



National NeTEx Profile

Timetables & related data



Overview
August 2020
Nicholas knowles



Topics

PART1 NeTEx & the Irish Profiles

- ▶ Wider Standards context & the Irish NeTEx Profiles
 - Model driven design
- ▶ Irish NeTEx profile overview
 - Timetable elements
 - Framework elements
- ▶ Additional material
 - Sites & Accessibility
- ▶ PART2 - Mappings
 - Operators
 - Localities (NPTG)
 - Stops (NaPTAN)
 - Timetables: (GTFS, VDV452, HaFas)



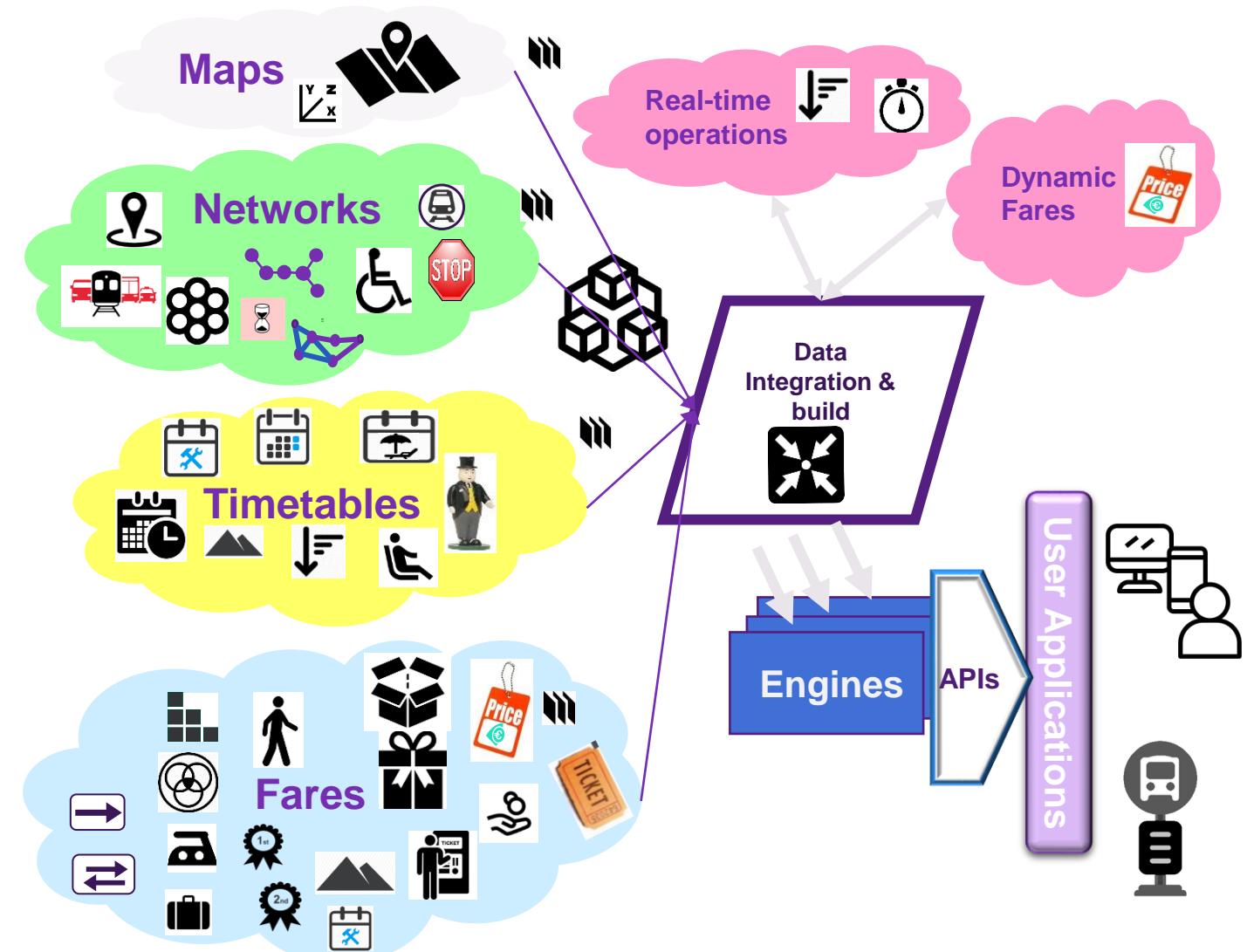
Transmodel, NeTEx & the European Standards Context



