHBI entry must have a non-zero intersection.

If we apply this matching process to the DURCHBI entry in the example above (see Figure 40), we get the following result:

1) Matching the journeys in FPLAN yields:
   - 13 journeys with "*Z 000501 000801"
   - 31 journeys with "*Z 000104 000801"
2) Matching the resulting journeys with the StopPlace / BP "8579362" yields (see for the resulting journeys):
   - only a single journey with "*Z 000501 000801" that contains the StopPlace "8579362" (variant 011)
   - only a single journey with "*Z 000104 000801" that contains the StopPlace "8579362" (variant 024)
3) Extracting the ValidDayBits / VPs yields a maximum in overlapping:
   - the journey "*Z 000501 000801   011" is valid for VP "001177" (last value in row “*A VE”)
   - the journey "*Z 000104 000801   024" is also valid for VP "001177"

```
*Z 000501 000801   011
*G BUS 8573140 8579362
*A VE 8573140 8579362 001177
*A VR 8573140 8579362
*I RN                        000008840
*I hi 8573140 8579362        000008725
*I PL 8573140 8579362        000008841
*L 681      8573140 8579362
*R H R001788 8573140 8579362
8573140 Andermatt, Bahnhof          00830
8573141 Hospental, Dorf      00835  00835
8573146 Hospental, Zumdorf   00838  00838
8573147 Realp, Post          00842  00842
8505760 Galenstock (Furka)   00854  00854
8508982 Tiefenbach (Furka)   00857  00857
8505549 Sidelenbach (Furka)  00900  00900
8505759 Furkapass, Hotel Fur 00905  00905
8505899 Furka Passhöhe       00906  00906
8505754 Belvedere Furka      00920  00920
8580044 Oberwald VS, Muttbac 00923  00923
8501660 Gletsch, Post        00935  01005
8580208 Oberwald VS, Rhonequ 01010  01010
8580384 Oberwald VS, Dorf    01015  01015
8579362 Oberwald, Bahnhof    01020
```

Bus changes LINEs at the stop 8579362, and is assigned to a new TrainNumber and region

```
*Z 000104 000801   024
*G BUS 8579362 8571581
*A VE 8579362 8571581 001177
*A VR 8579362 8571581
*I RN                        000008724
*I hi 8579362 8571581        000008725
*I PL 8579362 8571581        000008726
*L 161      8579362 8571581
*R R R000808 8579362 8571581
8579362 Oberwald, Bahnhof           01030
8580384 Oberwald VS, Dorf    01032  01032
8580208 Oberwald VS, Rhonequ 01037  01037
8501660 Gletsch, Post        01042  01046
8580209 Grimsel, Rest. Grims 01056  01056
8508762 Grimsel Passhöhe     01100  01131
8583733 Grimsel, Summerloch  01137  01137
8571611 Räterichsboden       01140  01140
8571613 Handegg, Kunzentännl 01143  01143
8508764 Handegg, Gelmerbahn  01147  01147
8571612 Guttannen, Breitwald 01149  01149
8508763 Guttannen, Dorf      01156  01156
8571610 Guttannen, Boden     01201  01201
8571609 Guttannen, Bänzlaui  01201  01201
8571608 Innertkirchen, Inner 01204  01204
8508767 Innertkirchen, Grims 01208  01208
8571595 Innertkirchen, Winke 01209  01209
8571594 Aareschlucht, Ost    01210  01210
8571583 Lammi                01212  01212
8571582 Willigen, Dorf       01214  01214
8581371 Meiringen,Alpbach Sp 01215  01215
8581370 Meiringen, Alpbach P 01216  01216
8571581 Meiringen, Bahnhof   01225
```

Figure 41: Excerpt of HRDF FPLAN showing the resulting journeys of the DURCHBI matching example above.

Careful:
The information about which part of the train to board must be transmitted as a Notice (and therefore also as a NoticeAssignment).

10.12.2 Structure

Element	Usage	Structure	Description	Example
journeyMeetings		-structure		
Attributes: • id • version				
::>	::>	DataManagedObject	JOURNEY MEETING inherits from DATA MANAGED OBJECT.	
id	1:1	IdType	Identifier of JourneyMeeting	
validityConditions	0:*	AvailabilityConditionRef	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”).	
AvailabilityCondition with ValidDayBits (BITFELD) replaces DayType in Swiss Public Transport. The AvailabilityConditions are centrally stored and only referenced here. ValidDayBits must be correctly set.				
AtStopPointRef	1:1	ScheduledStopPointRef	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.	
Description	0:1	xsd:MultilingualString	Description of JOURNEY MEETING.	
IGNORED AT IMPORT				
EarliestTime	0:1	xsd:time	Earliest time for JOURNEY MEETING.	
EarliestTime and LatestTime are currently the same.				
LatestTime	0:1	xsd:time	Latest time for JOURNEY MEETING.	
EarliestTime and LatestTime are currently the same.				
Reason	0:1	ReasonForMeetingEnum	Reason for JOURNEY MEETING.	splitting

Value	**Description**
joining	Meeting is joining of two services.
splitting	Meeting is splitting of two services.
tariffSection	Meeting is for start of a Tariff Section
serviceFacility	Meeting is for start of service Facilities.

Table 47: ReasonForMeeting – Allowed values (NeTEx-2, 7.2.7.3.5).

A reason “staySeated” for cases where, for example, a bus just turns around and traverses the same stops (in reverse), is currently missing in the NeTEx schema. We hope to add it later via Change Request. In the meantime we just omit the Reason element altogether in those cases.

MaximumWaitTime	0:1	xsd:duration	Maximum wait time for INTERCHANGE.	PT5M
NOT TO BE USED				
ConnectionRef	0:1	ConnectionRefStructure	Reference to CONNECTION at which JOURNEY MEETING takes place.	
LATER				
ConnectingStopPointRef	0:1	ScheduledStop-PointRefStructure	SCHEDULED STOP POINT to which JOURNEY MEETING connects if different from current stop interchange.	

ConnectingStopPoint-Name	0:1	xsd:MultilingualString	Name of CONNETCING STOP POINT.	
ConnectingJourneyView	0:1	ConnectingJourneyStruc-ture	Simplified view of connecting SERVICE JOURNEY.	
NOT TO BE USED				
ConnectingLineView	0:1	ConnectingLineStructure	Simplified view of connecting LINE.	
NOT TO BE USED				

10.12.3 Example

```
<JourneyMeeting id="ch:1:JourneyMeeting:022948f1-76fc-4ad8-afdb-2267ad7331b4" version="any">
  <AtStopPointRef ref="ch:1:ScheduledStopPoint:8507483" version="any" />
  <FromJourneyRef ref="ch:1:ServiceJourney:33:4161-101" version="any" />
  <ToJourneyRef ref="ch:1:ServiceJourney:33:6813-101" version="any" />
  <EarliestTime>08:10:00</EarliestTime>
  <LatestTime>08:12:00</LatestTime>
  <Reason>splitting</Reason>
</JourneyMeeting>
```

10.12.4 Hints

-

10.13 CoupledJourney

(NeTEx-2, 7.2.9)
An important additional issue for rail systems compared to conventional bus systems, is the operation of vehicles coupled in trains, rather than running as separate autonomous vehicles. One consequence is the additional possibility to adjust the service supply to the demand as regards the types of vehicle. Trains may be shortened or prolonged during the day, or even within one service journey.

Furthermore the description of journeys to the passenger is more complex as train may be separated in two (or more) parts at a particular branching point, where both train parts continue their journey on different routes towards separate destinations. Conversely, two short trains *coming from different feeding routes may be scheduled to meet at a joining point, where they are coupled to continue their service as one long train on a common route.*

NeTEx separately represents the coupling of vehicles in a TRAIN and the linking of JOURNEY PARTs of VEHICLE JOURNEYs.

The concept of a COUPLED JOURNEY is related to the action of vehicle coupling. 'Vehicle' is understood as a unit remaining stable all along a VEHICLE JOURNEY. Therefore, a 'vehicle' may be either a single vehicle (e.g. a single tramway vehicle) or a TRAIN composed of several TRAIN ELEMENTs or a COMPOUND TRAIN composed of elementary TRAINs.

The considerations related to the vehicle coupling actions are based on the concept of VEHICLE TYPE.

The entity TRAIN describes an elementary train and is thus a VEHICLE TYPE. A TRAIN consists of TRAIN ELEMENTs assembled together. The composition of the TRAIN is provided by a TRAIN COMPONENT, giving the order of the TRAIN ELEMENT in the TRAIN.

Like any vehicle, a TRAIN operates VEHICLE JOURNEYs. If there is no coupling action during a VEHICLE JOURNEY, there is only one TRAIN for the journey. Two or more TRAINs may be coupled together for a part of a VEHICLE JOURNEY, or for longer periods, during which the composition of the compound train changes (thus the VEHICLE TYPE). Such coupled vehicles are represented by the concept of COMPOUND TRAINs.

Two distinct points of view of vehicle coupling need to be taken into account:

- *For operational management, which will typically manage work periods for each VEHICLE TYPE. Such periods are described as BLOCKs, worked from a PARKING POINT to another, composed of sets of VEHICLE JOURNEYs. BLOCKs may be coupled (building COMPOUND BLOCKs, representing the work of a vehicle during the time it is coupled to another vehicle) or separated for a while, building BLOCK PARTs, i.e. the parts of a BLOCK corresponding to the different JOURNEY PARTs of the VEHICLE JOURNEYs in a BLOCK. In this modelling TYPE OF COUPLING allows for a classification of BLOCK PARTs, for example to indicate whether the coupling or the separation may occur at the start or at the end of a BLOCK.*
- *For passenger information, which is not concerned by the BLOCK description but by the fact that VEHICLE JOURNEYs are either coupled or not; these actions are occurring during a journey (at an intermediate point, e.g. where two routes meet, or separation where they diverge), JOURNEY PARTs are considered to describe the different journey parts. Any part of a VEHICLE JOURNEY that is coupled with another is qualified with a JOURNEY PART. In such a case, the PURPOSE OF JOURNEY PARTITION is "coupling". One of the coupled JOURNEY PARTs is considered to be the main part of the compound vehicle formed. The entity JOURNEY PART COUPLE represents the coupling of one JOURNEY PART to the main one. In the case of the separation of vehicles, JOURNEY PARTs are created and the PURPOSE OF JOURNEY PARTITION is "separation".*

10.13.1 Business Requirements

We don't use it currently (neither the related JourneyPartCouples) but we will use CoupledJourneys in the future for through coach (so called "Kurswagen" or "KW"). See also the Business information of JourneyPart in section 10.9.1 and JourneyPartCouple in section 10.11.1.

"Kurswagen" is a coach/carriage (other than the locomotive) that is joined/coupled with multiple other trains throughout its journey. In NeTEx we represent it by a series of loosely coupled JourneyParts.

In HRDF FPLAN each through coach is labeled with a 5-9 digit number in the *KW field. A CoupledJourney is needed for the assignment of this "Kurswagen" number to the series of journeys that the specific through coach is comprised of. Each of these journeys contains at least two JourneyParts, one for the "main" journey and one for the through coach. We then couple the related JourneyParts (possibly more than two) by specifying a JourneyPartCouple that assigns an origin and destination as well as a TrainNumber to each series of JourneyParts.

```
*KW 00037                                                  %
*KWZ 00472 80____ 8500200 Zuerich HB         8000026 Basel Bad Bf      02215  02319
*KWZ 00470 80____ 8000026 Basel Bad Bf       8000152 Hannover Hbf      02340  00612
*KWZ 02746 80____ 8000152 Hannover Hbf       8000050 Bremen Hbf        00644  00754
*A VE 8500200 8000050 001339                               %
*A SL 8500200 8000050                                      %
*A VE 8010085 8010097 046149                               %
```

Figure 42: Excerpt of HRDF FPLAN showing a through coach ("Kurswagen") that contains, i.e. references three different journeys (labeled with *KWZ) or, in NeTEx terms, the JourneyParts of the three coupled journeys that correspond to the through coach.

The example above would be mapped to the following CoupledJourney (keep in mind that we use simplified IDs here):

```
<CoupledJourney id="ch:1:CoupledJourney:b9f4c98c-3d3d-4c93-983c-342c6088c5dd" version="any">
  <Description>00037</Description>
  <journeys>
    <VehicleJourneyRef ref="ch:1:ServiceJourney:80___:472" version="any" />
    <VehicleJourneyRef ref="ch:1:ServiceJourney:80___:470" version="any" />
    <VehicleJourneyRef ref="ch:1:ServiceJourney:80___:2746" version="any" />
  </journeys>
</CoupledJourney>
```

The rest of the KW data (including stop points, arrival-/departure time and all the *A fields) is mapped with the JourneyPart and Journey-PartCouple model (see chapter 10.9 and 10.11.1).

10.13.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	DataManagedObject	COUPLED JOURNEY inherits from DATA MANAGED OBJECT	
• id • version				
id	1:1	CoupledJourneyIdType	Identifier of COUPLED JOURNEY.	id="ch:1:CoupledJourney:cj_0-2"
Name	0:1	MultilingualString	Name of COUPLED JOURNEY.	
Description	0:1	MultilingualString	Description of COUPLED JOURNEY.	00037
Equal to the value of the *KW row from HRDF FPLAN.				
TrainBlockRef	0:1	BlockRef	BLOCK supplying that COUPLE JOURNEY.	
IGNORED AT IMPORT				
journeys	0:*	VehicleJourneyRef	JOURNEYs linked by of COUPLED JOURNEY.	
Careful: VehicleJourneyRef points to a ServiceJourneyID. See example below.				

10.13.3 Example

```
<coupledJourneys>
    <CoupledJourney id="ch:1:CoupledJourney:3jf4c98c-3d3d-k86j-983c-342c60875htd" version="any">
      <Description>>00037</Description>
      <journeys>
        <VehicleJourneyRef ref="ch:1:ServiceJourney:11-18404-101-1" version="any" />
        <VehicleJourneyRef ref="ch:1:ServiceJourney:11-96550-101-1" version="any" />
      </journeys>
    </CoupledJourney>
```

```xml
    <CoupledJourney id="ch:1:CoupledJourney:h7f4c90c-93it-k86j-983c-gr3c60875htd" version="any">
      <Description>00043</Description>
      <journeys>
        <VehicleJourneyRef ref="ch:1:ServiceJourney:767-307-3-1" version="any" />
        <VehicleJourneyRef ref="ch:1:ServiceJourney:11-9780-101-1" version="any" />
      </journeys>
    </CoupledJourney>
</coupledJourneys>
```

10.13.4 Hints

-

10.14 JourneyFrequency

(NeTEx-2, 7.2.6.5.5)
Often in passenger information systems there is a requirement to show multiple journeys as a single column in a timetable for example "And then every 20 minutes until 6 pm". The JOURNEY FREQUENCY model allows groups of journeys to be aggregated using a TEMPLATE JOURNEY and an overall frequency to be specified for them, using either a HEADWAY JOURNEY GROUP (e.g. 'every 10 minutes') or a RHYTHMICAL JOURNEY GROUP – one that runs at a regular interval past the hour (for example 'xxh10', 'xxh25' and 'xxh45').

Even though every scheduled VEHICLE JOURNEY has a specific set of PASSING TIMEs that it will run to, these will not necessarily be revealed to the passenger and a JOURNEY FREQUENCY can be used to present the journey as frequency based.

For passenger information purposes it is possible to exchange a TEMPLATE VEHICLE JOURNEY without any concrete VEHICLE JOURNEYs.

10.14.1 Business Requirements

In many cases journeys with Frequencys are denormalized into different ServiceJourney by the SBB system. However the JourneyFrequency element may be used. For cable car and Seilbahnen this is used mostly. If a journey id exists the denormalization always occurs.

Will be filled from HRDF FPLAN *Z.

10.14.1 Structure

Element	Usage	Structure	Description	Example
Description	0:1	MultilingualString	Text description to use for frequency. E.g. ‘Every five minutes’.	
ScheduledHeadwayInterval	0:1	duration	Scheduled normal HEADWAY INTERVAL.	PT12M
This is the only element to be used				
MinimumHeadwayInterval	0:1	duration	Minimum HEADWAY INTERVAL.	
NOT TO BE USED				
MaximumHeadwayInterval	0:1	duration	Maximum HEADWAY INTERVAL.	
NOT TO BE USED				
FrequencyRegulated	0:1	boolean	Whether frequency falls under regulatory agreement or not.	
NOT TO BE USED				
HeadwayDisplay	0:1	HeadwayUseEnum	Use to be made of HEADWAY INTERVAL information when displaying to public. Default is 'Display Instead of Passing Times'.	DisplayInsteadOfPassing-Times
NOT TO BE USED				

10.14.2 Example

Example of how to indicate the CALL frequency with the FREQUENCY element:

```
<Call id="hde:tvj_24o_02_001" version="any" order="1">
    <ScheduledStopPointRef version="any" ref="mybus:SSP_001"/>
    <Arrival>
        <ForAlighting>false</ForAlighting>
    </Arrival>
    <Departure>
        <Time>10:20:00.0Z</Time>
    </Departure>
    <Frequency>
        <ScheduledHeadwayInterval>PT8M</ScheduledHeadwayInterval>
    </Frequency>
</Call>
```

Example on how to construct a frequency based TemplateServiceJourney with the various FREQUENCY GROUP classes:

```
<TemplateServiceJourney version="any" id="hde:tvjh_24o_01">
    ...
    <calls>
        ...
    </calls>
    <frequencyGroups>
        <HeadwayJourneyGroup version="any" id="hde:hjg_24o_01">
            ...
        </HeadwayJourneyGroup>
        <RhythmicalJourneyGroup version="any" id="hde:rjg_24o_01">
            ...
        </RhythmicalJourneyGroup>
    </frequencyGroups>
</TemplateServiceJourney>
```

10.14.1 Hints

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10.15 JourneyFrequencyGroup

(NeTEx-2, 7.2.6.5.1)
NOT TO BE USED
JOURNEY FREQUENCY GROUP defines a set of JOURNEYs in order to describe special frequency behaviour like frequency based services or rhythmical services (one that runs at a regular interval past the hour, for example ‘xxh10’, ‘xxh25’ and ‘xxh45’; this is especially useful for passenger information).

10.15.1 Business Requirements

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

In many cases journeys with Frequencys are denormalized into different ServiceJourney by the SBB system. However the element may be used. For cable car and Seilbahnen this is used mostly.

10.15.1 Structure

Element	Usage	Structure	Description	Example
::>	::>	GroupOfEntities	*JOURNEY FREQUENCY GROUP inherits from GROUP OF ENTITIES.*	
id	1:1	FrequencyGroupIdType	Identifier of FREQUENCY GROUP.	
FirstDepartureTime	1:1	xsd:time	Time of first departure in FREQUENCY GROUP.	
LastDepartureTime	0:1	xsd:time	Time of last departure in FRQUENCY GROUP.	
DayOffset	0:1	xsd:integer	Offset of end time day from start time.	
timeDemandTypes	0:1	TimeDemandRef	TIME DEMAND TYPEs for which this FREQUENCY GROUP applies.	
journeys	0:*	VehicleJourneyRef	Journeys belonging to FREQUENCY GROUP.	

10.15.1 Example

```
<TemplateServiceJourney id="ch:1:ServiceJourney:9302AY-LAB-1-1-30600:oK" version="any"
responsibilitySetRef="ch:1:ResponsibilitySet:LAB_LAB">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:oK" version="any" />
  </validityConditions>
  <PrivateCode>1</PrivateCode>
  <TransportMode>cableway</TransportMode>
```

```xml
   <TypeOfProductCategoryRef ref="ch:1:TypeOfProductCategory:SL" version="any" />
   <TypeOfServiceRef ref="ch:1:TypeOfService:1" version="any" />
   <DepartureTime>08:30:00</DepartureTime>
   <trainNumbers>
     <TrainNumberRef ref="ch:1:TrainNumber:301" version="any" />
   </trainNumbers>
   <Destination>
     <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8588693" version="any" />
     <DestinationDisplayRef ref="ch:1:DestinationDisplay:1666" version="any" />
   </Destination>
   <calls>
     <Call id="ch:1:Call:ch:1:ServiceJourney:306-301-1-1_1" version="any" order="1">
       <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8507460" version="any" />
       <Departure>
         <Time>08:30:00</Time>
         <ForBoarding>true</ForBoarding>
         <IsFlexible>false</IsFlexible>
       </Departure>
       <DestinationDisplayRef ref="ch:1:DestinationDisplay:1666" version="any" />
       <RequestStop>false</RequestStop>
       <StopUse>access</StopUse>
     </Call>
     <Call id="ch:1:Call:ch:1:ServiceJourney:306-301-1-1_2" version="any" order="2">
       <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8588693" version="any" />
       <Arrival>
         <Time>08:35:00</Time>
         <ForAlighting>true</ForAlighting>
         <IsFlexible>false</IsFlexible>
       </Arrival>
       <RequestStop>false</RequestStop>
       <StopUse>access</StopUse>
     </Call>
   </calls>
   <frequencyGroups>
     <HeadwayJourneyGroup id="ch:1:JourneyFrequencyGroup:395" version="any">
       <Name>395</Name>
       <FirstDepartureTime>08:30:00</FirstDepartureTime>
       <LastDepartureTime>16:35:00</LastDepartureTime>
       <ScheduledHeadwayInterval>PT1M</ScheduledHeadwayInterval>
```

```xml
      <HeadwayDisplay>DisplayPassingTimesOnly</HeadwayDisplay>
    </HeadwayJourneyGroup>
  </frequencyGroups>
</TemplateServiceJourney>
```

10.15.2 Hints

-

10.16 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.