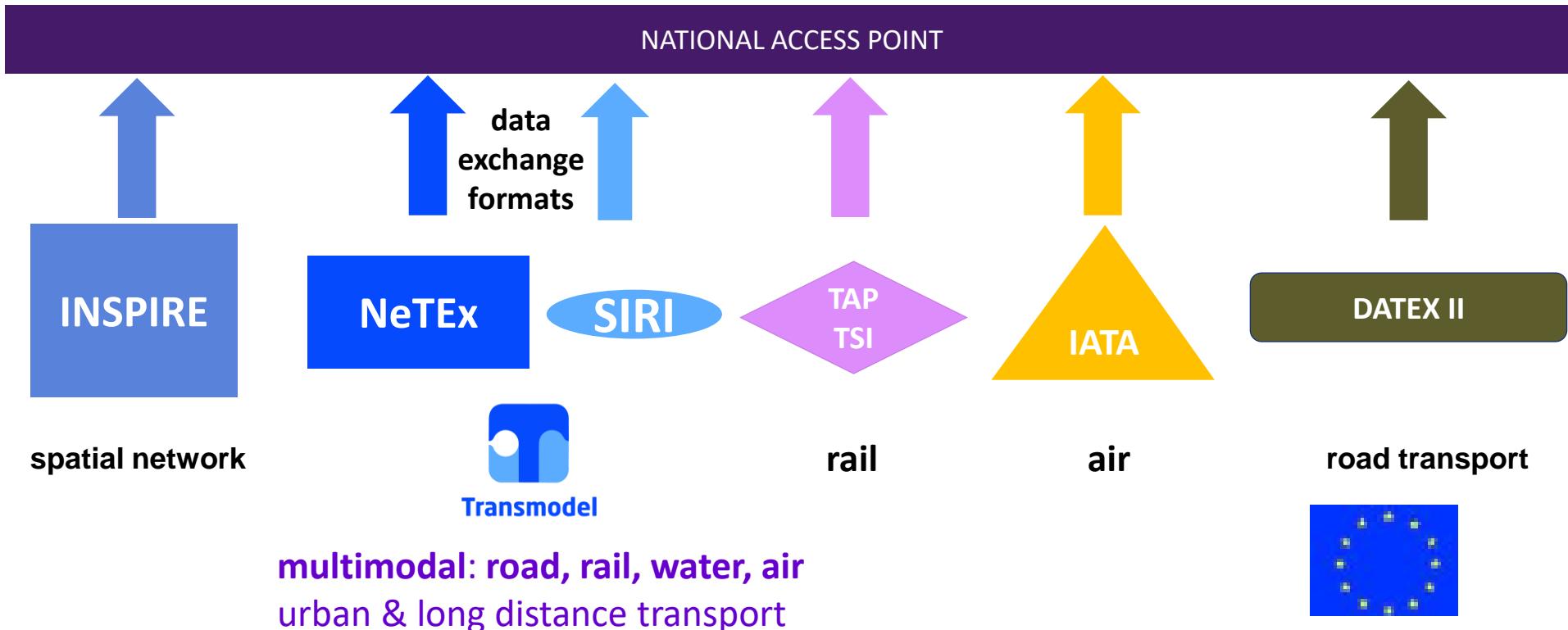


Why? - Integrating data for Passenger Information services

- ▶ In order to create useful information services, we need to integrate data
 - ▶ of many different types...
 - ▶ from many different providers...
 - ▶ that changes constantly – some of it in real-time
- ▶ This needs to be done
 - ▶ Precisely...
 - ▶ Repeatedly..
 - ▶ Cheaply...
 - ▶ Scaleably
- ▶ ECONOMY OF SCALE
- ▶ REDUCE COMPLEXITY