10.16.1 Business Requirements

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

In many cases journeys with Frequencys are denormalized into different ServiceJourney by the SBB system. However the element may be used. For cable car and Seilbahnen this is used mostly.

HEADWAY JOURNEY GROUP is the primary FREQUENCY GROUP we use for HRDF mapping of “takt” etc.

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 or multiple 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). Multiple HeadwayJourneyGroups can be defined, each assigning a certain frequency or headway interval to some time range. For example two different headway intervals for regular service and rush hour service.

10.16.2 Structure

Element	Usage	Structure	Description	Example

frequencyGroups		-structure		
::>	::>	JourneyFrequencyGroup	HEADWAY JOURNEY GROUP inherits from JOURNEY FREQUENCY GROUP.	
id	1:1	HeadwayJourneyGroupIdType	Identifier of HEADWAY JOURNEY GROUP.	
FirstDepartureTime	1:1	xsd:time	Time of first departure in FREQUENCY GROUP.	
LastDepartureTime	0:1	xsd:time	Time of last departure in FRQUENCY GROUP.	
DayOffset	0:1	xsd:integer	Offset of end time day from start time.	
timeDemandTypes	0:1	TimeDemandRef	TIME DEMAND TYPEs for which this FREQUENCY GROUP applies.	
journeys	0:*	VehicleJourneyRef	Journeys belonging to FREQUENCY GROUP.	
ScheduledHeadwayInterval	0:1	xsd:duration	Scheduled normal HEADWAY INTERVAL.	
MinimumHeadwayInterval	0:1	xsd:duration	Minimum HEADWAY INTERVAL.	
MaximumHeadwayInterval	0:1	xsd:duration	Maximum HEADWAY INTERVAL.	
HeadwayDisplay	0:1	HeadwayUseEnum	How headway is to be displayed to passengers.	
HeadwayUseEnum: • displayInsteadOfPassingTimes • displayAsWellAsPassingTimes				

• displayPassingTimesOnly				
Description	0:1	xsd:MultilingualString	Description of Headway Journey Groups.	

10.16.3 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>
            <Description>About every 12 minutes</Description>
            <FirstDepartureTime>10:00:00</FirstDepartureTime>
            <LastDepartureTime>12:00:00</LastDepartureTime>
            <ScheduledHeadwayInterval>PT12M</ScheduledHeadwayInterval>
            <HeadwayDisplay>DisplayInsteadOfPassingTimes</HeadwayDisplay>
        </HeadwayJourneyGroup>
        <HeadwayJourneyGroup version="any" id="hde:hjg_24o_02">
            <Name>Regular  Interval service between 12am and 18:00 pm</Name>
            <Description>About every 20 minutes</Description>
            <FirstDepartureTime>12:00:00</FirstDepartureTime>
            <LastDepartureTime>18:00:00</LastDepartureTime>
            <ScheduledHeadwayInterval>PT20M</ScheduledHeadwayInterval>
            <HeadwayDisplay>DisplayInsteadOfPassingTimes</HeadwayDisplay>
        </HeadwayJourneyGroup>
    </frequencyGroups>
</TemplateServiceJourney>
```

10.16.4 Hints

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10.17 RhythmicalJourneyGroup

(NeTEx-2, 7.2.6.5.3)
NOT TO BE USED
A group of VEHICLE JOURNEYs following the same JOURNEY PATTERN having the same "rhythm" every hour (for example, 'runs at xxh10, xxh25 and xxh45 past the hour') between a specified start and end time.
-

10.18 TimingPointStatus

(NeTEx-2, 7.2.14.2.2
NOT BE USED
The following table shows the allowed values for TimingPointStatus (TimingPointStatusEnum).

Value Description

- timingPoint Timing Point
- secondaryTimingPoint Secondary Timing Point
- notTimingPoint Not Timing Point

10.19 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.).

10.19.1 Business Requirements

SNCF has train numbers with 4 digits for TGV and 5-6 digits for TER. All TER going to Switzerland have only 5 digits. In Switzerland train numbers are currently a maximum of 5 digits long. However, in the future they will be extendet to 6 as well.

The ID is created as follows:

ID	Description	Stability	Construction	Examples

ch:1:TrainNumber:<ForProduction_code>	Not yet defined if there will be a business key that might replace the ID in future	Yes	Built from Attributes by Source	ch:1:TrainNumber:546

Table 48: TrainNumber ID definition.

In NeTEx the association with TrainNumbers (also called “Fahrtnummer”, i.e. journey number in HRDF) can happen on the level of ServiceJourney or on the level of JourneyPart. NeTEX distinguished between TrainNumbers for publication (ForAdvertisment) and for operation (ForProduction). TrainNumbers are their own entities and reside in the TimetableFrame:

trainNumbers

TrainNumber (5)

	= id	= version	{} ForAdvertisement	{} ForProduction
1	tn:4177a	1	4177	
2	tn:6829a	1	6829	
3	tn:4177p	1		4177
4	tn:4277p	1		4277
5	tn:6829p	1		6829

Figure 43: A list of TrainNumbers in the TimetableFrame.

ServiceJourneys can in principle have multiple different TrainNumbers whereas a JourneyPart can only reference a single one.

10.19.2 Structure

Element	Usage	Structure	Description	Example
Id	1:1	TrainNumberIdType	Identifier of TRAIN NUMBER	
See Table 48: TrainNumber ID definition.				
ForAvertisment	0:1	xsd.normalizedString	TRAIN NUMBER to use for advertisement to public if different from ID.	51090
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.	

10.19.3 Example

```
<trainNumbers>
    <TrainNumber id="ch:1:TrainNumber:51090" version="any">
      <ForAdvertisement>51090</ForAdvertisement>
      <ForProduction>51090</ForProduction>
    </TrainNumber>
</trainNumbers>
```

10.19.4 Hints

-

10.20 Train

(NeTEx- 1, 7.7.16)
LATER
The TRAIN Conceptual model represents VEHICLE TYPE properties that are peculiar to TRAINs. A TRAIN may comprise not just a single VEHICLE but a chain of carriages, TRAIN ELEMENTS, assembled as TRAIN COMPONENTs. Groups of carriages may be managed as sections by composing TRAINs into a COMPOUND TRAIN made up of TRAINs IN COMPOUND TRAIN, for example in a train that joins or splits.

TRAIN ELEMENTS can be classified with a TYPE OF TRAIN.

10.20.1 Business Requirements

Every wagon of a train shall correspond to a TRAIN COMPONENT and TRAIN ELEMENT.

An example shall be given in the subsequent Figures.

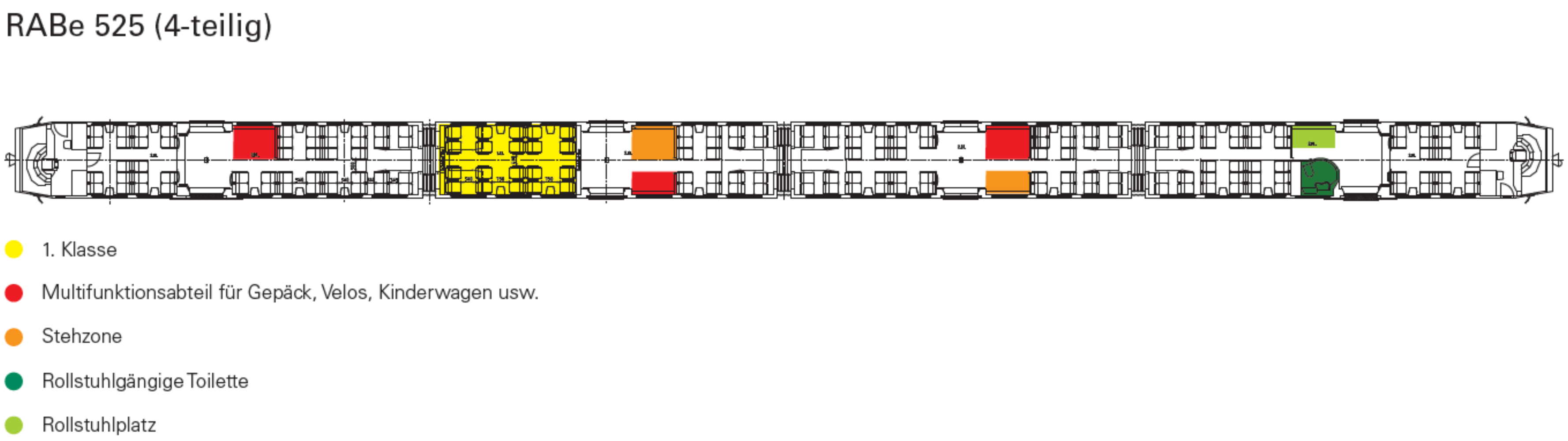

Figure 44: Composition of a S5 train unit RABe 525.

The RABe 525 consists of four TRAIN COMPONENTS, each with a different set of TRAIN ELEMENTS. For the service of a Line S5 a maximum of four such TRAIN units can be coupled. In our example we assume a total of two TRAIN units.

The mapping is illustrated in the next Figure:

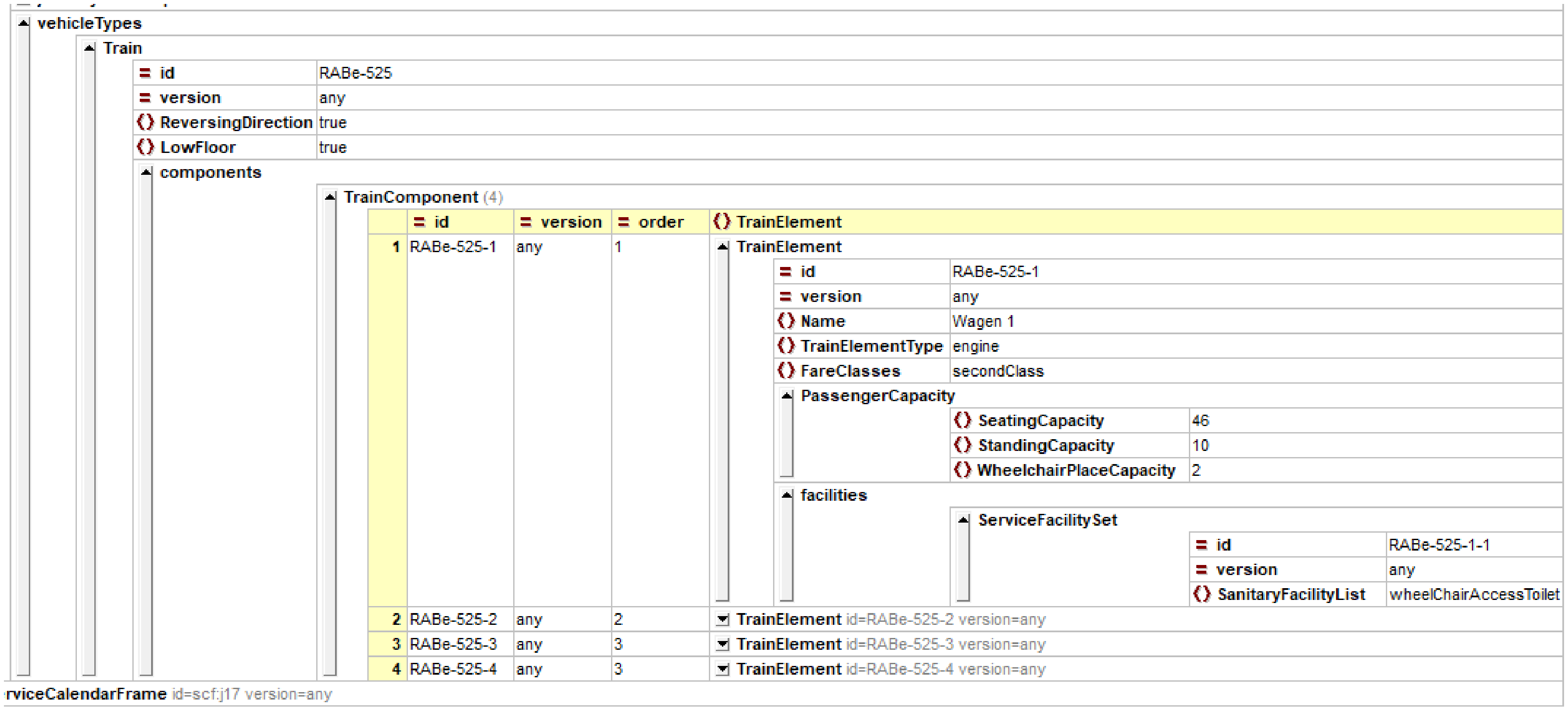

Figure 45: Example of a RABe 525 mapping with TRAIN COMPONENTS and ELEMENTS.

10.20.2 Structure

Element	Usage	Structure	Description	Example
vehicleTypes		-structure	Declared in VEHICLE TYPES withing the TIMETABLE FRAME.	
::>	::>	VehicleType	TRAIN inherits from VEHICLE TYPE.	
• id • version				

Id	1:1	TrainNumberIdType	Identifier of TRAIN NUMBER	
TrainSize	0:1	TrainSizeStructure	Train size Properties of TRAIN.	
components	0:*	TrainComponent	Components of TRAIN.	

10.20.3 Example

```
<Train version="any" id="hde:trn_40447">
    <Name>40447 Hanover - Copenhagen</Name>
    <Description>2 2 2 1 1 E</Description>
    <SelfPropelled> true</SelfPropelled>
    <facilities>
        <ServiceFacilitySetRef version="any" ref="hde:svcfc_general"/>
        <ServiceFacilitySetRef version="any" ref="hde:svcfc_first"/>
    </facilities>
    <components>
        <TrainComponent version="any" id="hde:trncmp_40447_01" order="1">
            <Label>Engine </Label>
            <Description>Engine</Description>
            <TrainElement version="any" id="hde:trne_40447_01">
                <Name/>
                <TrainElementType>engine</TrainElementType>
            </TrainElement>
        </TrainComponent>
        <TrainComponent version="any" id="hde:trncmp_40447_02" order="2">
            <Label>Carriage A</Label>
            <Description>Front Carriage 1st Class</Description>
            <TrainElement version="any" id="hde:trne_40447_02">
                <Name/>
                <TrainElementType>carriage</TrainElementType>
                <FareClasses> firstClass</FareClasses>
            </TrainElement>
        </TrainComponent>
        <TrainComponent version="any" id="hde:trncmp_40447_03" order="3">
```

```xml
            <Label>Carriage B</Label>
            <Description>2nd Carriage 1st CLass</Description>
            <TrainElement version="any" id="hde:trne_40447_03">
                <Name/>
                <TrainElementType>carriage</TrainElementType>
                <FareClasses> firstClass</FareClasses>
            </TrainElement>
        </TrainComponent>
    </components>
</Train>
```

```xml
<CompoundTrain version="any" id="hde:ctrn_XX-447">
    <Name>447 + 457 + 40447 Amsterdam - Hannover</Name>
    <Description>E - 2 2 2 2 2 2 R 1 1 - 2 2 2 2 2 - 2 2 2 1 1 - E</Description>
    <SelfPropelled> true</SelfPropelled>
    <components>
        <TrainInCompoundTrain version="any" id="hde:trninctrn_XX-447_40447" order="1">
            <TrainRef version="any" ref="hde:trn_40447"/>
            <Label>40447</Label>
        </TrainInCompoundTrain>
        <TrainInCompoundTrain version="any" id="hde:trninctrn_XX-447_457" order="2">
            <TrainRef version="any" ref="hde:trn_457"/>
            <Label>457</Label>
        </TrainInCompoundTrain>
        <TrainInCompoundTrain version="any" id="hde:trninctrn_XX-447_447" order="3">
            <TrainRef version="any" ref="hde:trn_447"/>
            <Label>447</Label>
        </TrainInCompoundTrain>
    </components>
</CompoundTrain>
```

10.20.4 Hints

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10.21 TrainComponent

(NeTEx-1, 7.7.16.4.3)

LATER

A specification of the order of TRAIN ELEMENTs in a TRAIN.

10.21.1 Business Requirements

-

10.21.2 Structure

Element	**Usage**	**Structure**	**Description**	**Example**
Train		-structure	Is an element of TRAIN.	
::>	::>	VersionedChild	TRAIN COMPONENT inherits from VERSIONED CHILD.	
• id • order • version				
Id	1:1	TrainComponentIdType	Identifier of TRAIN COMPONENT.	
order	1:1	xsd:positiveInteger	Order of TRAIN COMPONENT in TRAIN.	
Label	0:1	xsd:MultilingualString	Label of TRAIN COMPONENT.	
Description	0:1	xsd:MultilingualString	Description of TRAIN COMPONENT.	
TrainRef	1:1	TrainRef	Reference to TRAIN of which this is a part.	
TrainElementRef • Choice 1	1:1	TrainElementRef	Reference to TRAIN ELEMENT associated with TRAIN COMPONENT or a TRAIN ELEMENT itself.	
TrainElement	1:1	TrainElement	TRAIN ELEMENT associated with TRAIN COMPONENT.	

• Choice 2				

10.21.3 Example

-

10.22 TrainElement

(NeTEx-1, 7.7.16.4.4)
LATER
An elementary component of a TRAIN (e.g. wagon, locomotive).

10.22.1 Business Requirements

-

10.22.2 Structure

Element	**Usage**	**Structure**	**Description**	**Example**
TrainComponent		-structure	Is an element of TRAIN COMPONENT.	
::>	::>	DataManagedObject	TRAIN ELEMENT inherits from DATA MAN-AGED OBJECT.	
• id • version				
Id	1:1	TrainElementtIdType	Identifier of TRAIN ELEMENT.	
Name	0:1	xsd:MultilingualString	Name of TRAIN ELEMENT.	
Description	0:1	xsd:MultilingualString	Description of TRAIN ELEMENT.	
TrainElementType	1:1	TypeOfTrainElementEnum	Classification of TRAIN ELEMENT.	

FareClasses	0:1	FareClassEnum	FARE CLASSes for TRAIN ELEMENT.	
PassengerCapacity	0:1	PassengerCapacity	Capacity of TRAIN ELEMENT.	
TrainSize	0:1	TrainSizeStructure	Size of TRAIN.	
Length	0:1	LengthType	Length of TRAIN ELEMENT.	
facilities	0:*	Facility	FACILITies of TRAIN ELEMENT.	
equipments	0:*	Equipment	Equipment of TRAIN ELEMENT.	

10.22.3 Example

-

10.23 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.

10.23.1 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 49: TypeOfService – Allowed values.

10.23.2 Structure

Element	Usage	Structure	Description	Example
	::>	TypeOfEntity	TYPE OF SERVICE inherits from TYPE OF ENTITY.	
• id • version				
id	1:1	TypeOfServiceIdType	Identifier of TYPE OF SERVICE.	
:::	0:1	TypeOfValueGroup	All elements of the TYPE OF VALUE class (see chapter 4.9).	

10.23.3 Example

```xml
<typesOfService>
    <TypeOfService id="ch:1:TypeOfService:1" version="any">
        <Name lang="en">PublicJourney</Name>
        <ShortName lang="en">N</ShortName>
        <PrivateCode>1</PrivateCode>
    </TypeOfService>
    <TypeOfService id="ch:1:TypeOfService:2" version="any">
        <Name lang="en">GarageRunOut</Name>
        <ShortName lang="en">GO</ShortName>
        <PrivateCode>2</PrivateCode>
    </TypeOfService>
    <TypeOfService id="ch:1:TypeOfService:3" version="any">
        <Name lang="en">GarageRunIn</Name>
```

```
        <ShortName lang="en">GI</ShortName>
        <PrivateCode>3</PrivateCode>
    </TypeOfService>
    <TypeOfService id="ch:1:TypeOfService:4" version="any">
        <Name lang="en">ThroughCoach</Name>
        <ShortName lang="en">TC</ShortName>
        <PrivateCode>4</PrivateCode>
    </TypeOfService>
</typesOfService>
```

10.23.4 Hints

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10.24 FacilitySet

(NeTEx-1, 7.7.14)
NOT TO BE USED (We only use the sub classes)
The Facility Model provides named facilities that can be associated with SERVICE JOURNEYS, SITE ELEMENTs and other entities.

A FACILITY provides just a simple name of a capability. Detailed properties may be stated for some types of facilities by a corresponding EQUIPMENT type.

These FACILITies are combined into FACILITY SETs - a set of FACILITIES that may be associated with an ENTITY and subject to a specific VALIDITY CONDITION. Values with a SET are logically ANDed together. For example, FARE CLASS = “firstClass” and CATERING FACILITY = “Restaurant”.

A SERVICE FACILITY SET describes a set of FACILITIES for use on a SERVICE. It can include information about the ACCOMMODATION on board. A SITE FACILITY SET describes a set of FACILITIES available at a SITE.

NeTEx uses enumerations (like FARE CLASS or CATERING FACILITY) to define standardised sets of Facility values. The values are implemented as list of enumerated values.

10.24.1 Business Requirements

We actually only use the subclass SERVICE FACILITY SET (and SITE FACILITY SET later). See subsequent sections.

10.25 ServiceFacilitySet

(NeTEx-1, 7.7.14.3.2)
Set of ServiceFacilitySet objects available for a ServiceJourney or a JourneyPart. 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 train-Numbers 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.

10.25.1 Business Requirements

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:ServiceFacilitySet:<Facility_code>	The facility code could be the HRDF attribute code (line *A).	Yes	Built from Attributes by Converter	ch:1:ServiceFacilitySet:RE

Table 50: ServiceFacilitySet ID definition.

The assignment of facilities to ServiceJourney or JourneyPart is made by using FacilitySet elements:

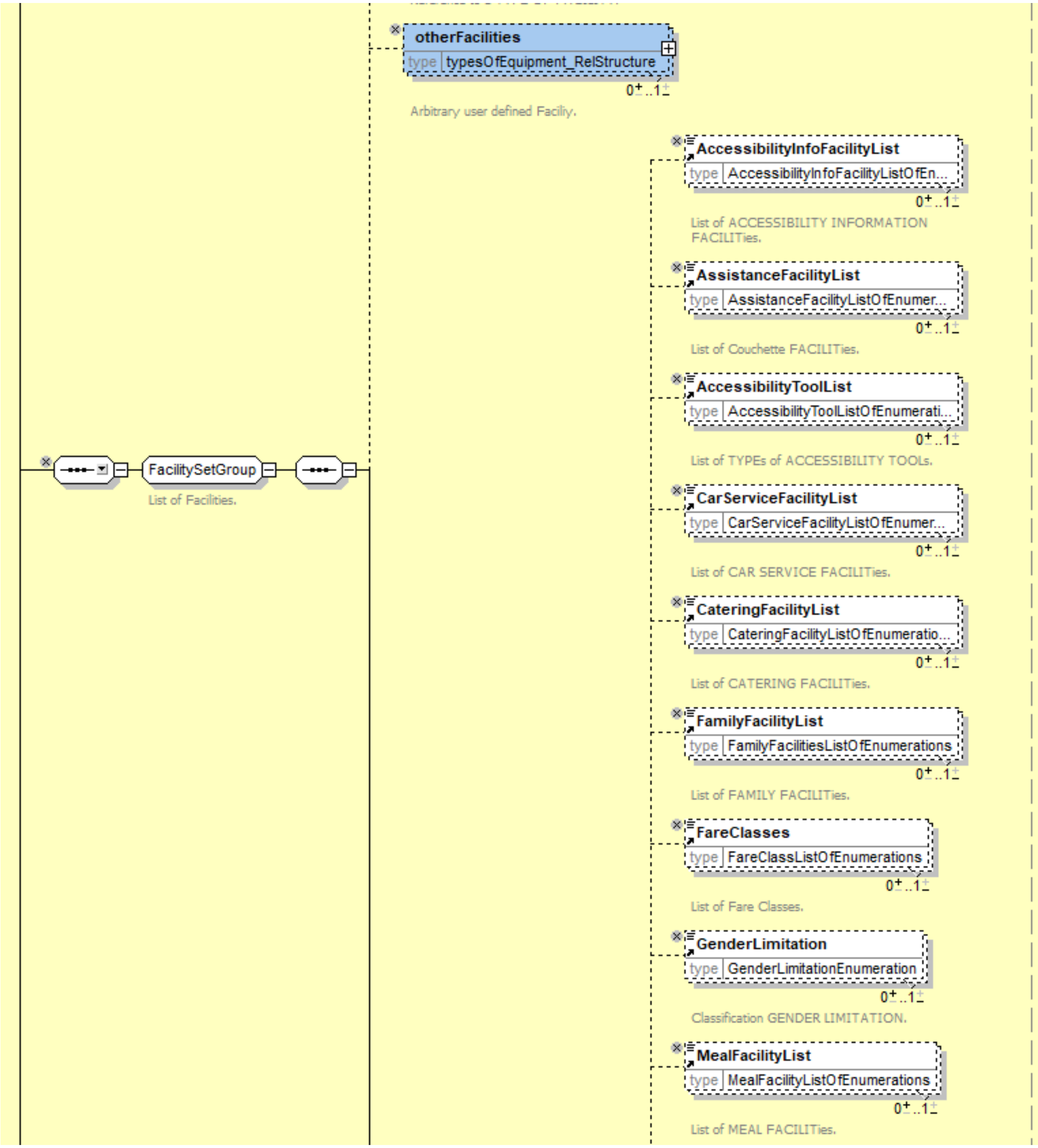


Figure 46: Schema definition of FacilitySet.

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 cateogry are a separated list of elements. There is no designation of order, but the XML-parser has to maintain order when reading the element (we use this to have a priority of Facilties in output communicating channels). An example of the usage of FacilitySets:

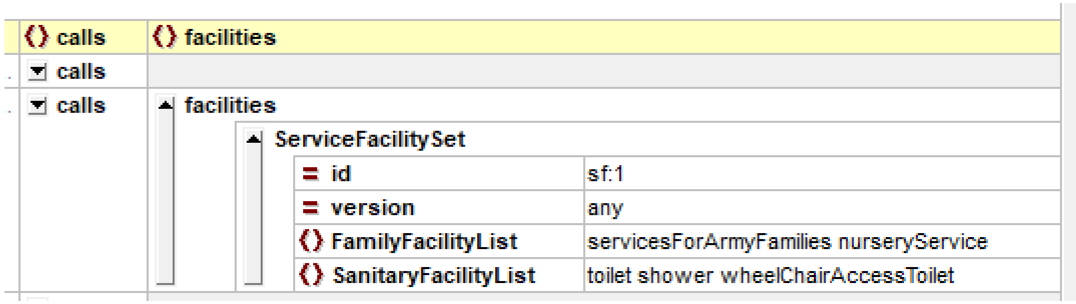


Figure 47: example Facilities – multiple items in each category.

10.25.2 Structure

Element	Usage	Structure	Description	Example
serviceFacilitySets		-structure		
Attributes: • id • version				
::>	::>	DataManagedObject	SERVICE FACILTY SET inherits from FA-CILITY SET.	
id	1:1	ServiceFacilitySetIdType	Identifier of ServiceFacilitySet.	ServiceFacilitySet:familyCar-riage-34522
See Table 50: ServiceFacilitySet ID definition.				
validityConditions	0:*	+AvailabilityConditionRef	A specific type of VALIDITY CONDITION used to specify a set of temporal conditions	<validityConditions>

			that can be associated with the SERVICE FACILITY SET, for example that the corresponding facilities only apply on particular days of a period (indicated by ValidDayBits “Verkehrstagebitfeld”).	<AvailabilityConditionRef ref="ch:1:AvailabilityCondition:17" version="any" /> </validityConditions>
AvailabilityCondition with ValidDayBits (HRDF BITFELD). The AvailabilityConditions are centrally stored and only referenced here. ValidDayBits must be set correctly.				
FacilitySetGroup	0:1		Elements from the FACILITY SET GROUP. Multiplicity counts for each element of the Group.	
ServiceFacilityGroup	0:1		SERVICE FACILITies in the SERVICE FACILITY SET defined as lists of numerated values of fixed types. There are specific to the SERVICE FACILITY SET. Multiplicity counts for each element of the Group.	
accomodations	0:1	+Accomodation	List of ACCOMODATION elements	
LATER				
onboardStays	0:1	+OnboardStay	List of ONBOARD STAY elements	
NOT TO BE USED				

10.25.1 Example

```
<ServiceFacilitySet id="ch:1:ServiceFacilitySet:A__BZ" version="any">
  <alternativeTexts>
    <AlternativeText attributeName="Description">
      <Text lang="en">Business zone in 1st class</Text>
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="fr">Espace affaires en 1re classe</Text>
```

```xml
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="it">Zona business in 1a classe</Text>
    </AlternativeText>
  </alternativeTexts>
  <Description lang="de">Businesszone in 1. Klasse</Description>
  <PassengerCommsFacilityList>businessServices</PassengerCommsFacilityList>
</ServiceFacilitySet>
<ServiceFacilitySet id="ch:1:ServiceFacilitySet:A__EP" version="any">
  <alternativeTexts>
    <AlternativeText attributeName="Description">
      <Text lang="en">Service at seat in 1st cl., drinks/snacks in 2nd cl.</Text>
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="fr">Service à la place en 1re cl., boissons/snacks en 2e cl.</Text>
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="it">Servizio al posto in 1a cl., bevande/snacks in 2a cl.</Text>
    </AlternativeText>
  </alternativeTexts>
  <Description lang="de">1. Kl. Service am Platz, 2. Kl. Getränke/Snacks</Description>
  <CateringFacilityList>mealAtSeat</CateringFacilityList>
</ServiceFacilitySet>
<ServiceFacilitySet id="ch:1:ServiceFacilitySet:A__FA" version="any">
  <alternativeTexts>
    <AlternativeText attributeName="Description">
      <Text lang="en">Family Coach with play area</Text>
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="fr">Voiture-familles avec aire de jeux</Text>
    </AlternativeText>
    <AlternativeText attributeName="Description">
      <Text lang="it">Carrozza famiglia con compartimento giochi</Text>
    </AlternativeText>
  </alternativeTexts>
  <Description lang="de">Familienwagen mit Spielplatz</Description>
  <NuisanceFacilityList>familyArea</NuisanceFacilityList>
</ServiceFacilitySet>
```

10.25.2 Hints

-

10.26 Accommodation

(NeTEx-1, 7.7.14.3.4)
NOT TO BE USED
A combination of Accommodation characteristics available on a service, e.g. "First Class Couchette with Shower and 2 bunks".

Is an element and subclass of SERVICE FACILITY SET.
-

10.27 OnboardStay

(NeTEx-1, 7.7.14.3.5)
Permission to board early before the journey or stay on board after the journey.
It is an element and subclass of SERVICE FACILITY SET.

10.27.1 Business Requirements

-

10.27.2 Structure

Element	Usage	Structure	Description	Example
Attributes: • id • version				
::>	::>	DataManagedObject	ONBOARD STAY inherits from DATA MANAGED OBJECT	
id	1:1	IdType	Identifier of ONBOARD STAY	

FareClass	0:1	FareClassEnum	FARE CLASS to which BOARDING PERMISSION applies.	firstClass
BoardingPermission	0:1	BoardingPermissionEnum	Nature of BOARDING PERMISSION.	earlyBoardingPossible-Before-Departure
Period	0:1	xsd:duration	Duration of BOARDING PERMISSION.	PT1H

10.27.3 Example

```
<onboardStays>
    <OnboardStay version="any" id="bbd:OnboardStay:svcfc_firs@earlyBoardingPossibleBeforeDeparture">
        <FareClass>firstClass</FareClass>
        <BoardingPermisssion>earlyBoardingPossibleBeforeDeparture</BoardingPermisssion>
        <Period>PT1H</Period>
    </OnboardStay>
    <OnboardStay version="any" id="bbd:OnboardStay:svcfc_firs@overnightStayOnboardAllowed">
        <FareClass>firstClass</FareClass>
        <BoardingPermisssion>overnightStayOnboardAllowed</BoardingPermisssion>
        <Period>PT9H</Period>
    </OnboardStay>
</onboardStays>
```

10.27.4 Hint

-

10.28 Notice

(NeTEx-1, 7.7.18)
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.

Each NOTICE may have several alternative formats as specified by a DELIVERY VARIANT.

A NOTICE carries additional information for passengers that may help them plan their trip or during their trip. Footnotes are one type of NOTICE, a human-understandable text that may be made available in various delivery formats. Using a NOTICE ASSIGNMENT, NOTICEs can be assigned to stops of one service (POINT IN JOURNEY PATTERN), to stops in more services (COMMON SECTION), to JOURNEY PATTERNs, to one VEHICLE JOURNEY or more of them (GROUP OF SERVICES) and to INTERCHANGEs. Each NOTICE ASSIGNMENT can be restricted in its validity by specifying a VALIDITY CONDITION.

10.28.1 Business Requirements

NOTICEs are delivered as part of the ServiceFrame. The corresponding TypeOfNotices are specified within a ValueSet (id="ch:1:ValueSet:notices") in the ResourceFrame.

10.28.2 Structure

Element	Usage	Structure	Description	Example
notices		-structure		
Attributes: • id • version				
::>	::>	DataManagedObject	NOTICE inherits from DATA MANAGED OBJECT	
id	1:1	NoticeIdType	Identifier of Notice	Notice:Hin-46346
Name	0:1	multilingualString	Name of Notice	
IGNORED AT IMPORT				
ShortName	0:1	multilingualString	Short name of Notice	
NOT TO BE USED				

Text	0:1	multilingualString	Content text of Notice	<Text lang="fr">Arrêt derrière la gare, route François-Louis Duvillard</Text>
PublicCode	0:1	xsd:normalizedString	Public code of Notice	
LATER				
May be used in future for standard abreviations				
ShortCode	0:1	xsd:normalizedString	Short code of Notice	
IGNORED AT IMPORT				
PrivateCode	0:1	PrivateCodeType	Private code of Notice	
TypeOfNoticeRef	0:1	TypeOfValueRefStructure	Reference to TypeOfNotice values.	
TYPE OF NOTICEs are defined in a VALUE SET within the RESOURCE FRAME. For the allowed values and the behavior see section 5.2.2.				
CanBeAdvertised	0:1	xsd:boolean	Wheter Notice is advertised or not	
SBB will use this flag to indicate which Notices are for internal usage and which will be for operational purposes.				
DriverDisplayText	0:1	multilingualString	Driver Display text associated with Notice	
IGNORED AT IMPORT				
variants	0:1	DeliveryVariant	DeliveryVariant elements of Notice	
IGNORED AT IMPORT				
Extensions	0:1	ExtensionStructure	Extensions can be defined here. It is still discussed if Ausgabepriorität", Feinsortierung" and "Haltestellen-zugehörigkeit" of HRDF are mapped as EXTENSION or rather to VALUE SET or KEY LIST.	<Extensions> <DisplayPriority> 10 </DisplayPriority> <Feinsortierung> 2 </Feinsortierung> <DisplayCondition> 1

				</DisplayCondition> </Extensions>

DisplayCondition (Haltestellenzugehörigkeit):

- "1“ for departure stop
- "2“ for arrival stop
- "0“ for journey part

DisplayPriority (Ausgabepriorität):

- Value range 0 - 999
- smaller values are higher-valued
- If multiple attributes are used, the higher-valued attributes are output first
- Priorities <= 2 are prominently output, if applicable

Feinsortierung (sub-ordering):

- Value range 0 - 99
- smaller values are higher-valued
- for attributes of the same DisplayPriority, the output depends on the Feinsortierung

10.28.3 Example

```
<Notice id="ch:1:Notice:672" version="any">
  <Text>672</Text>
  <TypeOfNoticeRef ref="ch:1:TypeOfNotice:11" version="any"/>
  <CanBeAdvertised>false</CanBeAdvertised>
</Notice>
<Notice id="ch:1:Notice:A__PA" version="any">
  <alternativeTexts>
    <AlternativeText attributeName="Text">
      <Text lang="en">Panorama coach</Text>
    </AlternativeText>
    <AlternativeText attributeName="Text">
      <Text lang="fr">Voiture panoramique</Text>
    </AlternativeText>
    <AlternativeText attributeName="Text">
      <Text lang="it">Carrozza panoramica</Text>
```