Transmodel and the EC ACT/ ITS MMTIS Regulations

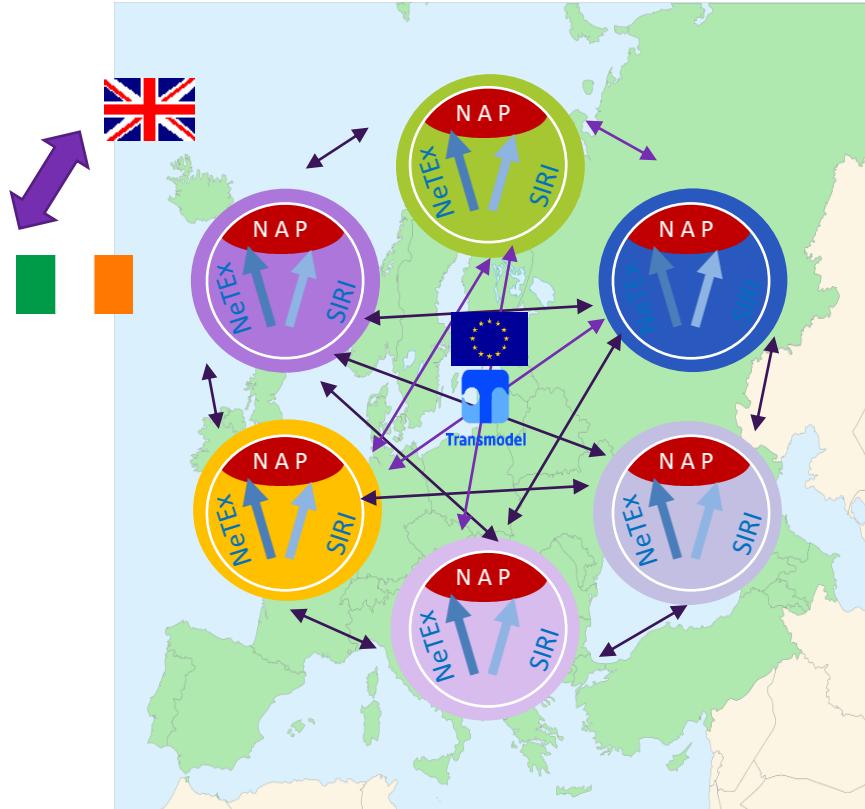


- ▶ Phased requirement to make data available
- ▶ EC investing in PT standards support