```
    </AlternativeText>
  </alternativeTexts>
  <Extensions>
    <DisplayCondition>0</DisplayCondition>
    <DisplayPriority>4</DisplayPriority>
    <Feinsortierung>5</Feinsortierung>
  </Extensions>
  <Text lang="de">Panoramawagen</Text>
  <ShortCode>PA</ShortCode>
  <PrivateCode>A__PA</PrivateCode>
  <TypeOfNoticeRef ref="ch:1:TypeOfNotice:10" version="any"/>
  <CanBeAdvertised>true</CanBeAdvertised>
</Notice>
<Notice id="ch:1:Notice:I_01X" version="any">
  <alternativeTexts>
    <AlternativeText attributeName="Text">
      <Text lang="en">Abfahrt in Ried-Mörel nur zur Talfahrt nach Mörel (1.Sek)</Text>
    </AlternativeText>
    <AlternativeText attributeName="Text">
      <Text lang="fr">Abfahrt in Ried-Mörel nur zur Talfahrt nach Mörel (1.Sek)</Text>
    </AlternativeText>
    <AlternativeText attributeName="Text">
      <Text lang="it">Abfahrt in Ried-Mörel nur zur Talfahrt nach Mörel (1.Sek)</Text>
    </AlternativeText>
  </alternativeTexts>
  <Text lang="de">Abfahrt in Ried-Mörel nur zur Talfahrt nach Mörel (1.Sek)</Text>
  <PrivateCode>I_01X</PrivateCode>
  <TypeOfNoticeRef ref="ch:1:TypeOfNotice:1" version="any"/>
  <CanBeAdvertised>true</CanBeAdvertised>
</Notice>
```

10.28.4 Hints

-

10.29 NoticeAssignment

(NeTEx-1, 7.7.18)

The assignment of a NOTICE showing an exception in a JOURNEY PATTERN, a COMMON SECTION, or a VEHICLE JOURNEY, possibly specifying at which POINT IN JOURNEY PATTERN the validity of the NOTICE starts and ends respectively. We currently use noticeAssignments only in ServiceJourney (where they are placed after the Name element). They include NoticeAssignmentView objects which in turn include a reference to a Notice object (located at the end of the TimetableFrame). NoticeAssignments can also be listed directly in a Call.

10.29.1 Business Requirements

The Notice element is used to transfer general textual information on the line network and the timetable. This is in correspondence with the HRDF attributes and info texts.

The Notice element has no part that is in correspondance with the fields “Ausgabepriorität”, “Feinsortierung” in HRDF and “ Haltestellen-zugehörigkeit”. 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

In NeTEx the order of the output can only in relation to the given object, to which the notice element relates. This could be used e.g. to order the notes for a given ServiceJourney. It is not possible, e.g. on a page in a timetable to group the notices in a meaningful way, then the notices could be referenced from different journeys and there have different positions. Such a grouping could be created by using the freely definable TypeOfNotice. The TypeOfNotice are defined in the ResourceFrame. The following examples show the types proposed in VDV 462:

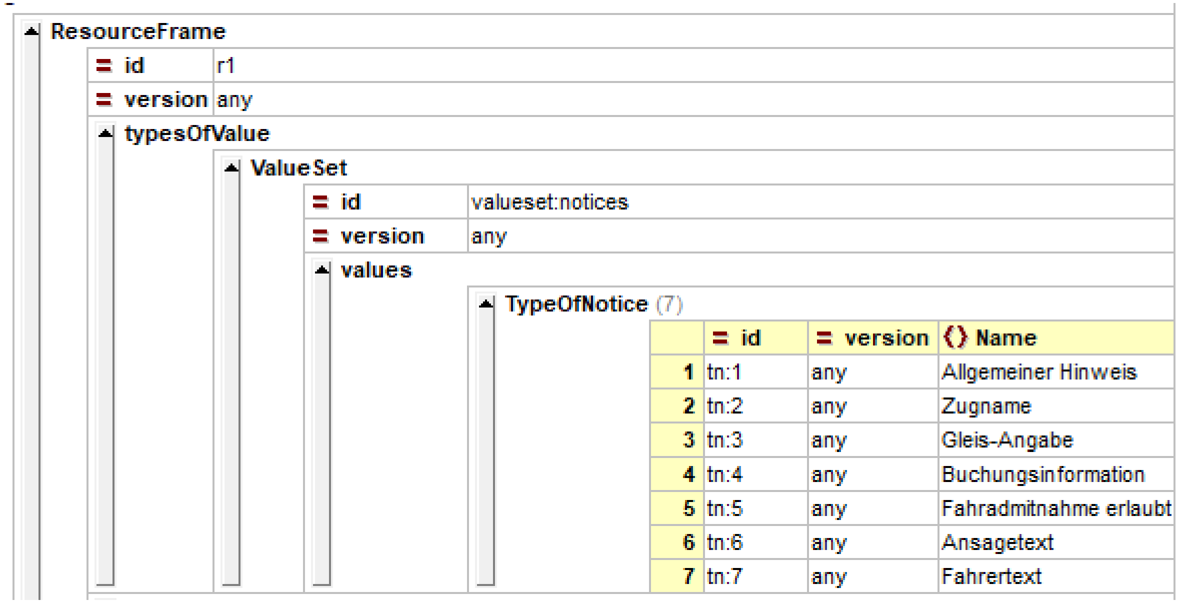


Figure 48: TypeOfNotice element (usage in VDV 462).

The full list of TypesOfValue can be found in section 4.9. The notices are put into the ServiceFrame. They have a reference to TypeOfNotice:

Notice (5)

	id	version	Text		TypeOfNoticeRef	
			lang	Text	ref	version
1	n1	any	de	Dies ist ein sehr wichtiger Hinweis	tn:1	any
2	n2	any	de	Dies ist ein wichtiger Hinweis	tn:1	any
3	n3	any	de	IC Deichgraf	tn:2	any
4	n4	any	de	Fahrradmitnahme erlaubt am Wochenende und ausserhalb der Berufsverkehrszeit von 07:00-09:00 und von 15:00-18:00	tn:5	any
5	n99	any	de	Dies ist ein unwichtiger Hinweis	tn:1	any

Figure 49: XML Example of Element “Notice”.

"NoticeAssignment“ element assignes the notices e.g. to a given ServiceJourney:

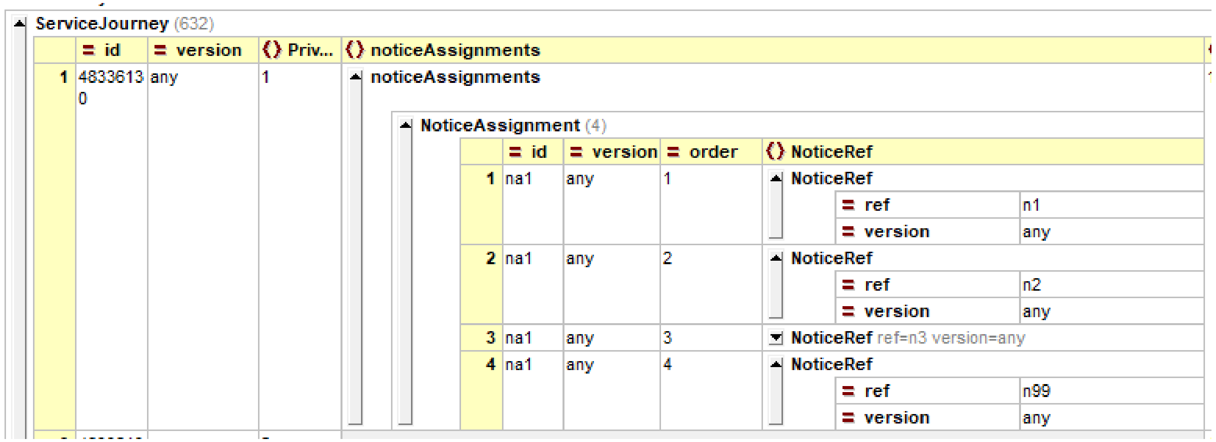


Figure 50: XML example of NoticeAssignments in a ServiceJourney.

The attribute "order“ can be used to give the order in a given ServiceJourney. The attribute “order” is part of the key, this means that all entrances to NoticeAssignments of a given ServiceJourney can have the same id and version. This allows to easier indentify them. Notice-Assiments can be added as a child element to almost all relevant elements (e.g. ServiceJourney, ServicePattern, Call).

It is also possible to add noticeAssignment elements centrally in the ServiceFrame and in principle to reference every other object:

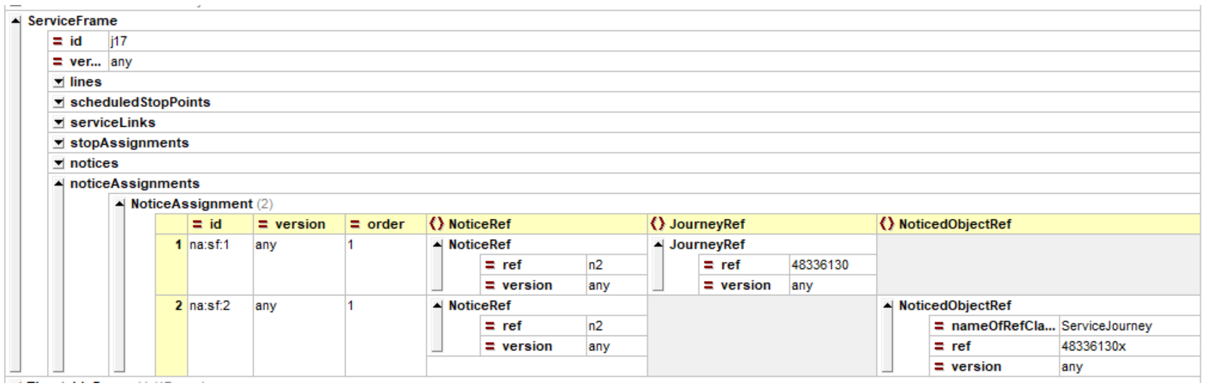


Figure 51: Centralized definition NoticeAssignments.

By using "NoticedObjectRef“ any given object can be assigned a notice (e.g. also a StopPlace). These references however are not validated as the relevant constraint (NetexPublication.xsd about line 2780) is commented:

```
2768          <xsd:field xpath="@id"/>
2769          <xsd:field xpath="@version"/>
2770        </xsd:key>
2771        <!-- =====ObjectRef============================ -->
2772        <!--
2773        <xsd:keyref name="Object_AnyKeyRef" refer="netex:Object_AnyVersionedKey">
2774          <xsd:selector xpath=".//netex:ConditionedObjectRef |.//netex:RuleObjectRef"/>
2775          <xsd:field xpath="@ref"/>
2776          <xsd:field xpath="@version"/>
2777        </xsd:keyref>
2778
2779        <xsd:key name="Object_AnyVersionedKey">
2780          <xsd:selector xpath=".//netex:ResourceFrame | .//netex:CompositeFrame | .//netex:SiteFrame | .//netex:ServiceFrame | .//netex:InfrastructureFrame | .//netex:TimetableFrame |
.//netex:GeneralFrame  | .//netex:SiteFrame | .//netex:ServiceCalendarFrame | .//netex:VehicleScheduleFrame  |  .//netex:DriverScheduleFrame |.//netex:FareFrame | .//netex:RailwayJunction|
.//netex:RoadJunction| .//netex:WireJunction|.//netex:ReliefPoint  |.//netex:GaragePoint  |.//netex:ParkingPoint  | .//netex:ScheduledStopPoint  | .//netex:TimingPoint  |.//netex:ActivationPoint
|.//netex:BeaconPoint  |.//netex:RoutePoint  | .//netex:TrafficControlPoint  |.//netex:Place |.//netex:StopPlace | .//netex:ServiceSite |  .//netex:TopographicPlace |.//netex:PointOfInterest  |.//netex:Parking
|  .//netex:EquipmentPlace  | .//netex:FlexibleStopPlace | .//netex:AccessZone |.//netex:TariffZone | .//netex:RoadAddress | .//netex:PostalAddress |  .//netex:Quay | .//netex:AccessSpace  |
.//netex:BoardingPosition |  .//netex:StopArea | .//netex:HailAndRideArea |  .//netex:FlexibleArea |.//netex:VehicleStoppingPlace |  .//netex:VehicleStoppingPosition | .//netex:VehicleEntrance |
.//netex:StopPlaceEntrance | .//netex:StopPlaceVehicleEntrance | .//netex:PointOfInterestEntrance | .//netex:ParkingPassengerEntrance |  .//netex:ParkingEntranceForVehicles | .//netex:ParkingBay |
.//netex:ParkingArea |   .//netex:AdministrativeZone | .//netex:Country |   .//netex:RoutingConstraintZone  |.//netex:ActivationLink  | .//netex:TimingLink  |  .//netex:ServiceLink | .//netex:Connection
|.//netex:Access |  .//netex:NavigationPath |.//netex:PathJunction  | .//netex:VehicleJourney |  .//netex:DeadRun |.//netex:ServiceJourney |.//netex:TemplateServiceJourney
|.//netex:TemplateServiceJourney | .//netex:SpecialService |.//netex:DatedVehicleJourney  |.//netex:NormalDatedVehicleJourney |  .//netex:TimingPattern |.//netex:Operator | .//netex:GroupOfOperators
|.//netex:Authority | .//netex:OtherOganisation | .//netex:TravelAgent | .//netex:ServicedOrganisation |  .//netex:GeneralOrganisation | .//netex:ManagementAGent | .//netex:Line| .//netex:GroupOfLines |
.//netex:Garage | .//netex:Crewbase  |  .//netex:TimingPattern | .//netex:Route | .//netex:ServicePattern | .//netex:DeadRunPattern |.//netex:GroupOfServices  "/>
2781          <xsd:field xpath="@id"/>
2782          <xsd:field xpath="@version"/>
2783        </xsd:key>  -->
```

Figure 52: Validation of ObjectRef commented in XSD.

Therefore using this possibility should be done with care and that’s why we don’t do it for the time being (LATER)

10.29.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	Assignment	NOTICE ASSIGNMENT inherits from ASSIGNMENT	
Attributes: • id • version • order				
id	1:1	NoticeAssignmentIdType	Identifier of NoticeAssignment.	NoticeAssignment:8501023-46346

order	1:1	xsd:integer	Order of NoticeAssignment	200
validityConditions	0:*	+AvailabilityConditionRef	A specific type of VALIDITY CONDITION used to specify a set of temporal conditions that can be associated with the NOTICE ASSIGNMENT, for example that the corresponding NOTICE only applies on particular days of a period (indicated by ValidDayBits "Verkehrstagebitfeld").	<validityConditions> <AvailabilityConditionRef ref="ch:1:AvailabilityCondition:17" version="any" /> </validityConditions>
LATER				
NoticeRef	0:1	VersionOfObjectRefStructure	Reference to a Notice element	<NoticeRef ref="Notice:Hin-46346" version="any" />
NoticedObjectRef	0:1	VersionOfObjectRefStructure	Reference to the Object to which the Notice is assigned (can be GroupOfNoticeRef). Is omitted depending on context (if noticeAssignments is listed in the object itself)	
LATER				
LinkSequenceRef	0:1	LinkSequenceRefType	Reference to a LinkSequence object	
NOT TO BE USED				
SectionRef	0:1	SectionRefType	Reference to a Section object	
NOT TO BE USED				
StartPointInPatternRef	0:1	PointInSequenceRefType	Point at which applicability of referenced Notice starts	
NOT TO BE USED				
EndPointInPatternRef	0:1	PointInSequenceRefType	Point at which applicability of referenced Notice ends. If absent, same as start	
NOT TO BE USED				
Advertised	0:1	xsd:boolean	Wheter Notice is advertised to public	
NOT TO BE USED				

BrandingRef	0:1	TypeOfValueRefStructure	Reference to a BRANDING.	
NOT TO BE USED				
CanBeAdvertised	0:1	xsd:boolean	Wheter Notice is advertised	
NOT TO BE USED				
Mark	0:1	xsd:string	Mark associated with Notice	
NOT TO BE USED				
MarkUrl	0:1	xsd:anyURI	URL for image associated with Notice	
NOT TO BE USED				
PrivateCode	0:1	PrivateCodeType	PrivateCode of NoticeAssignment	
NOT TO BE USED				
PublicCode	0:1	xsd:normalizedString	PublicCode of NoticeAssignment	
NOT TO BE USED				
PublicityChannel	0:1	xsd:PublicityChannelEnumeration		
NOT TO BE USED **PublicityChannelEnumeration**: • printedMedia • dynamicMedia • none				
ShortCode	0:1	xsd:normalizedString	ShortCode of NoticeAssignment	
NOT TO BE USED				
Text	0:1	multilingualString	NoticeAssignment Text	

10.29.3 Example

```
<NoticeAssignment id="ch:1:NoticeAssignment:A__TT:ch_1_ServiceJourney_11-1622-101-1_0" version="any" order="1">
  <NoticeRef ref="ch:1:Notice:A__TT" version="any"/>
```

```xml
</NoticeAssignment>
<NoticeAssignment id="ch:1:NoticeAssignment:A__VR:ch_1_ServiceJourney_11-1622-101-1_0" version="any" order="2">
  <NoticeRef ref="ch:1:Notice:A__VR" version="any"/>
</NoticeAssignment>
<NoticeAssignment id="ch:1:NoticeAssignment:A___R:ch_1_ServiceJourney_11-1622-101-1_0" version="any" order="3">
  <NoticeRef ref="ch:1:Notice:A___R" version="any"/>
</NoticeAssignment>
<NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJourney_801-66008-2-1_0" version="any" order="0">
  <NoticeRef ref="ch:1:Notice:366" version="any"/>
</NoticeAssignment>
<NoticeAssignment id="ch:1:NoticeAssignment:ch_1_ServiceJourney_801-66148-1-1_0" version="any" order="0">
  <NoticeRef ref="ch:1:Notice:366" version="any"/>
</NoticeAssignment>
```

10.29.4 Hints

-

10.30 Checkin and Checkout modelling

Checkin- and Checkout times for an airport gate or any other access restricted area can be modeled with the CHECK CONSTRAINT object. Since CHECK CONSTRAINT is part of the SITE COMPONENT GROUP, it is usable by any component related to transfer like QUAY or ENTRANCEs. It can also be used in CALLS of a SERVICE JOURNEY. CHECK CONSTRAINT has an element CHECK CONSTRAINT DELAY which comprises minimal, maximal and average delays caused by the constraint. Whether these delays are experienced at the entrance or exit is defined by the element CHECK DIRECTION, unless given by the properties of the SITE COMPONENT (BoardingUse, AlightingUse, ForExit, ForEntry).

CheckIn- and CheckOut times to an airport gate or other access restricted areas kann be modeled with a checkConstraint element. The CheckConstraint is a SiteComponentGroup and therefore a component that can be used for Interchage information, e.g. Quay or Entrace elments.

The CheckConstraint element is also a Delay subelement: The minimal, maximal or average delay can be added. The direction for wich the delay is valid can be defined in CheckDirectoin, when not already defined by attributes of the SiteComponent (BoardingUse, AlightingUse, ForExit, ForEntry).

10.31 CheckConstraint

(NeTEx-1, 8.5.11)
IGNORED AT IMPORT
There may be points in the STOP PLACE or SITE that incur significant delays either always or at certain times of day – for example, to buy a ticket, pass through a ticket barrier or security check, or immigration control. 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.

One can also specify a VALIDITY CONDITION for when it applies (e.g. ticket machine queue delays 5-10 minutes, 8:30-9:30 am). These can be used to give more realistic journey times and to warn users of potential bottlenecks of which they might not be aware, (for example trying to buy a TfL ticket at a major station in rush hour).

If more than one CHECK CONSTRAINT is valid at a given time, an order of precedence can be specified.

*Used to mark PATH LINKs (see chapter **Erreur ! Source du renvoi introuvable.**) to determine transit routes through interchanges. A CHECK CONSTRAINT associated with a PATH LINK by default applies in the directions specified for it (i.e. one way or two way). It may be further restricted to apply only in a given sense of the link.*

10.31.1 Business Requirements

CheckConstraints can be used for different things. E.g. in case of an airport gate or with TGV it is mandatory to be at the gate/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 interchange this could also be modeled as CheckConstraint (e.g. in Geneva the trains from and to France).

There is another use case. If a ServiceJourney is overcrowded, the connections are not guaranteed on a narrow quay because the passengers can’t change to the different quay in the usual time span. This results in a breaking of the interchange. The interchange time for that service journey is longer by n minutes than the default. This could certainly be done with using the Interchange on the ServiceJourney level. It can also be modeled with CheckConstraint (which is nearer to the way it is done with HRDF/Info+. The following image shows the model:

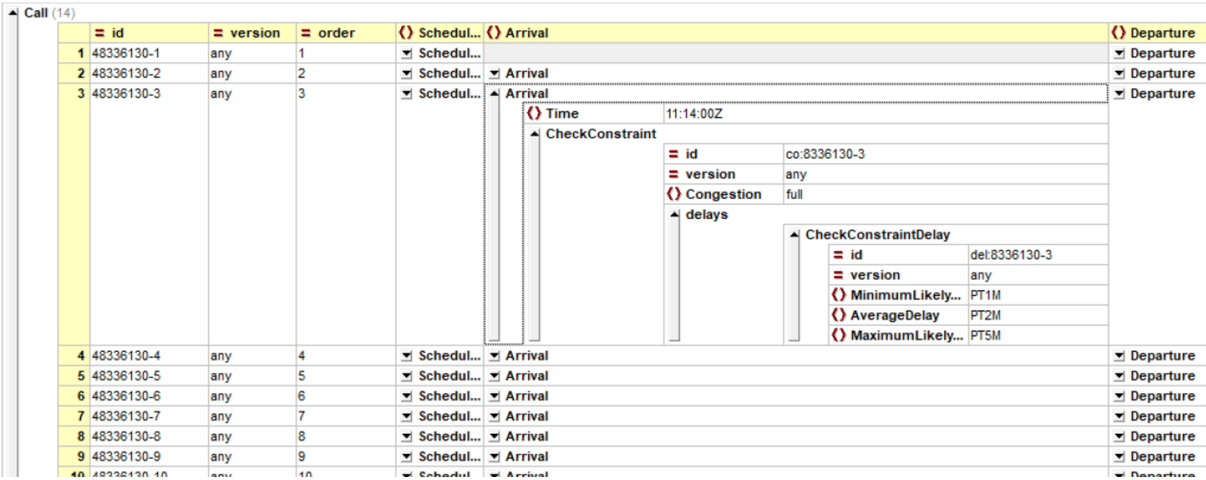


Figure 53: CheckConstraint with Call/Arrival.

A CheckConstraint with the type "Congestion“ (Stau) is used. With "CongestionEnumeration“ the exact type of congestion can be indicated:

```
<xsd:simpleType name="CongestionEnumeration">
    <xsd:annotation>
        <xsd:documentation>Allowed values for a congestion.</xsd:documentation>
    </xsd:annotation>
    <xsd:restriction base="xsd:string">
        <xsd:enumeration value="noWaiting"/>
        <xsd:enumeration value="queue"/>
        <xsd:enumeration value="crowding"/>
        <xsd:enumeration value="full"/>
    </xsd:restriction>
</xsd:simpleType>
```

Figure 54: Possible types for the Congestion element.

In this case we choose the value "full“. For the delay caused by the congestion a minimal, maximal and average value can be provided:

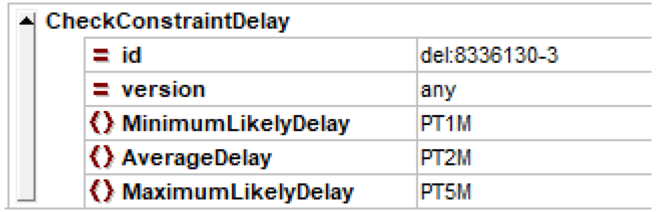


Figure 55: Time indicated for the CheckConstraint.

In HRDF CI and CO are always directly added to arrival and departure time for interchange calculation.

SNCF might use EarliestDepartureTime instead of CheckConstraints.

10.31.2 Structure

Element	Usage	Structure	Description	Example
checkConstraints		-structure		
::>	::>	DataManagedObject	CHECK CONTRAINT inherits from DATA MANAGED OBJECT	
Attributes: • id • order • version				
Id	1:1	IdType	Identifier of CHECK CONSTRAINT.	id="ch:1:CheckCon-straint:8516161-spl-1-chc-1"
validityConditions	0:*	AvailabilityConditionRef	A specific type of VALIDITY CONDITION used to specify a set of temporal conditions that can be associated with the CHECK CONSTRAINT, for example that the corre-	<validityConditions> <AvailabilityConditionRef ref="ch:1:AvailabilityCondi-tion:17" version="any" /> </validityConditions>

			sponding constraint only applies on particular days (indicated by ValidDayBits “Verkehrstagebitfeld”).	
AvailabilityCondition with ValidDayBits (HRDF BITFELD). The AvailabilityConditions are centrally stored and only referenced here. ValidDayBits must be set correctly.				
Name	0:1	xsd:MultilingualString	Name of CHECK CONSTRAINT.	<Name>Ticket clipper at staircase 1 in main area</Name>
AffectedObjectRef	0:1	ObjectRef	Reference to ENTITY affected by process defined by CHECK CONSTRAINT.	
ClassOfUseRef	0:1	FareClassRef	Reference to CLASS OF USE for which CHECK CONSTRAINT applies. E.g. There may be different delays for First class than for second class.	
NOT TO BE USED				
TypeOfEquipmentRef		TypeOfEquipmentRefStructure	Identifier of TYPE OF EQUIPMENT.	
NOT TO BE USED				
CheckDirection	0:1	CheckDirectionEnum	For CHECK CONSTRAINTs associated with PATH LINKs, the direction in which the check applies. Forwards = from/to, backwards = to/from. For Check constraints associated with an external ENTRANCE, forwards means into the SITE, backwards is out of the SITE.	<CheckDirection>bothWays</CheckDirection>
CheckDirectionEnum: • forwards • backwards • bothWays				

CheckProcessType	0:1	CheckProcessEnum	Type of process that may occur at CHECK CONSTRAINT.	<CheckProcess>ticketValida-tion</CheckProcess>

Only a few Enum types are used at the beginning.

CheckProcessEnum:

- none
- unknown
- boarding
- alighting
- ticketPurchase
- ticketCollection
- ticketValidation
- baggageCheckIn
- checkout
- oversizeBaggageCheckIn
- oversizeBaggageReclaim
- baggageReclaim
- leftLuggageDeposit
- leftLuggageReclaim
- firstclassCheckin
- specialNeedsCheckin
- baggageSecurityCheck
- securityCheck
- outgoingPassportControl
- incomingPassportControl
- fasttrackDepartures
- fasttrackArrivals
- incomingDutyFree
- outgoingDutyFree
- taxRefunds
- outgoingCustoms
- incomingCustoms
- waitForLift

• ingress • egress • queue • vehicleLoading • vehicleUnloading • other				
CheckService	0:1	CheckServiceEnum	Nature of service that may occur at CHECK CONSTRAINT.	<CheckService>self-Service</CheckService>
LATER **CheckServiceEnum**: • selfService • counterService • anyService • other				
ObjectRef	0:1	ObjectRefStructure	Reference to other object affected by CHECK CONSTRAINT, e.g. SERVICE JOURNEY.	
AccessFeatureType	0:1	AccessFeatureTypeEnum	Type of physical feature that may slow use of CHECK CONSTRAINT.	<AccessFeatureType>open-Space</AccessFeatureType>
LATER **AccessFeatureTypeEnum**: • lift • escalator • freightElevator • travelator • ramp • stairs • seriesOfStairs • shuttle				

• crossing • barrier • narrowEntrance • hall • concourse • confinedSpace • queueManagement • none • unknown • other • openSpace • street • pavement • footpath • passage				
Congestion	0:1	CongestionEnum	Type of crowding that may slow use of CHECK CONSTRAINT.	<Congestion>noWaiting</Con-gestion>
CongestionEnum: • noWaiting • queue • crowding • full				
FacilityRef	0:1	FacilityRefStructure	Reference to FACILITY affected by CHECK CONSTRAINT.	
NOT TO BE USED				
delays	0:*	CheckConstraintDelay	Durations needed to pass through CHECK CONSTRAINT.	
throughput	0:*	CheckConstraintThrough-put	CHECK CONSTRAINT THROUGHPUTs at CHECK CONSTRAINT.	
NOT TO BE USED				

10.31.3 Example

```
<checkConstraints>
    <CheckConstraint id="ch:1:CheckConstraint:8516161-spl-1-chc-1" order="1" version="any">
      <Name>Ticket clipper at staircase 1 in main area</Name>
      <CheckDirection>bothWays</CheckDirection>
      <CheckProcess>ticketValidation</CheckProcess>
      <CheckService>selfService</CheckService>
      <AccessFeatureType>openSpace</AccessFeatureType>
      <Congestion>noWaiting</Congestion>
      <delays>
        <CheckConstraintDelay id="ch:1:CheckConstraintDelay:8516161-spl-1-chc-1-d-1" order="1" version="any">
          <MinimumLikelyDelay>PT5S</MinimumLikelyDelay>
          <AverageDelay>PT10S</AverageDelay>
          <MaximumLikelyDelay>P1M</MaximumLikelyDelay>
        </CheckConstraintDelay>
      </delays>
    </CheckConstraint>
</checkConstraints>
```

10.31.4 Hints

-

10.32 CheckConstraintDelay

(NeTEx-1, 8.5.11.2.3)
IGNORED AT IMPORT
Time penalty associated with a CHECK CONSTRAINT.

10.32.1 Business Requirements

There exist minimal, maxium and average duration. We set them all to the same value due to processing reasons. During import only average will be imported.

10.32.2 Structure

Element	Usage	Structure	Description	Example
CheckConstraint		-structure		
Attributes: • id • order • • version				
id		CheckConstraintDelayId	ID of CHECK CONSTRAINT DELAY.	
MinimumLikelyDelay	0:1	xsd:duration	Minimum duration needed to pass through CHECK CONSTRAINT.	<MinimumLikelyDe-lay>PT5S</MinimumLikelyDelay>
IGNORED at IMPORT				
AverageDelay	0:1	xsd:duration	Average duration expected to pass through CHECK CONSTRAINT.	<AverageDelay>PT10S</Aver-ageDelay>
MaximumLikelyDelay	0:1	xsd:duration	Maximum duration expected to pass through CHECK CONSTRAINT.	<MaximumLikelyDe-lay>P1M</MaximumLikelyDelay>
NOT TO BE USED				

10.32.3 Example

```
<delays>
    <CheckConstraintDelay id="ch:1:CheckConstraintDelay:8516161-spl-1-chc-1-d-1" order="1" version="any">
        <MinimumLikelyDelay>PT5S</MinimumLikelyDelay>
        <AverageDelay>PT10S</AverageDelay>
        <MaximumLikelyDelay>P1M</MaximumLikelyDelay>
    </CheckConstraintDelay>
</delays>
```

10.32.4 Hints

-

10.33 CheckConstraintThroughput

(NeTEx-1, 8.5.11.2.4)
NOT TO BE USED
Throughput of a CHECK CONSTRAINT: the number of passengers who can pass through it in a specified interval.
-

10.34 Interchange

(NeTEx-2, 7.2.7)
NOT TO BE USED (We only use the derived classes)
In order to reach the destination of a trip if there is no direct service between the origin and the destination SCHEDULED STOP POINTs, a passenger will have to interchange between vehicles. A transfer will be necessary where the passenger will leave the vehicle at a particular SCHEDULED STOP POINT and enter another vehicle (which serves another SERVICE JOURNEY, usually on a different LINE) at the same or another SCHEDULED STOP POINT.

Each SERVICE JOURNEY INTERCHANGE involves two different SERVICE JOURNEYs. The passenger makes the transfer from a feeder SERVICE JOURNEY to a distributor ("fetcher") SERVICE JOURNEY.

Sometimes both SERVICE JOURNEYs are planned to stop at exactly the same SCHEDULED STOP POINT but usually there are two different (but nearby) SCHEDULED STOP POINTs involved. In such a case, these SCHEDULED STOP POINTs will often (but need not necessarily) belong to the same STOP AREA. Passengers will have to walk a certain distance after disembarking from the feeder SERVICE JOURNEY to reach the stop position of the distributor SERVICE JOURNEY.

A CONNECTION expresses that there is a possible walking link 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 may be used.

The connection time information could also be used for passenger information such as in travel planners, however sometimes more detailed information about timings and suitable paths adapted to the individual traveller's specific preferences and capabilities is necessary. In that case additional information can be retrieved from attributes related to the physical model, such as PATH LINKs and NAVIGATION PATHs.

10.34.1 Business Requirements

In general, the INTERCHANGE classes are used for the mapping of transfer times, especially for advertised or guaranteed connections whenever specific SERVICE JOURNEYs or certain kinds of journeys are involved. CONNECTIONs on the other hand are use for the mapping of walking lines between the places of a potential interchange, i.e., whenever SCHEDULED STOP POINTs or STOP PLACEs are involved (independent from SERVICE JOURNEYs).

We will only use the sub class SERVICE JOURNEY INTERCHANGE and INTERCHANGE RULE. In particular, interchange data from the core exchange format HRDF is mapped to INTERCHANGE RULEs (as well as CONNECTIONs). See the following chapters for details.

10.34.1 Structure

Since we actually only use the interchange subclass ServiceJourneyInterchange, the structural part here is omitted. All elements relevant for inheritance are summarized in the InterchangeGroup in the following section.

10.35 ServiceJourneyInterchange

(NeTEx-2, 7.2.7.3.3)
NOT TO BE USED
The scheduled possibility for transfer of passengers between two SERVICE JOURNEYs at the same or different STOP POINTs.

In some cases a SERVICE JOURNEY INTERCHANGE expresses an interchange between two SERVICE JOURNEYs specifically planned to be operated by the same physical vehicle. This concept is for instance used for circular lines and coupled journeys. This means that passenger information should be adapted to the fact that the passenger should not change vehicle as the transfer is implicit. In this case it is also important that operation control staff is aware of the consequences to passengers if the operation is altered in such a way that two different vehicles are used for the two involved SERVICE JOURNEYs.

In real-time operation, interchanges that are advertised to the public should be controlled. For instance, vehicles may sometimes have to wait if the arriving vehicle in an interchange is delayed. The company will probably define certain rules and instructions for drivers on how to react in case of deviations from the planned schedule.

The SERVICE JOURNEY INTERCHANGE may be used to store some information on the planned interchange between two SERVICE JOURNEYs such as if it is advertised or not, if it is guaranteed or not and the maximum time a vehicle may wait for a connecting vehicle, beyond the planned departure time.

10.35.1 Business Requirements

ServiceJourneyInterchange enables us to deliver the effectively calculated journey pairs (see the following figure) as opposed to the interchange times between Lines which are usually independent of journeys (HRDF UMSTEIGL). However, since HRDF UMSTEIGZ does provide StopPlace information (without any Quay), and ServiceJourneyInterchange only allows ScheduledStopPoint references, we cannot use ServiceJourneyInterchanges for our HRDF mapping. We model UMSTEIGL as well as UMSTEIGZ solely with InterchangeRule (see chapter 10.36).

10.36 InterchangeRule

(NeTEx-2, 7.2.8)
IGNORED AT IMPORT
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.

The INTERCHANGE RULE instead provides enough details so that eligible SERVICE JOURNEY INTERCHANGEs can be determined at a later stage after the scheduling is completed. This later stage could be when two schedules from different sources are coordinated in an integrator system, or in real time in a system considering late re-scheduling and delays of involved LINEs.

As described earlier, 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 or nearby SCHEDULED STOP POINT.

Often the two involved SERVICE JOURNEYs in the interchange are planned separately. Sometimes the SERVICE JOURNEYs are worked by different companies.

This means that it is not an easy task for a scheduler to keep track of the exact details of the SERVICE.JOURNEY at the other end of an intended interchange as the SERVICE JOURNEY at the other end might be altered, deleted or replaced at any time.

Instead of trying to keep track of such external changes and continuously readjust the schedule with the.details of the external SERVICE JOURNEY, it is easier in this case to use an INTERCHANGE RULE..

The INTERCHANGE RULE uses INTERCHANGE RULE PARAMETERs which will remain stable over time.to identify the involved SERVICE JOURNEYs.

The INTERCHANGE RULE PARAMETER specifies criteria that a candidate SERVICE JOURNEY shall fulfil to be considered. Examples of such criteria are working on a certain LINE in a specific DIRECTION. There could also be criteria relating to time of day or matching a specified SERVICE JOURNEY identifier. Which criteria or combination of criteria that are used will differ for different use cases.

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. Instead of specifying a SCHEDULED STOP POINT, it is possible to specify a STOP AREA. This is interpreted as that any SCHEDULED STOP POINT within that STOP AREA is accepted for the related SERVICE JOURNEY. The STOP AREA construction is useful when the exact details of where the vehicle is planned to stop are not known in advance, or might change at a late stage.

Finally there is also a final matching criterion, the maximum interchange window duration. This is used to filter out pairs of feeder and distributor SERVICE JOURNEYs where the feeder is planned to arrive so much earlier than the distributor is planned to depart, that the combination is not of interest as a SERVICE JOURNEY INTERCHANGE.

10.36.1 Business Requirements

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:InterchangeRule:<generated_key>		Yes	Artifically generated by Converter	ch:1:InterchangeRule:1015776_jZ_79740_80040
ch:1:sccid:<AdminOrg>:<Technical_ID>	The "Swiss Connection ID" or SCCID will presumably replace the IDs of the	Yes	Built from Attributes by Converter	

	NeTEx objects "InterchangeRule", "ServiceJourneyInterchange" and "Connection". The <Technical_ID> is still under discussion.			

Table 51: InterchangeRule ID definition.

The following section describes, in addition to a general description of the NeTEx model, how interchange data from the core exchange format HRDF is mapped to the NeTEx InterchangeRule model. HRDF contains different levels of granularity for interchanges, see also section 8.24.1.1 for a description of the other levels (mapped differently, to the NeTEx Connection model).

10.36.1.1 UMSTEIGL (HRDF)

UMSTEIGL describes the transfer times between two Lines at a given StopPlace (also depends on the Directions, Operators and ProductCategories). However, we map only those entries of UMSTEIGL to InterchangeRules, where the line number and direction value have specific values, i.e., are **not** arbitrary (“*****”). All other entries (for arbitrary "*" Line and Direction) are mapped to NeTEx DefaultConnections (see chapter 8.24.1.6).

UMSTEIGL provides the following information (examples are given in brackets):

- StopPlace (8508207)
- Organiation (000033)
- TransportMode or "VMArt" (RE)
- Line number (e.g. "8" or arbitrary "*")
- Direction flag (2)
- Transfer time in minutes (002)
- "!" or space that indicates whether the connection is guaranteed or not ("!" means "Guaranteed=true")

```
8507100 000011 IC  *        * 000011 EC  *        * 006  Thun
8507050 000827 NFT 8        * 000850 NFB 40       * 004  Bern, Egghölzli
8587568 000138 NFB 300      * 000138 NFB 401      * 005  Grabs, Industrie
8508207 000033 RE  *        * 000033 S   2        * 004  Langnau i.E.
8576937 000870 NFB 51       * 000870 NFB 52       * 002  Langenthal, Bahnhof
8501609 000011 IC  *        * 000011 ATZ *        * 008  Brig
```

```
8500010 000011 EXT *         * 000011 TER *         * 010  Basel SBB
8500010 000011 IC  *         * 000011 TE2 *         * 010  Basel SBB
8500010 87____ TE2 *         * 000011 ICE *         * 010  Basel SBB
574223 000885 BUS 7         R 000885 BUS 2         R 002  St. Gallen, St.Leonhard
8574223 000885 BUS 7         H 000885 BUS 2         R 002  St. Gallen, St.Leonhard
8503472 sbg034 BUS 7362      H sbg034 TX  7362      H 000! Rielasingen, Kirche
```

The interchange can be marked as guaranteed with a "!“. TransportMode (VMArt) and direction can be marked as “*” meaning “all”.

Table 52: Mapping between HRDF table “UMSTEIGL” and InterchangeRule of NeTEx:

HRDF	NeTEx
Haltestellennummer	• FeederFilter/**StopPlaceRef** • DistributorFilter/**StopPlaceRef**
Verwaltung 1	FeederFilter/**OperatorRef** *
Gattung/Verkehrsmittel 1	• FeederFilter/**TransportMode** • Extensions/**FeederProductCategoryRef** Since the HRDF data allows a more detailed description of the mode, an Extension is used to specify the ProductCategory of the feeder as well.
Linie 1	• FeederFilter/LineInDirectionRef/**LineRef** However, LineInDirection (and therefore LineRef) is replaced with **AllLines** if HRDF value is arbitrary "*" (i.e. valid for all Lines). Keep in mind, that at least one Line must be specified (other than arbitrary) for the UMSTEIGL entry to be mapped to an InterchangeRule.
Richtung 1	• FeederFilter/LineInDirectionRef/**DirectionRef** However, DirectionRef is omitted if HRDF value is arbitrary "*" (i.e. valid for all Directions).
Verwaltung 2	DistributorFilter/**OperatorRef** *
Gattung/Verkehrsmittel 2	• DistributorFilter/**TransportMode** • Extensions/**DistributorProductCategoryRef** Since the HRDF data allows a more detailed description of the mode, an Extension is used to specify the ProductCategory of the Distributor as well.

Linie 2	• DistributorFilter/LineInDirectionRef/**LineRef** However, LineInDirection (and therefore LineRef) is replaced with **AllLines** if HRDF value is arbitrary "*" (i.e. valid for all Lines). Keep in mind, that at least one Line must be specified (other than arbitrary) for the UMSTEIGL entry to be mapped to an InterchangeRule.
Richtung 2	• DistributorFilter/LineInDirectionRef/**DirectionRef** However, DirectionRef is omitted if HRDF value is arbitrary "*" (i.e. valid for all Directions).
Umsteigezeit	• **MinimumTransferTime** Could also be used inside the timings/InterchangeRuleTiming subelement but is simpler and requires less space if defined as direct child node of ServiceJourneyInterchange.
Garantierter Umstieg • “!“ • <empty>	**Guaranteed** ** • "Guaranteed=true" must be set • "Guaranteed=false" can be omitted because it is the default value
Haltestellenname	We suggest including it as XML comment (is equal to StopPlace/Name)

* OperatorRef is redundant when a line is provided, because LineRef is already unique.

** "Controlled" means that the interchange is secured by technical or organisational measures.
"Guaranteed" means that the passanger can gets a compensation, if the interchange is missed.
See also the next section (10.36.1.4) for a more detailed discussion.

The second row of the UMSTEIGL example above would be mapped to the following InterchangeRule (keep in mind that we use simplified IDs here):

```
8507050 000827 NFT 8         * 000850 NFB 40        * 004  Bern, Egghölzli
```

```
<InterchangeRule id="ch:1:InterchangeRule:8507050:Lines_8-40" version="any">
  <Extensions>
    <FeederProductCategoryRef ref="ch:1:TypeOfProductCategory:T" version="any"/>
    <DistributorProductCategoryRef ref="ch:1:TypeOfProductCategory:B" version="any"/>
  </Extensions>
  <Guaranteed>false</Guaranteed>
  <MinimumTransferTime>PT4M</MinimumTransferTime>
```

```xml
    <FeederFilter>
      <TransportMode>tram</TransportMode>
      <StopPlaceRef ref="ch:1:StopPlace:8507050" version="any"/>
      <OperatorRef ref="ch:1:Operator:827" version="any"/>
      <LineInDirectionRef>
        <LineRef ref="ch:1:Line:827:8" version="any"/>
      </LineInDirectionRef>
    </FeederFilter>
    <DistributorFilter>
      <TransportMode>bus</TransportMode>
      <StopPlaceRef ref="ch:1:StopPlace:8507050" version="any"/>
      <OperatorRef ref="ch:1:Operator:850" version="any"/>
      <LineInDirectionRef>
        <LineRef ref="ch:1:Line:850:40" version="any"/>
      </LineInDirectionRef>
    </DistributorFilter>
  </InterchangeRule>
```

Note that the DirectionRef in LineInDirectionRef was omitted because of an arbitrary "*" HRDF value (i.e. valid for all feeder and distributor directions). Next, another example from UMSTEIGL with a specific Direction (we only use "H" for outbound and "R" for inbound):