European Harmonisation & NAPs

EC ITS Priority Action A



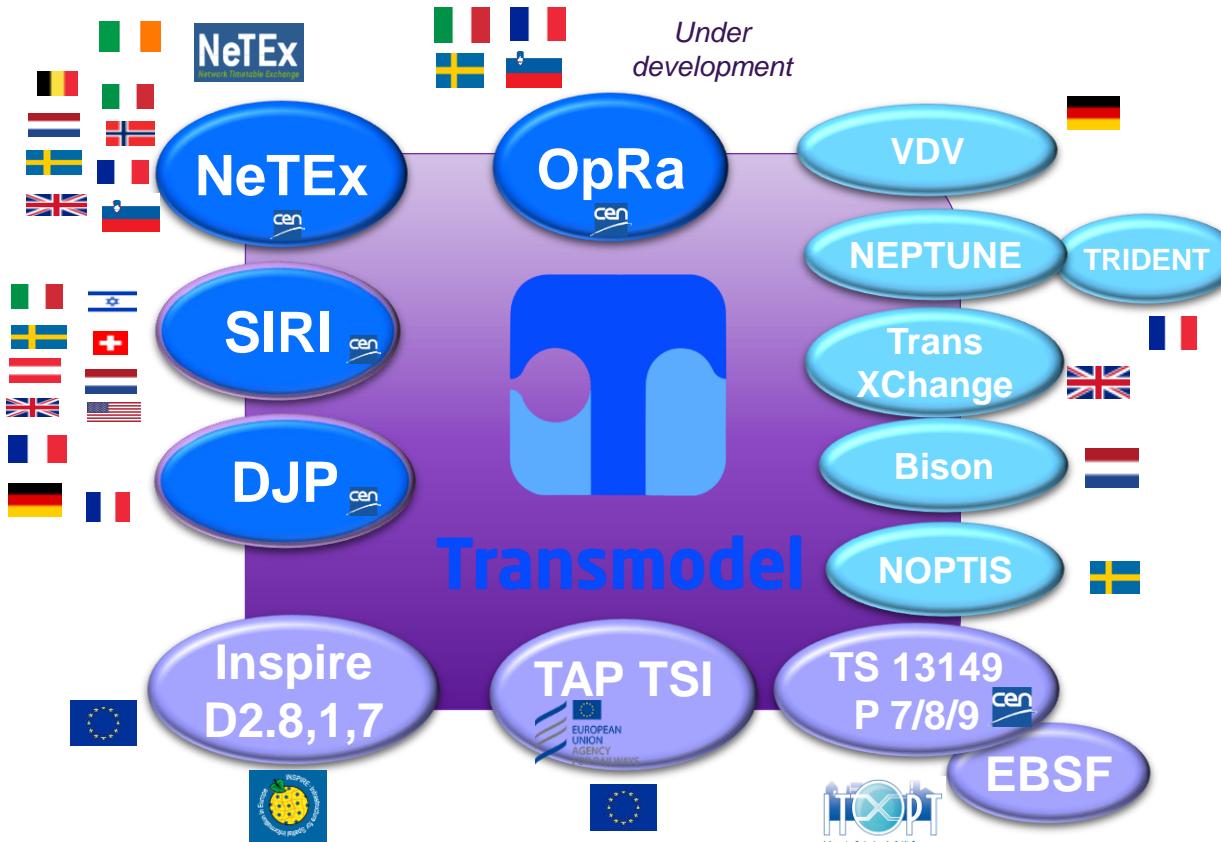
- National Access Points for PT Data
 - ▶ EC members to make Road & PT data available in standardised formats
 - ▶ 2017-18 funding to enable NAPs
- Timeline /Levels of Service
 - ▶ By 1 Dec 2019: Level travel and traffic data TEN-T network,
 - (PT Existing Stops / Timetables)
 - ▶ By 1 Dec 2020 Level TEN-T 2
 - (PT Accessibility etc)
 - ▶ By 1 Dec 2021 Level TEN-T 3
 - ▶ Other networks by 1 December 2023
- Common data formats...



Coherent standards give Interoperability

- The “Transmodel ecosystem”

- ▶ Complementary formats & protocols:
 - Bulk exchange of static data (NeTEx)
 - Dynamic APIs for data (SIRI, DJP)
- ▶ Flexibility: adaptations to local needs
 - National Standards & profiles
- ▶ Coherent “Bridges” to standards for other domains
 - GIS – e.g. Inspire
 - Road – e.g. DATExII



Flags Indicative,
not Exhaustive



Transmodel based
CEN Standard



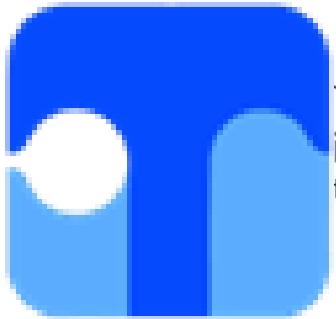
Transmodel Interoperating
European Standard



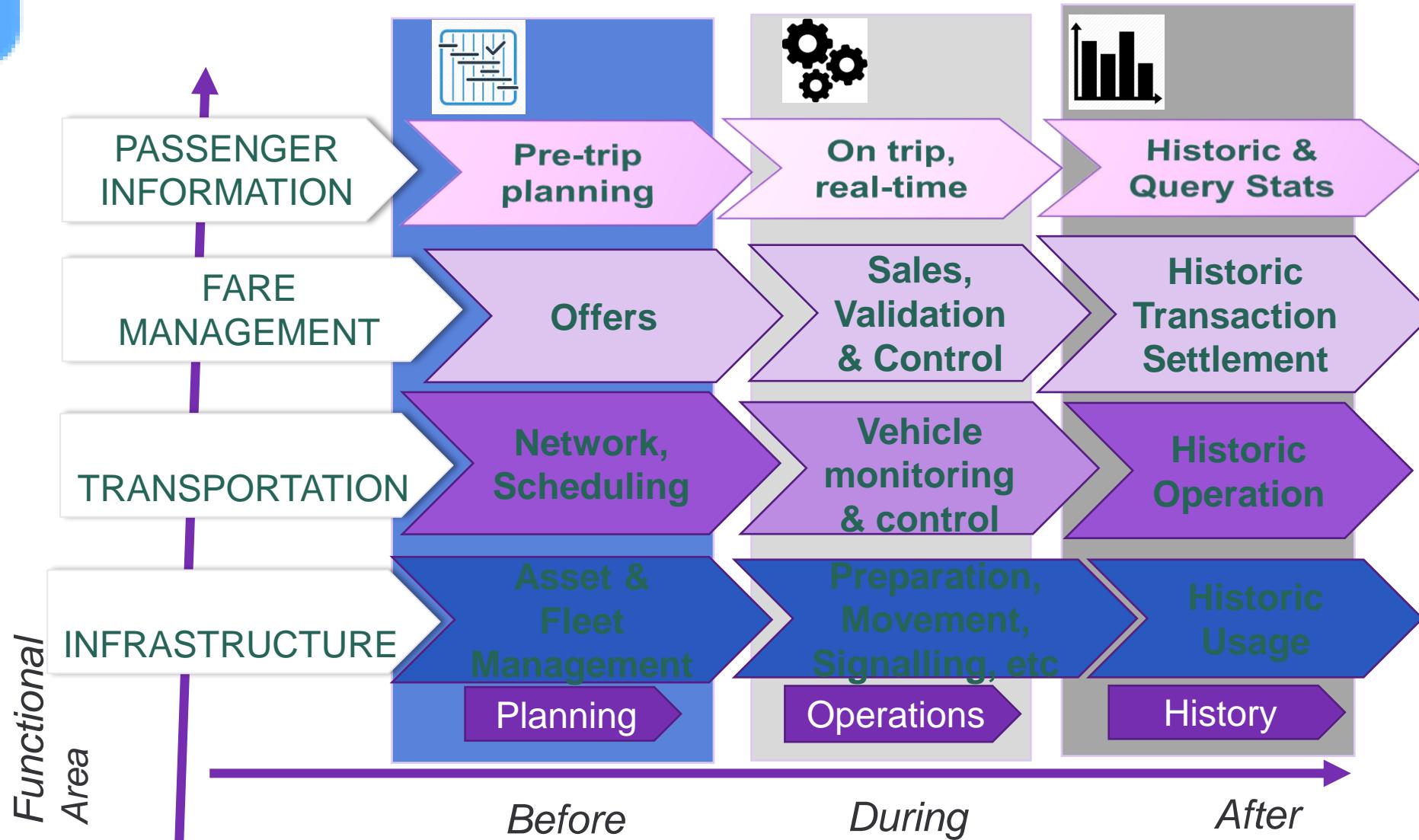
National
Standard