```
8574223 000885 BUS 7        H 000885 BUS 2        R 001!  St. Gallen, St.Leonhard
```

```xml
<InterchangeRule id="ch:1:InterchangeRule:8574223:Lines_7-2" version="any">
  <Extensions>
    <FeederProductCategoryRef ref="ch:1:TypeOfProductCategory:B" version="any"/>
    <DistributorProductCategoryRef ref="ch:1:TypeOfProductCategory:B" version="any"/>
  </Extensions>
  <Guaranteed>true</Guaranteed>
  <MinimumTransferTime>PT1M</MinimumTransferTime>
  <FeederFilter>
    <TransportMode>bus</TransportMode>
    <StopPlaceRef ref="ch:1:StopPlace:8574223" version="any"/>
    <OperatorRef ref="ch:1:Operator:885" version="any"/>
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:885:7" version="any"/>
      <DirectionRef ref="ch:1:Direction:H" version="any"/>
    </LineInDirectionRef>
  </FeederFilter>
  <DistributorFilter>
```

```
    <TransportMode>bus</TransportMode>
    <StopPlaceRef ref="ch:1:StopPlace:8574223" version="any"/>
    <OperatorRef ref="ch:1:Operator:885" version="any"/>
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:885:2" version="any"/>
      <DirectionRef ref="ch:1:Direction:R" version="any"/>
    </LineInDirectionRef>
  </DistributorFilter>
</InterchangeRule>
```

The next mapping example shows a case where the distributor Line is not specified and arbitrary "*" instead. This means the InterchangeRule is valid for all possible distributor Lines hence the LineInDirection structure is replaced with the empty element "AllLines":

```
8506302 000065 S   55       * 000011 RE   *        * 004  St. Gallen
```

```
<InterchangeRule id="ch:1:InterchangeRule:8506302:Lines_55-:1" version="any">
  <Extensions>
    <FeederProductCategoryRef ref="ch:1:TypeOfProductCategory:S" version="any"/>
    <DistributorProductCategoryRef ref="ch:1:TypeOfProductCategory:RE" version="any"/>
  </Extensions>
  <Guaranteed>false</Guaranteed>
  <MinimumTransferTime>PT4M</MinimumTransferTime>
  <FeederFilter>
    <TransportMode>rail</TransportMode>
    <StopPlaceRef ref="ch:1:StopPlace:8506302" version="any"/>
    <OperatorRef ref="ch:1:Operator:65" version="any"/>
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:65:55" version="any"/>
    </LineInDirectionRef>
  </FeederFilter>
  <DistributorFilter>
    <TransportMode>rail</TransportMode>
    <StopPlaceRef ref="ch:1:StopPlace:8506302" version="any"/>
    <OperatorRef ref="ch:1:Operator:11" version="any"/>
    <AllLines/>
  </DistributorFilter>
</InterchangeRule>
```

10.36.1.2 UMSTEIGZ (HRDF)

UMSTEIGZ describes the transfer times between two ServiceJourneys at a given StopPlace, and provides the following information (examples are given in brackets):

- StopPlace (8508207)
- TrainNumber ("Fahrtnummer") of the first journey, also called feeder journey (30578)
- Operator of the first journey (000011)
- TrainNumber ("Fahrtnummer") of the second journey, also called distributor journey (09230)
- Operator of the second journey (000011)
- Interchange time in minutes (005)
- "!" or space that indicates whether the connection is guaranteed or not ("!" means "Guaranteed=true")
- Name of the StopPlace for better readability (Visp)

```
8501605 30830 000011 00269 000093 005  Visp
8501605 30818 000011 06124 000074 005  Visp
8501605 30828 000011 06134 000074 005  Visp
8500010 30578 000011 09230 000011 005  Basel SBB
8500010 30340 000011 17388 000011 005  Basel SBB
8500010 17322 000011 06886 000011 005  Basel SBB
8500010 31082 000011 96140 000011 005  Basel SBB
8500010 00091 000011 02075 000011 005  Basel SBB
8501500 01830 000011 26130 003074 005  Martigny
8500125 17378 000011 40778 007000 005  Courgenay
8502001 30439 000011 04742 000011 005  Zofingen
8502017 21938 000011 21938 007000 005  Waldibrücke
8502017 21946 000011 21946 007000 005  Waldibrücke
8502034 21979 007000 21979 000011 005  Beinwil am See
8502034 21955 007000 21955 000011 005  Beinwil am See
```

Instead of using VMArt / Line, a direct reference to the journeys is used. Again, we model this in NeTEx as InterchangeRule (see also the explanation in chapter 10.35.1 on why we cannot use ServiceJourneyInterchange):

Table 53: Mapping between HRDF table "UMSTEIGZ" and InterchangeRule of NeTEx:

HRDF	**NeTEx**
Haltestellennummer	• FeederFilter/**StopPlaceRef** • DistributorFilter/**StopPlaceRef**
Fahrtnummer 1	FeederFilter/**ServiceJourneyRef**
Verwaltung Fahrt 1	FeederFilter/**OperatorRef** *
Fahrtnummer 2	DistributorFilter/**ServiceJourneyRef**
Verwaltung Fahrt 2	DistributorFilter/**OperatorRef** *
Umsteigezeit	• **MinimumTransferTime** The TransferTime could also be used inside the timings/InterchangeRuleTiming subelement but is simpler and requires less space if defined as direct child node of ServiceJourneyInterchange.
Garantierter Umstieg	**Guaranteed** ** • "Guaranteed=true" must be set • "Guaranteed=false" can be omitted because it is the default value
Verkehrstagebitfeldnummer	• validityConditions/**AvailabilityConditionRef** The AvailabilityConditionID contains the number of the VP bitmap without leading zeros, whereas the ValidDayBits of the AvailabilityCondition contains the binary value of the VP hex value of BITFELD.
Haltestellenname	We suggest including it as XML comment (is equal to StopPlace/Name)

Table 54: Mapping between HRDF UMSTEIGZ and NeTEx InterchangeRule. Other attributes are taken from the corresponding FPLAN journeys.

* OperatorRef is redundant when a line is provided, because LineRef is already unique.

** "Guaranteed" means that the passanger can get a compensation if the interchange is missed.
"Controlled" means that the interchange is secured by technical or organisational measures.
See also the next section (10.36.1.4) for a more detailed discussion.

Example of an UMSTEIGZ entry mapped to two NeTEx InterchangeRules (keep in mind that we use simplified IDs here). The question of why two InterchangeRules are needed (with different validity) is explained below.

```
8500010 010578 000011 009230 000011 001  083237 Basel SBB
```

```xml
<InterchangeRule id="ch:1:InterchangeRule:8500010:Journeys_10578-9230:8732" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityConditionRef:8732" version="any" />
  </validityConditions>
  <Extensions>
    <FeederProductCategoryRef ref="ch:1:TypeOfProductCategory:IC" version="any"/>
    <DistributorProductCategoryRef ref="ch:1:TypeOfProductCategory:TGV" version="any"/>
  </Extensions>
  <StaySeated>false</StaySeated>
  <Planned>true</Planned>
  <Guaranteed>false</Guaranteed>
  <Controlled>true</Controlled>
  <MinimumTransferTime>PT1M</MinimumTransferTime>
  <timings>
    <InterchangeRuleTiming id="ch:1:InterchangeRuleTiming:8500010:Journeys_10578-9230:8732:1832-1834" version="any">
      <TimebandRef ref="ch:1:Timeband:1832-1834" version="any"/>
    </InterchangeRuleTiming>
  </timings>
  <FeederFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any"/>
    <OperatorRef ref="ch:1:Operator:11" version="any"/>
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:11:3" version="any"/>
      <DirectionRef ref="ch:1:Direction:H" version="any"/>
    </LineInDirectionRef>
    <ServiceJourneyRef ref="ch:1:ServiceJourney:11:10578-101" version="any"/>
    <MaximumInterchangeWindow>PT2M</MaximumInterchangeWindow>
  </FeederFilter>
  <DistributorFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any"/>
    <OperatorRef ref="ch:1:Operator:11" version="any"/>
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:11:NoLine" version="any"/>
      <DirectionRef ref="ch:1:Direction:H" version="any"/>
    </LineInDirectionRef>
    <ServiceJourneyRef ref="ch:1:ServiceJourney:11:9230-101" version="any"/>
    <MaximumInterchangeWindow>PT2M</MaximumInterchangeWindow>
  </DistributorFilter>
</InterchangeRule>
```

```xml
<InterchangeRule id="ch:1:InterchangeRule:8500010:ServiceJourneys_10578-9230:38600" version="any">
  <validityConditions>
    <AvailabilityConditionRef ref="ch:1:AvailabilityConditionRef:38600" version="any" />
  </validityConditions>
  <Extensions>
    <FeederProductCategoryRef ref="ch:1:TypeOfProductCategory:IC" version="any"/>
    <DistributorProductCategoryRef ref="ch:1:TypeOfProductCategory:TGV" version="any"/>
  </Extensions>
  <StaySeated>false</StaySeated>
  <Planned>true</Planned>
  <Guaranteed>false</Guaranteed>
  <Controlled>true</Controlled>
  <MinimumTransferTime>PT1M</MinimumTransferTime>
  <timings>
    <InterchangeRuleTiming id="ch:1:InterchangeRuleTiming:8500010:Journeys_10578-9230:38600:1832-1834" version="any">
      <TimebandRef ref="ch:1:Timeband:1832-1834" version="any"/>
    </InterchangeRuleTiming>
  </timings>
  <FeederFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any"/>
    <OperatorRef ref="ch:1:Operator:11" version="any"/>
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:11:3" version="any"/>
      <DirectionRef ref="ch:1:Direction:H" version="any"/>
    </LineInDirectionRef>
    <ServiceJourneyRef ref="ch:1:ServiceJourney:11:10578-105" version="any"/>
    <MaximumInterchangeWindow>PT2M</MaximumInterchangeWindow>
  </FeederFilter>
  <DistributorFilter>
    <StopPlaceRef ref="ch:1:StopPlace:8500010" version="any"/>
    <OperatorRef ref="ch:1:Operator:11" version="any"/>
    <LineInDirectionRef>
      <LineRef ref="ch:1:Line:11:NoLine" version="any"/>
      <DirectionRef ref="ch:1:Direction:H" version="any"/>
    </LineInDirectionRef>
    <ServiceJourneyRef ref="ch:1:ServiceJourney:11:9230-101" version="any"/>
    <MaximumInterchangeWindow>PT2M</MaximumInterchangeWindow>
  </DistributorFilter>
</InterchangeRule>
```

Note that InterchangeRuleTiming references a Timeband that represents the following time frame:

- Timeband/**StartTime**: ArrivalTime of the feeder journey at the referenced StopPlace.
- Timeband/**EndTime**: DepartureTime of the distributor journey at the referenced StopPlace.

The UMSTEIGZ entry itself doesn't provide any Line or Direction information (nor a MaximumInterchangeWindow). But via matching process, one can obtain the *L and *R attributes of the respective journey entries in HRDF FPLAN. In many cases the tuple consisting of the journey reference (*Z) and Operator code will not be unique, i.e., one will find multiple matches in FPLAN.

How do we match the UMSTEIGZ journeys in FPLAN?

1) Match the UMSTEIGZ journey in FPLAN with the journey number (*Z or also called TrainNumber) and Operator code.
   For example "30578 000011".

2) Match the resulting FPLAN journeys with the StopPlace information provided in the UMSTEIGZ entry (called “Betriebspunkt” or BP in HRDF). Meaning, if a journey contains the UMSTEIGZ StopPlace it is kept as possible candidate.

3) If there still exist multiple possibilies match the ValidDayBits of the resulting journeys (called “Verkehrsperiode” or VP in HRDF). More precisely, the ValidDayBits or hex value of the VP (in BITFELD) of the two journeys (*A VE row) in the UMSTEIGZ entry must have a non-zero intersection.

4) All remaining journeys with matching TrainNumber, Operator, StopPlace and ValidDayBits (VP) are exported to an InterchangeRule. Each InterchangeRule references the respective AvailabilityCondition (containing the ValidDayBits / VP) during which it is valid, i.e., an intersection of the UMSTEIGZ VP with the individual VPs of the referenced journeys. The MaximumInterchangeWindow (if used at all) can be calculated from the Arrival- and DepartureTime of the feeder and distributor journey (difference of the two).

The matching process is demonstrated on the example above:

```
8500010 010578 000011 009230 000011 001  083237 Basel SBB
```

This entry references the VP "083237", meaning that the interchange is valid only on four days (marked green) of the whole timetable year:

The first journey "010578 000011" of this entry, the so called feeder journey ("Zubringer"), matches with five journeys in FPLAN (so called variants). In this example actually every single journey contains the StopPlace referenced in the UMSTEIGZ entry (8500010). To possibly eliminate some of the journeys, we need to compare the VP of each feeder journey (in attribute *A VE) with the VP of the distributor journey, and with the VP referenced in the UMSTEIGZ entry (083237):

- A feeder journey with a VP that doesn't overlap with the distributor VP "002355" (see next table) can be ruled out.
  - This is not the case in the example above because the distributor journey is valid on every single day of the timetable period.
- If a pair of feeder and distributor journey (i.e. the intersection of their VPs) does not overlap with the UMSTEIGZ VP, then this pair can also be ruled out.
  - Since in this example the distributor journey is valid on every single day of the timetable period, we only need to compare the feeder VP with the UMSTEIGZ VP. This actually eliminates three of the five journeys.

The following table contains the five possible feeder journeys with their respective validity (crossed out means ruled out):

```
*Z 010578 000011   101                                      % -- 10899593644 --
*G IC  8509000 8500010                                      %
*A VE 8509000 8500010 019635                                %
*A BZ 8509000 8503000                                       %
*A FZ 8509000 8503000                                       %
*A R  8509000 8503000                                       %
*A RZ 8509000 8503000                                       %
*A WR 8509000 8503000                                       %
```

```
*I ZO                             000000348
*I PL 8509000 8500010             000000000
*L 3        8509000 8500010
*R H
8509000 Chur                                01609
8509002 Landquart                  01617   01619
8509411 Sargans                    01627   01628
0000176 Zimmerberg-Basistunn      -01655  -01655
8503000 Zürich HB                  01723   01734
0000175 Hauenstein-Basistunn      -01803  -01803
8500010 Basel SBB                  01832
-----------------------------------------------
```


```
*Z 010578 000011   102                                       % -- 10899593647 --
*G IC  8509000 8500010                                       %
*A VE 8509000 8500010 005651
*A BZ 8509000 8503000
*A FZ 8509000 8503000
*A R  8509000 8503000
*A RZ 8509000 8503000
*A WR 8509000 8503000
*I ZO                             000000348
*I PL 8509000 8500010             000000000
*L 3        8509000 8500010
*R H
8509000 Chur                                01609
8509002 Landquart                  01617   01619
8509411 Sargans                    01627   01628                 %
0000176 Zimmerberg-Basistunn      -01655  -01655                 %
8503000 Zürich HB                  01723   01734                 %
0000175 Hauenstein-Basistunn      -01803  -01803                 %
8500010 Basel SBB                  01832                         %
------------------------------------------------------------------------------------------------------------------
*Z 010578 000011   103                                       % -- 10899593650 --
*G IC  8509000 8500010                                       %
*A VE 8509000 8500010 068388                                 %
*A BZ 8509000 8503000                                        %
*A FZ 8509000 8503000                                        %
*A R  8509000 8503000                                        %
*A RZ 8509000 8503000                                        %
```

~~*A WR 8509000 8503000~~
~~*I ZO 000000348~~
~~*I PL 8509000 8500010 000000000~~
~~*L 3 8509000 8500010~~
~~*R H~~
~~8509000 Chur 01609~~
~~8509002 Landquart 01617 01619~~
~~8509411 Sargans 01627 01628~~
~~0000176 Zimmerberg-Basistunn -01655 -01655~~
~~8503000 Zürich HB 01723 01734~~
~~0000175 Hauenstein-Basistunn -01803 -01803~~
~~8500010 Basel SBB 01832~~

~~*Z 010578 000011 104 % -- 10899593653 --~~
~~*G IC 8509000 8500010 %~~
~~*A VE 8509000 8500010 033897~~
~~*A BZ 8509000 8503000~~
~~*A FZ 8509000 8503000~~
~~*A R 8509000 8503000~~
~~*A RZ 8509000 8503000~~
~~*A WR 8509000 8503000~~
~~*I ZO 000000348~~
~~*I PL 8509000 8500010 000000000~~
~~*L 3 8509000 8500010~~
~~*R H~~
~~8509000 Chur 01609~~
~~8509002 Landquart 01617 01619~~
~~8509411 Sargans 01627 01628 %~~
~~0000176 Zimmerberg-Basistunn -01655 -01655 %~~
~~8503000 Zürich HB 01723 01734 %~~
~~0000175 Hauenstein-Basistunn -01803 -01803 %~~
~~8500010 Basel SBB 01832 %~~

----

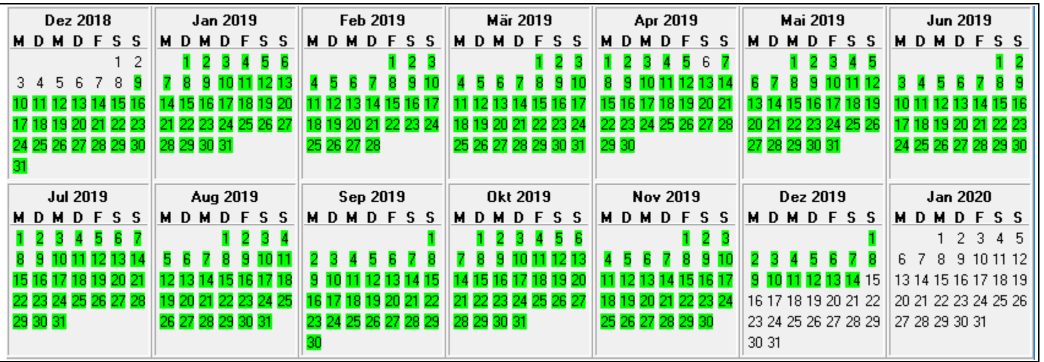
*Z 010578 000011 105 % -- 10899593654 --
*G IC 8509000 8500010 %
*A VE 8509000 8500010 038600 %
*A BZ 8509000 8503000 %
*A FZ 8509000 8503000 %
*A R 8509000 8503000 %

```
*A RZ 8509000 8503000
*A WR 8509000 8503000
*I ZO                          000000348
*I PL 8509000 8500010          000000000
*L 3          8509000 8500010
*R H
8509000 Chur                                01609
8509002 Landquart                    01617  01619
8509411 Sargans                      01627  01628
0000176 Zimmerberg-Basistunn        -01655 -01655
8503000 Zürich HB                    01723  01734
0000175 Hauenstein-Basistunn        -01803 -01803
8500010 Basel SBB                    01832
```

%

The second journey of the UMSTEIGZ entry, the so called distributor journey ("Abbringer"), only matches with one journey in FPLAN. The journey also conveniently valid on every single day of the timetable period (from 09.12.2018 until 14.12.2019).

```
*Z 009230 000011   101
*G TGV 8500010 8718206
*A VE 8500010 8718206 002355
*A GP 8500010 8718206
*A RR 8500010 8718206
*A VN 8500010 8718206
*A WS 8500010 8718206
*R H
8500010 Basel SBB                           01834
8718206 Mulhouse Ville               01853
```



The matching process provides the following result (the distributor journey is the same):

- UMSTEIGZ example applies to feeder journey "010578 000011   101" on VP intersection 083237 ∩ 019635 = 008732 (11./12. May)
- UMSTEIGZ example applies to feeder journey "010578 000011   105" on VP intersection 083237 ∩ 038600 = 038600 (4./5. May)

In the end, this means that we export two InterchaneRules, one for each VP intersection (represented by the AvailabilityConditionRef). These InterchangeRule examples can be found in the table above (where the demonstration example was introduced).

Two important things about interchange times provided by UMSTEIGZ need to be considered (independent of the example above):

1. For Interchanges that are to be avoided, a certain amount of time is added to ensure that a passenger cannot possibly make it. This indicates that the respective Interchange should be avoided.
2. Zero TransferTime is transmitted for important Interchanges that are generally always guaranteed by the responsible Operators.

10.36.1.3 UMSTEIGZ_VERKEHRSTAGE (HRDF)

A second (newer) version of UMSTEIGZ exists in HRDF. Compared to the original version 5.20.39, this second version introduces a bitfield-number “Verkehrsperiode” (VP) in the column after the transfer time. This bitfield-number corresponds to ValidDayBits in NeTEx, and is referenced in an InterchangeRule via AvailabilityConditionRef. The following table shows an excerpt of UMSTEIGZ with VPs:

```
8502202 30812  000011 07324  000011 005  000000 Rotkreuz
8502202 30848  000011 07358  000011 005  000000 Rotkreuz
8578112 01001  000883 01037  000883 005  000000 Derendingen, Ritterplatz
8505004 21346  000011 21234  007000 005  000000 Arth-Goldau
8502034 21955  007000 21955  000011 005  115574 Beinwil am See
8507079 15681  007001 15385  000033 005  033249 Bern Weissenbühl
8504307 07226  000011 03681  000011 005  000000 Courtelary
8502203 02690  007000 02690  000011 005  048251 Cham
8504307 07222  000011 03677  000011 005  000000 Courtelary
8507483 31073  000011 04275  000033 005  043816 Spiez
8501120 00720  000011 01535  000011 005  000000 Lausanne
8508312 02920  000086 21539  000086 005  000000 Giswil
8507071 15291  007001 15391  000033 005  000000 Seftigen
8508394 02977  007000 02977  000086 005  098010 Wolfenschiessen
8505213 25182  000011 25678  000011 005! 000000 Bellinzona
```

This is modelled in the same way as before, with a reference to an AvailabilityCondition containing ValidDayBits. See also the example in the previous section. The VP "000000" corresponds to daily service without restrictions (the bitfield would have a "1" for each day of the FPLAN year). See also chapter 9.34.5 for details about AvailabilityCondition).

10.36.1.4 Connection Certainty

The following boolean attributes are available, although they can be omitted most of the time because of the default values:

- **Planned**: Interchange is planned (random interchanges due to the timetable are not entered here).
- **Guaranteed**: Interchange is guaranteed, i.e., transfer durations are reliable and it is ensured that the distributor journey waits for the feeder journey.
- **Advertised**: Interchange is published, i.e., advertised to the passengers.
- **Controlled**: Interchange is secured by technical and/or organisational measures.

Possible interchange scenarios in the current system are:

1) **JourneyMeeting** (”Flügelung” / HRDF DURCHBI):

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

2) **Exception**:
   - Interchange can be avoided:

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

   - Interchange cannot be avoided:

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

Controlled	true	Yes

10.36.1.5 Interchange Validity

The validity of Interchanges is modelled with AvailabilityConditions (that contain ValidDayBits). ValidDayBits replace DayTypes, and directly indicate the particular days of a period for which the interchange applies. The ValidDayBits must be transformed and correctly mapped from the HRDF "Verkehrsperiode" or VP. Each VP in BITFELD points to a hex value that, when transformed to binary, contains a 1 for each day of the FPLAN year for which the Interchange applies (and a zero otherwise).

10.36.1.6 InterchangeTimings

The minimal and maximal acceptable interchange times are defined by time bands Multiple such time bands are possible (but we will not use them). The day time range itself must be defined – somehow cumbersome – in the ServiceCalendarFrame – because in timings only TimeBandRef are allowed:

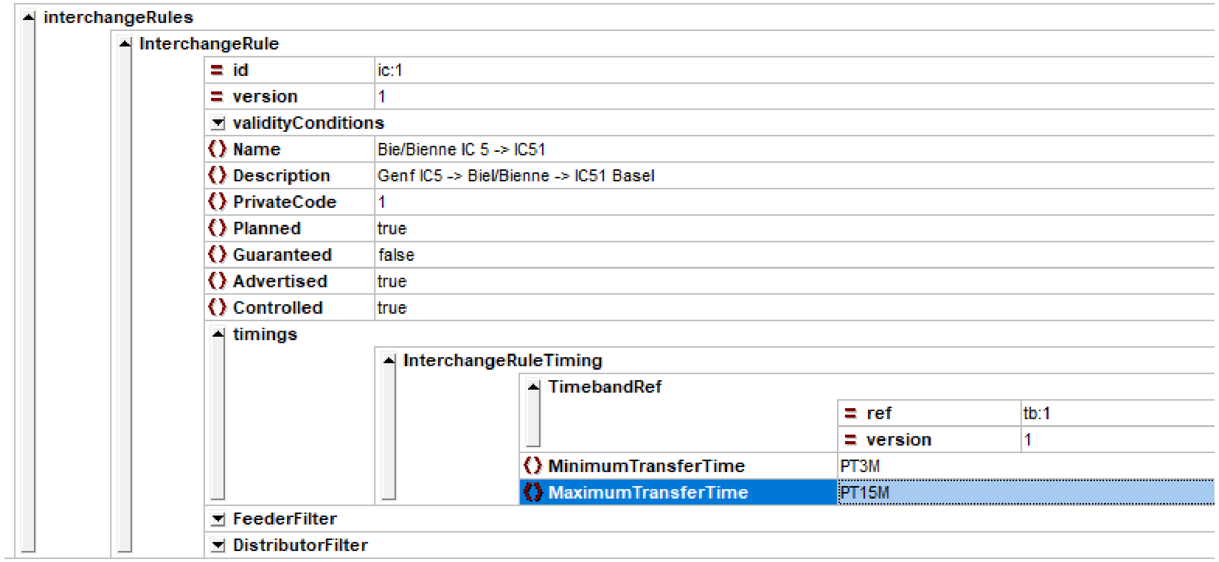


Figure 56: Validity of Interchanges with the timing element.

See the following figure for an excerpt of the ServiceCalendarFrame showing such a referenced Timeband.

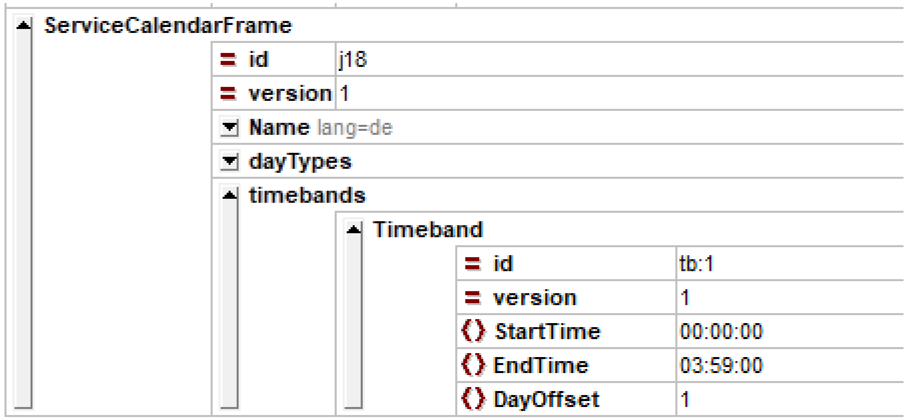


Figure 57: Definition of TimeBands with the correct element (00:00 to 03:59 of the following day).

10.36.2 Structure

Element	Usage	Structure	Description	Example
interchangeRules		-structure		
::>	::>	::>	INTERCHANGE RULE inherits from DATA MANAGED OBJECT.	
• id • version				
id	1:1	InterchangeRuleIdType	Identifier of INTERCHANGE RULE.	
See Table 51: InterchangeRule ID definition.				
validityConditions	0:*	+AvailabilityConditionRef	A specific type of VALIDITY CONDITION used to specify a set of temporal conditions that can be associated with the INTERCHANGE RULE, for example that the corresponding rule only	<validityConditions> <AvailabilityConditionRef ref="ch:1:AvailabilityCondi-tion:17" version="any" /> </validityConditions>

			applies on particular days of a period (indicated by ValidDayBits "Verkehrstagebitfeld").	
AvailabilityCondition with ValidDayBits (HRDF BITFELD). The AvailabilityConditions are centrally stored and only referenced here. ValidDayBits must be set correctly.				
keyList	0:1	+KeyValue	KEY LIST with KEY VALUEs belonging to the INTERCHANGE RULE. Will contain the SCCID.	
Will have a single KeyValue with the SCCID (Swiss Connection ID) in the future.				
PrivateCode	0:1	PrivateCodeType	Private Code of INTERCHANGE RULE.	
Will be the SCCID in the future.				
InterchangeGroup	0:1		The INTERCHANGE GROUP includes all elements of the INTERCHANGE class. Multiplicity counts for each element of the Group.	
MaximumWindow	0:1	xsd:duration	Maximum window for holding DISTRIBUTOR will wait.	
NOT TO BE USED				
ConnectionZoneRef	0:1	ZoneRefStructure	Reference to a CONNEXTION ZONE area.	
NOT TO BE USED				
ControlCentreRef	0:1		Reference to a CONTROL CENTRE for which RULE applies.	
NOT TO BE USED				
Exclude	0:1	xsd:boolean	Whether rule is to exclude any connections that satisfy the criteria. Default is false.	
NOT TO BE USED				
timings	0:1	InterchangeRuleTimingStructure	Additional timings for the INTERCHANGE RULE for specific TIME DEMAND TYPEs.	
InterchangeRuleTiming is used to reference a Timeband representing the following time frame:				

• **Timeband/StartTime**: ArrivalTime of the feeder journey at the referenced StopPlace. • **Timeband/EndTime**: DepartureTime of the distributor journey at the referenced StopPlace.				
FeederFilter	0:1	InterchangeRuleParame-terStructure	Feeder end of INTERCHANGE RULE. Part of InterchangeRuleFilteringGroup. Filter Elements for an INTERCHANGE RULE. Single Elements are Logically ANDed together. Multiple elements (e.g. Line) are Logically ORed with each other.	See Example below
Only to be used as far as defined in this document.				
DistributorFilter	0:1	InterchangeRuleParame-terStructure	Distributor end of INTERCHANGE RULE. Part of InterchangeRuleFilteringGroup. Filter Elements for an INTERCHANGE RULE. Single Elements are Logically ANDed together. Multiple elements (e.g. Line) are Logically ORed with each other.	See Example below
Only to be used as far as defined in this document.				

10.36.3 Example

See the various examples in the Business Requirements section.

10.36.4 Hints

-

10.37 InterchangeRuleParameter

(NeTEx-2, 7.2.8.3.2)
Type for INTERCHANGE RULE PARAMETER of the InterchangeRuleFilteringGroup.

10.37.1 Business Requirements

-

10.37.2 Structure

Element	Usage	Structure	Description	Example
TransportMode	0:1	AllVehicleModesOfTrans-portEnumeration	Identifier of MODE of end Point of TRANS-FER . Default is all modes.	
StopAreaRef	0:1	StopAreaRefStructure	Identifier of a Place at end point of transfer.	
NOT TO BE USED				
StopPlaceRef	0:1	StopPlaceRefStructure	STOP PLACE feeding or distributing JOURNEY to which INTERCHANGE RULE applies.	
OperatorRef	0:1	OperatorRefStructure	OPERATOR of JOURNEYs to which IN-TERCHANGE RULE applies.	
LineInDirectionRef	0:1	+Structure	Line filter Elements for an INTERCHANGE RULE PARAMETER.	
LineRef (P)LineInDirectionRef	0:1	LineRefStructure	LINE of JOURNEYs to which INTER-CHANGE RULE applies.	
DirectionRef (P)LineInDirectionRef	0:1	DirectionRefStructure	Reference to DIRECTION of TRANSFER to which INTERCHANGE RULE applies	
ExternalLineRef (P)LineInDirectionRef	0:1	LineRefStructure	External reference to LINE of JOURNEYs to which INTERCHANGE RULE applies.	
NOT TO BE USED				
ExternalDirectionRef (P)LineInDirectionRef	0:1	DirectionRefStructure	External reference to DIRECTION of TRANSFER to which INTERCHANGE RULE applies	
NOT TO BE USED				

ScheduledStopPointRef	0:1	ScheduledStop-PointRefStructure	Start or end SCHEDULED STOP POINT in INTERCHANGE of connecting JOURNEY to which INTERCHANGE RULE applies.	
AdjacentStopPointRef	0:1	ScheduledStop-PointRefStructure	Prior (feeder) or onwards (distributor) STOP POINT before of journeys to which INTERCHANGE RULE applies.	
AdjacentStopPlaceRef	0:1	StopPlaceRefStructure	Prior (feeder) or onwards (distributor) STOP PLACE before of journeys to which INTERCHANGE RULE applies.	
AdjacentPointRef	0:1	PointRefStructure	Prior (feeder) or onwards (distributor) POINT before connection used by journey to which INTERCHANGE RULE applies.	
NOT TO BE USED				
EndStopPointRef	0:1	ScheduledStop-PointRefStructure	Origin (for feed journeys) or Destination (for distributor journeys) SCHEDULED STOP POINT of connecting JOURNEY to which INTERCHANGE RULE applies.	
TimeDemandTypeRef	0:1	TimeDemandTypeRefStruc-ture	Reference to TimeDemandType of INTER-CHANGE RULE	
NOT TO BE USED				
ServiceJourneyRef	0:1	ServiceJourneyRefStructure	Reference to a connecting VEHICLE JOURNEY to whom INTERCHANGE RULE applies. If absent applies to all jour-neys.	

MaximumInterchangeWindow	0:1	xsd:duration	Maximum interval for making INTER-CHANGe.	
JourneyDesignator	0:1	JourneyDesignator	Means of identifying a JOURNEY whose ID is not known.	
NOT TO BE USED				

10.37.3 Example

See examples in chapter 10.36.1.

10.38 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.

10.38.1 Business Requirements

-

10.38.2 Structure

Element	Usage	Structure	Description	Example
InterchangeRuleTiming				
• id • version				
InterchangeRuleRef	1:1	InterchangeRuleRef	Identifier of INTERCHANGE RULE to which this timing belongs.	
NOT TO BE USED				

TimebandRef	0:1	TimebandRefStructure	Reference to Timeband of the INTERCHANGE RULE	
OperationalContextRef	0:1	OperationalContextRefStructure	Reference to Operational Context of the INTERCHANGE RULE	
NOT TO BE USED				
MaximumWindow	0:1	xsd:duration	Maximum window for holding DISTRIBUTOR will wait.	
NOT TO BE USED				
StandardWaitTime	0:1	xsd:duration	Standard Time to wait at Interchange.	
NOT TO BE USED				
MaximumWaitTime	0:1	xsd:duration	Maximum time that DISTRIBUTOR will wait.	
StandardTransferTime	0:1	xsd:duration	Standard Time needed for transfer.	
NOT TO BE USED				
MinimumTransferTime	0:1	xsd:duration	Minimum Time needed for transfer.	
MaximumTransferTime	0:1	xsd:duration	Maximum Time needed for transfer.	

10.38.3 Example

-

10.39 JourneyAccounting

(NeTEx-2, 7.2.11)

NOT TO BE USED

Parameters characterizing VEHICLE JOURNEYs or SPECIAL SERVICEs used for accounting purposes in particular in contracts between ORGANISATIONs.

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10.40 DatedJourney

(NeTEx-2, 7.2.12)
LATER
This will be part of the discussion “Änderung der verständigten Trassen” in Switzerland.
Many reasons lead to modify the operational plan in the short term: special events, changes in the road infrastructure, incidents, etc. Some VEHICLE JOURNEYs may be added or deleted, may use alternative or shortened ROUTEs and JOURNEY PATTERNs, occasional services may be added, etc. If these changes are only valid for one or a few days, the reference schedule for a DAY TYPE is maybe not modified, but the changes are only stored for the appropriate OPERATING DAYs: the DATED VEHICLE JOURNEY describes a vehicle journey planned for one specific OPERATING DAY.

The NORMAL DATED VEHICLE JOURNEYs are based upon a VEHICLE JOURNEY, as produced for a DAY TYPE by the scheduling process. If there is no disturbance in the service, these normal journeys will be an exact image of the theoretical plan, applied to the specific OPERATING DAY. However, short-term modifications may be applied to these journeys, for instance when the controller decides to let a vehicle turn before the terminus. Such a control action updates the latest valid plan and produces a modified version of the DATED VEHICLE JOURNEY (provided as explanation but outside of NeTEx scope).

A DATED VEHICLE JOURNEY serves one JOURNEY PATTERN. The classification of JOURNEY PATTERNs through TYPE OF JOURNEY PATTERN may include some categories of occasional JOURNEY PATTERNs, to be used only by extra or modified DATED VEHICLE JOURNEYs (e.g. for occasionally shortened or deviated routes). In this situation, NeTEx allows the exchange of such of occasional JOURNEY PATTERNs without any VEHICLE JOURNEY operating it (for example, a scheduling system sends these occasional JOURNEY PATTERNs to an AVMS who will use some for operational control to create extra VEHICLE JOURNEY serving them).

Additional DATED VEHICLE JOURNEYs may be included in the production plan for an OPERATING DAY. Such extra DATED VEHICLE JOURNEYs may be created de novo, or by duplication of an existing journey, with modification of the departure time and other properties. They may for instance correspond to a reinforcement of the service, or result from a complete rescheduling.

The exchange of DATED VEHICLE JOURNEYs for operational purposes (e.g. between an AVMS and a passenger information system) is considered out of scope for NeTEx since this is already covered by the SIRI-PT Publication Timetable Service. The SIRI-PT service in effect uses a view of the NeTEx DATED VEHICLE JOURNEY optimised for its purposes.

However, the NORMAL DATED VEHICLE JOURNEY is an important object for exchanges between scheduling systems and AVMS, and as the NORMAL DATED VEHICLE JOURNEY inherits from the DATED VEHICLE JOURNEY, these both objects are available in NeTEx.

10.40.1 Business Requirements

This will be used in Switzerland with the usage of “Änderung verständige Trassen” (change of agreed TrainPaths).

10.41 DatedCall

(NeTEx-2, 7.2.15)
LATER
A DATED CALL refines a CALL element and provides a view of a POINT IN JOURNEY PATTERN that assembles data related to the visit to a stop of a VEHICLE JOURNEY at a SCHEDULED STOP POINT:

- *PASSING TIMEs, grouped by arrival and departure.*
- *Stop usage information (passthrough, no boarding, etc.).*
- *DESTINATION DISPLAY and VIA information.*
- *STOP ASSIGNMENTs to specific QUAYs i.e. platforms.*
- *Visit number (order within the VEHICLE JOURNEY, including repeated visits).*
- *Referenced entities and their derived properties, such as SCHEDULED STOP POINT, JOURNEY PARTs, SERVICE JOURNEY INTERCHANGES, SERVICE LINKs, etc.*
- *NOTICEs relating to the CALL.*

DATED CALL inherits from CALL and only uses one additional element – DRIVER REF of type “LogicalDriverRef” (0:1) – beside the inherited elements.

10.41.1 Business Requirements

-

10.42 PassingTime

(NeTEx-2, 7.2.13)
NOT TO BE USED

Many different types of passenger information systems require data about the planned and actual arrival and departure times of vehicles; usually without requiring access to the detailed scheduling data used to compute it. In the conceptual model, such data is represented in a highly normalised form as PASSING TIMEs. Each PASSING TIME indicates the time of a vehicle at a point in a journey pattern. There can be different types of time (arrival, departure, estimated, observed, etc.) In the Physical model PASSING TIMEs may also be exchanged in context using CALLs, which in effect provide a slightly denormalised view of a POINT IN JOURNEY PATTERN combined with one or more PASSING TIMEs.

11 VehicleScheduleFrame

(NeTEx-2, 8.2)
NOT TO BE USED
The elements of the VEHICLE SCHEDULE model can be grouped within a VEHICLE SCHEDULE FRAME which holds a coherent set of vehicle related elements for data exchange; including BLOCKs, COURSEs of JOURNEY, and VEHICLE SERVICE. See VERSION FRAME in the NeTEx Framework section for general concepts relating to version frames.

12 FareFrame

(NeTEx-3, 7.3.2)
A set of Fare data elements (FARE STRUCTURE ELMENTs, FARE PRODUCTs, FARE PRICEs, etc.) to which the same VALIDITY CONDITIONs have been assigned.

12.1.1 Business Requirements

The FareFrame is solely used for the definition of technical BorderPoints which are referenced in Calls of ServiceJourneys (as a Via).

12.1.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	VersionFrame	FARE FRAME inherits from VERSION FRAME.	
Attributes: • id • version				
id	1:1	FareFrameIdType	Identifier of FARE FRAME.	
borderPoints	0:*	BorderPoint	BORDER POINTs in FARE FRAME.	

12.1.3 Example