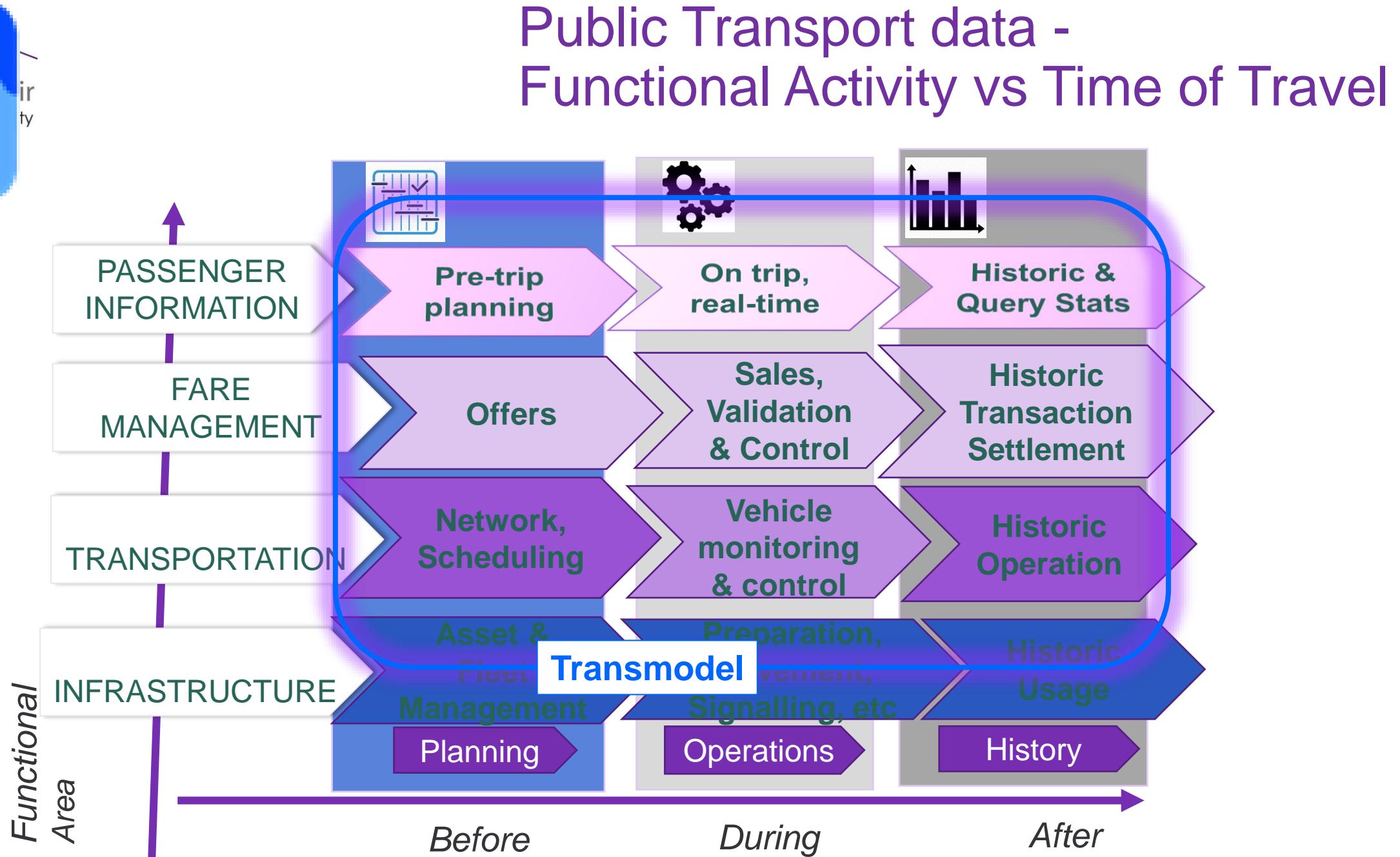
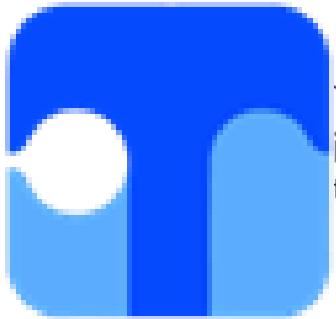