```
<FareFrame id="ch:1:FareFrame:j19" version="any">
  <borderPoints>
    <BorderPoint id="ch:1:BorderPoint:1" version="any">
      <Name>1</Name>
    </BorderPoint>
  </borderPoints>
</FareFrame>
```

12.1.4 Hints

-

12.2 BorderPoint

(NeTEx-3, 7.4.1.4.1)
A BORDER POINT is a point on the network marking a boundary for fare calculation that is used by the rail operators of both sides of the border to determine international fares. A BORDER POINT may or may not be a SCHEDULED STOP POINT.

12.2.1 Business Requirements

~~POINTS can be declared border-points by using the element BORDER CROSSING = “true”. These POINTS are either placed inside the GENERAL FRAME or the SERVICE FRAME under GROUP OF POINTS. The VDV462 AG decided in favour of the GENERAL FRAME, we would use ServiceFrame.~~

The ID is created as follows:

ID	Description	Stability	Construction	Examples
ch:1:BorderPoint:<BorderPoint_code>	-	Yes	Built from Attributes by Converter	

Table 55: BorderPoint ID definition.

The modeling is illustrated in the following figure:

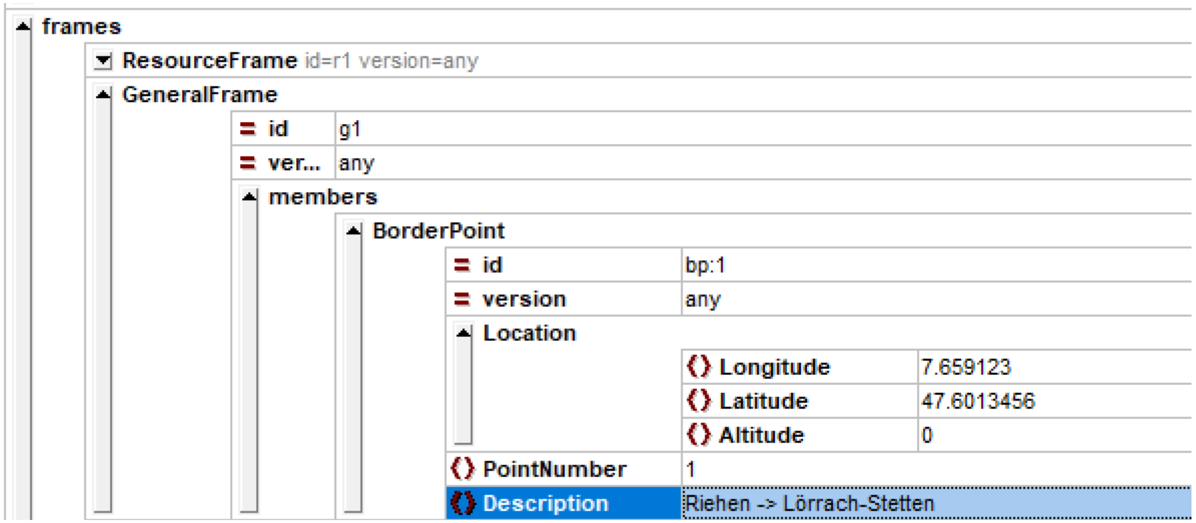

Figure 58: Structure example of the GENERAL FRAME.

The PointNumber can correspond to the HRDF-borderstop-number. Of course the Point can also have a NAME and LOCATION.

The *GR line of HRDF is currently not used in the conversion as it is not filled.

12.2.2 Structure

Element	Usage	Structure	Description	Example
::>	::>	TimingPoint	BORDER POINT inherits from TIMING POINT.	
Attributes: • id • version				
id	1:1	RoutePointIdType	Identifier of BORDER POINT.	
See Table 55: BorderPoint ID definition.				
Name	0:1	xsd:MultilingualString	Name of POINT.	

Location	0:1	Location	Location of POINT.	
PointNumber	0:1	xsd:normalizedString	Arbitrary alternative identifier for the POINT.	
ShortName	0:1	xsd:MultilingualString	Short Name of BORDER POINT.	
Description	0:1	xsd:MultilingualString	Description of BORDER POINT.	
GroupOfOperatorsRef	0:1	GroupOfOperatorsRef	Operators related to BORDER POINT.	

12.2.3 Example

Example on how a BorderPoint is defined in the FareFrame:

```
<borderPoints>
  <BorderPoint id="ch:1:BorderPoint:Genève/Annemasse_bor" version="any">
    <Name>BorderPoint between Genève and Annemasse</Name>
  </BorderPoint>
</borderPoints>
```

Example on how a BorderPoint is referenced in a Call of a ServiceJourney:

```
<Call id="ch:1:Call:51090-7037-000-2018-1b-6" order="4" version="any">
    <ScheduledStopPointRef ref="ch:1:ScheduledStopPoint:8702312-6" version="any"/>
    <Arrival>
      <Time>01:00:00</Time>
    </Arrival>
    <Departure>
      <Time>01:00:00</Time>
    </Departure>
    <vias>
      <Via id="ch:1:Via:BorderPoint:Genève/Annemasse_border" version="any">
        <Name>BorderPoint between Genève and Annemasse</Name>
```

```
        <BorderPointRef ref="ch:1:BorderPoint:Genève/Annemasse_border" version="any" />
      </Via>
    </vias>
    <StopUse>passthrough</StopUse>
</Call>
```

12.2.4 Hints

-

13 Accessibility

See document *NeTEx_Accessibility-Realisation_Guide_TP_Suisse*

14 Appendix: Groups

Important Groups for use in various classes and frames are listed here. We refrain from integrating those Groups directly into the corresponding classes to avoid redundancies and overloading.

14.1 CommonFacilityGroup

(NeTEx-1, 7.7.14.3.1.1)
Contains all the FACILITY LIST elements that can be used by the various FACILITY SETs. Each FACILITY LIST element is itself a list of various enumerations.

14.1.1 Structure

Element	Usage	Structure
FACILITY SET		-structure
. AccessibilityInfoFacilityList	0:1	AccessibilityInfoFacilityListOfEnum
LATER		
AssistanceFacilityList	0:1	AssistanceFacilityListOfEnumerations
LATER		
CateringFacilityList	0:1	CateringFacilityListOfEnumerations
FamilyFacilityList	0:1	FamilyFacilitiesListOfEnumerations
LATER		
FareClasses	0:1	FareClassEnumeration
GenderLimitationList	0:1	GenderLimitationEnumeration
LATER		
MealFacilityList	0:1	MealFacilityListOfEnumerations
LATER		
MobilityFacilityList	0:1	MobilityFacilityListOfEnumerations

NuisanceFacilityList	0:1	NuisanceFacilityListOfEnumerations
LATER		
PassengerCommsFacilityList	0:1	PassengerCommsFacilityListOfEnum
PassengerInformationEquipment	0:1	PassengerInformationEquipmentEnum
LATER		
PassengerInformationFacilityList	0:1	PassengerInformationFacilityListOfEnum
LATER		
RetailFacilityList	0:1	RetailFacilityListOfEnumerations
LATER		
SafetyFacilityList	0:1	SafetyFacilityListOfEnumerations
LATER		
SanitaryFacilityList	0:1	SanitaryFacilityListOfEnumerations
NOT TO BE USED		
TicketingFacilityList	0:1	TicketingFacilityListOfEnumerations
LATER		
TicketingServiceFacilityList	0:1	TicketingServiceFacilityListOfEnum
LATER		
AccessibilityToolList	0:1	TypeOfAccessibilityToolListOfEnum
LATER		

AccessibilityInfoFacilityOfEnumeration:

- audioInformation
- audioForHearingImpaired
- visualDisplays
- displaysForVisuallyImpaired
- largePrintTimetables
- other

AssistanceFacilityListOfEnumeration:

- boardingAssistance

- personalAssistance
- wheelchairAssistance
- unaccompaniedMinorassistance
- conductor
- information
- other

CateringFacilityEnumeration:
- bar
- bistro
- buffet
- noFoodAvailable
- noBeveragesAvailable
- restaurant
- firstClassRestaurant
- trolley
- coffeeShop
- hotFoodService
- selfService
- snacks
- foodVendingMachine
- beverageVendingMachine
- minibar
- breakfastInCar
- mealAtSeat
- other
- unknown

FamilityFacilityListOfEnumeration:
- nurseryService
- servicesForArmyFamilies
- servicesForFamilies

FareClassEnumeration (NeTEx-1, 7.7.15.1.2.1):
- firstClass
- secondClass
- thirdClass
- economyClass
- businessClass
- turista
- preferente

GenderLimitationEnumeration:
- both
- maleOnly
- femaleOnly

MealFacilityListOfEnumeration:
- lunch
- dinner
- breakfast
- snack

MobilityFacilityListOfEnumeration:
- unknown
- lowFloor
- stepFreeAccess
- suitableForWheelchairs
- suitableForHeaviliyDisabled
- boardingAssistance
- onboardAssistance
- unaccompaniedMinorAssistance
- tactilePatformEdges
- tactileGuidingStrips

NuisanceFacilityListOfEnumeration:

- unknown
- smoking
- noSmoking
- familyArea
- childfreeArea
- noAnimals
- breastfeedingFriendly
- mobilePhoneUseZone
- mobilePhoneFreeZone

PassengerCommsFacilityListOfEnumeration:
- unknown
- freeWifi
- publicWifi
- powerSupplySockets
- telephone
- audioEntertainment
- videoEntertainment
- businessServices
- internet
- postOffice
- postBox

PassengerInformationEquipmentEnumeration:
- timetablePoster
- fareInformation
- lineNetworkPlan
- lineTimetable
- stopTimetable
- interactiveKiosk
- informationDesk
- realTimeDepartures
- journeyPlanning

- other

PassengerInformationFacilityListOfEnumeration:
- nextStopIndicator
- stopAnnouncements
- passengerInformationDisplay
- realTimeConnections
- other

RetailFacilityListOfEnumeration:
- unknown
- food
- newspaperTobacco
- recreationTravel
- hygieneHealthBeauty
- fashionAccessories
- bankFinanceInsurance
- cashMachine
- currencyExchange
- tourismService
- photoBooth

SafetyFacilityListOfEnumeration:
- ccTv
- mobileCoverage
- sosPoints
- staffed

SanitaryFacilityListOfEnumeration:
- toilet
- wheelchairAccessToilet
- shower
- wheelchairBabyChange

- babyChange
- washingAndChangeFacilitiee
- other

TicketingFacilityListOfEnumeration:
- ticketMachines
- ticketOffice
- ticketOnDemandMachines
- mobileTicketing
- ticketSales
- ticketCollection
- centralReservations
- localTickets
- nationalTickets
- internationalTickets

TicketingServiceFacilityListOfEnumeration:
- purchase
- collection
- cardTopUp
- reservations

AccessibilityToolListOfEnumeration:
- wheelchair
- walkingstick
- audioNavigator
- visualNavigator
- passengerCart
- pushchair
- umbrella
- buggy
- other

14.2 SiteFacilityGroup

(NeTEx-1, 7.7.14.3.3.1)
LATER
The SiteFacilityGroup provides all enumerations characterising facilities that apply to a SITE.

14.2.1 Business Requirements

-

14.2.2 Structure

Element	Usage	Structure
EmergencyServiceList	0:1	EmergencyServiceListOfEnumeration
HireFacilityList	0:1	HireFacilityListOfEnumerations
LuggageLockerFacilityList	0:1	LuggageLockerFacilityListOfEnum
LuggageServiceFacilityList	0:1	LuggageServiceFacilityListOfEnum
MoneyFacilityList	0:1	MoneyFacilityListOfEnumerations
ParkingFacilityList	0:1	ParkingFacilityListOfEnumerations
Staffing	0:1	StaffingEnumeration

EmergencyServiceListOfEnumeration:
- fire
- police
- sosPoint
- firstAid

- other

HireFacilityListOfEnumerations:
- cycleHire
- motorcycleHire
- carHire
- boatHire
- recreationalDeviceHire

LuggageLockerFacilityListOfEnum:
- leftLuggageCounter
- lockers
- oversizeLockers
- bikeRack
- cloakroom

LuggageServiceFacilityListOfEnum:
- leftLuggage
- porterage
- freeTrolleys
- paidTrolleys
- collectAndDeliverToStation

MoneyFacilityListOfEnumerations:
- cashMachine
- bank
- insurance
- bureauDeChange

ParkingFacilityListOfEnumerations:
- unknown
- carpark
- parkAndRidePark

- motorcyclePark
- cyclePark
- rentalCarPark
- coachPark

StaffingEnumeration:
- fullTime
- partTime
- unmanned

14.3 ServiceFacilityGroup

(NeTEx-1, 7.7.14.3.2.1)
Contains all the FACILITY LIST elements that can be used by the SERVICE FACILITY SETs and subclasses. Each FACILITY LIST element is itself a list of various enumerations.

14.3.1 Structure

Element	Usage	Structure
SERVICE FACILITY SET		-structure
AccommodationAccessList	0:1	AccommodationAccessListOfEnu
NOT USED		
AccommodationFacilityList	0:1	AccommodationFacilityListOfEnum
BoardingPermission	0:1	BoardingPermissionEnumeration
NOT USED		
BookingProcessFacilityList	0:1	BookingProcessFacilityListOfEnum
NOT USED		
CouchetteFacilityList	0:1	CouchetteFacilityListOfEnumerations
NOT USED		
GroupBookingFacility	0:1	GroupBookingEnumeration

LuggageCarriageFacilityList	0:1	LuggageCarriageFacilityListOfEnum
ServiceReservationFacilityList	0:1	ServiceReservationFacilityListOfEnum
UicProductCharacteristicList	0:1	UicProductCharacteristicListOfEnum
UicTrainRate	0:1	UicRateTypeEnumeration

Enumerations are taken from xsd/netex_framework/netex_reusableComponents/netex_facility_support-v1.1.xsd version 1.08:

AccommodationAccessListOfEnumeration:
- other
- freeSeating
- reservation
- standing

AccommodationFacilityListOfEnumeration:
- unknown
- seating
- sleeper
- singleSleeper
- doubleSleeper
- specialSleeper
- couchette
- singleCouchette
- doubleCouchette
- specialSeating
- recliningSeats
- babyCompartment
- familyCarriage

- recreationArea
- panoramaCoach
- pullmanCoach
- standing

BoardingPermissionEnumeration:
- earlyBoardingPossibleBeforeDeparture
- delayedAlightingPossibleAfterArrival
- overnightStayOnboardAllowed

BookingProcessFacillityListOfEnumeration:
- productNotAvailable
- productNotBookable
- bookableThroughInternationalSystem
- bookableThroughLocalSystem
- bookableManually

CouchetteFacillityListOfEnumeration:
- C2
- C4
- C5
- C6
- T2
- T3
- T4
- wheelchair
- other

GroupBookingEnumeration:
- groupsAllowed
- groupsNotAllowed
- groupsAllowedWithReservation
- groupsBookingsRestricted

- unknown

LuggageCarriageFacilityListOfEnumeration:
- unknown
- noBaggageStorage
- baggageStorage
- luggageRacks
- extraLargeLuggageRacks
- baggageVan
- noCycles
- cyclesAllowed
- cyclesAllowedInVan
- cyclesAllowedInCarriage
- cyclesAllowedWithReservation
- vehicleTransport

ServiceReservationFacillityListOfEnumeration:
- reservationsCompulsory
- reservationsCompulsoryForGroups
- reservationsCompulsoryForFirstClass
- reservationsCompulsoryFromOriginStation
- reservationsRecommended
- reservationsPossible
- reservationsPossibleOnlyInFirstClass
- reservationsPossibleOnlyInSecondClass
- reservationsPossibleForCertainClasses
- groupBookingRestricted
- noGroupsAllowed
- noReservationsPossible
- wheelchairOnlyReservations
- bicycleReservationsCompulsory
- reservationSupplementCharged

UicProductCharacteristicListOfEnumeration:
- tariffCommunVoyageurs
- allInclusivePrice
- eastWestTariff
- trainWithTcvAndMarketPrice

UicRateTypeEnumeration:
- normal
- discountTrainOtherThanTgv
- specialFare
- supplement
- noPublishedTariff

14.4 InterchangeGroup

(NeTEx-2, 7.2.7.3.2)
Contains all elements of the INTERCHANGE class which are inherited from its subclasses, e.g., SERVICE JOURNEY INTERCHANGE.

14.4.1 Business Requirements

We will not use this element directly, but some other parts will use it.

14.4.2 Structure

Element	Usage	Structure	Description	Example
Name	0:1	MultilingualString	Name of INTERCHANGE.	
NOT TO BE USED				
Description	0:1	MultilingualString	Description of INTERCHANGE.	
NOT TO BE USED				
PrivateCode	0:1	xsd:normalizedString	Alternative key for INTERCHANGE.	
NOT TO BE USED				
ExternalInterchangeRef	0:1	ExternalObjectRef	An alternative code that uniquely identifies the INTERCHANGE specifically for use in AVMS systems.	

			NOTE For VDV compatibility.	
NOT TO BE USED				
ConnectionRef	0:1	ConnectionRef	CONNECTION link over which the interchange takes place.	
NOT TO BE USED				
Priority	0:1	InterchangePriorityType	Priority assigned to INTERCHANGE.	
NOT TO BE USED				
StaySeated	0:1	xsd:boolean	Whether passengers can stay seated to make INTERCHANGE.	false
CrossBorder	0:1	xsd:boolean	Whether INTERCHANGE involves crossing a national border.	
NOT TO BE USED				
Planned	0:1	xsd:boolean	Whether INTERCHANGE is planned.	true
Guaranteed	0:1	ConnectionCertaintyEnum	Whether INTERCHANGE is guaranteed, that is distributor services may be held in order to ensure the connection.	false
ConnectionCertaintyEnum: • Guaranteed • normallyGuaranteed • notGuaranteed • neverGuaranteed Use only normallyguaranteed and notGuaranteed.				
Advertised	0:1	xsd:boolean	Whether INTERCHANGE is advertised to the public.	true
NOT TO BE USED				
Controlled	0:1	xsd:boolean	Whether INTERCHANGE is controlled.	true
IGNORED AT IMPORT				
InterchangeTimesGroup	0:1		Timings that apply to the INTERCHANGE. Multiplicity counts for each element of the Group.	<StandardTransferTime> PT2M </StandardTransferTime> <MinimumTransferTime>

				PT1M </MinimumTransferTime>
TransferModes	0:1	AccessModeEnum	Out of vehicle TRANSPORT MODEs by which transfer at the interchange can be made. See Reusable components.	
NOT TO BE USED				
noticeAssignments	0:*	NoticeAssignmentView	NOTICE ASSIGNMENTs that apply to the INTERCHANGE.	
NOT TO BE USED				

14.5 InterchangeTimesGroup

(NeTEx-2, 7.2.7.3.2.2)
MaximumWaitTime expresses the maximum duration a distributor SERVICE JOURNEY should delay its departure time waiting for a feeder ServiceJourney.

If specified, the ExplictTransferTime attribute of the SERVICE JOURNEY INTERCHANGE overrides the DefaultDuration for the CONNECTION. This value expresses the default duration allocated for a passenger to transfer, normally by walking, from the SCHEDULED STOP POINT of the feeder SERVICE JOURNEY to the SCHEDULED STOP POINT of the distributor SERVICE JOURNEY. The default transfer time of the passenger should be added to the feeder SERVICE JOURNEY forecasted arrival time to decide if the distributor Service Journey will exceed the MaximumWaitTime when waiting for passengers from the delayed distributor.

14.5.1 Business Requirements

We will not use this structure directly, however it is important to know how it works for the rest of the interchange discussion.

14.5.2 Structure

Element	Usage	Structure	Description	Example
StandardWaitTime	0:1	xsd:duration	Standard Time to wait at Interchange.	PT3M
IGNORED AT IMPORT				
MaximumWaitTime	0:1	xsd:duration	Maximum time that DISTRIBUTOR will wait after its planned departure time.	PT2M

MaximumAutomaticWindow	0:1	xsd:duration	Maximum window for holding DISTRIBUTOR will wait.	
NOT TO BE USED				
StandardTransferTime	0:1	xsd:duration	Standard Time needed for transfer.	
NOT TO BE USED				
MinimumTransferTime	0:1	xsd:duration	Minimum Time needed for transfer.	PT3M
MaximumTransferTime	0:1	xsd:duration	Maximum Time needed for transfer.	PT8M
ControlCentreNotifyThreshold	0:1	xsd:duration	Interval before CONTROL CENTRE should be notified associated with SERVICE JOURNEY INTERCHANGE.	<ControlCentreRef version="101" ref="hde:ControlCentre:123"/>