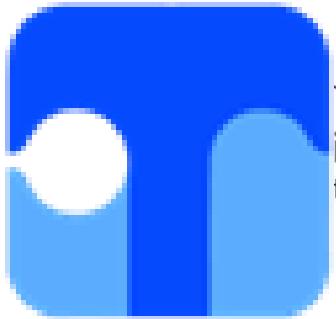
API



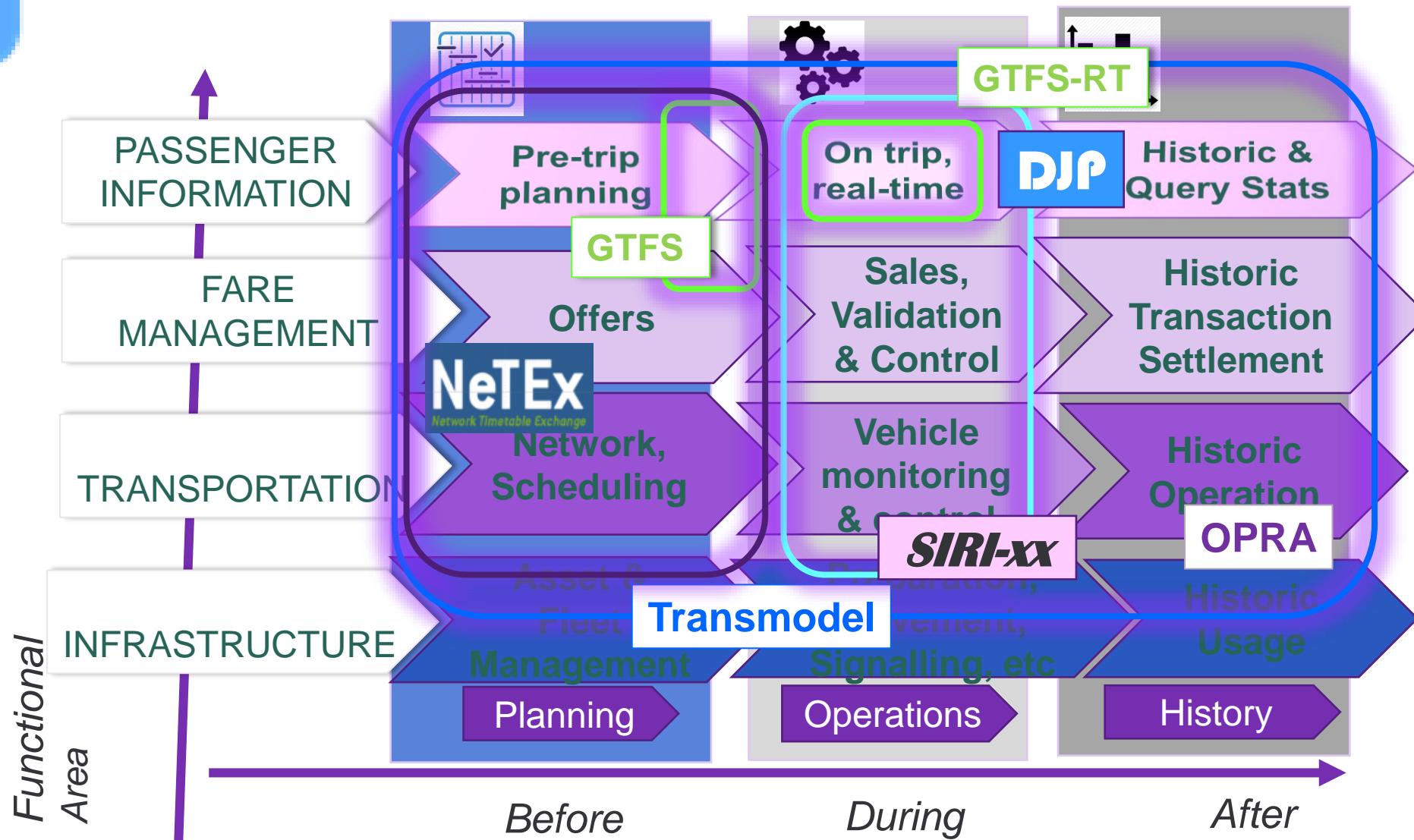
Public Transport data - Functional Activity vs Time of Travel







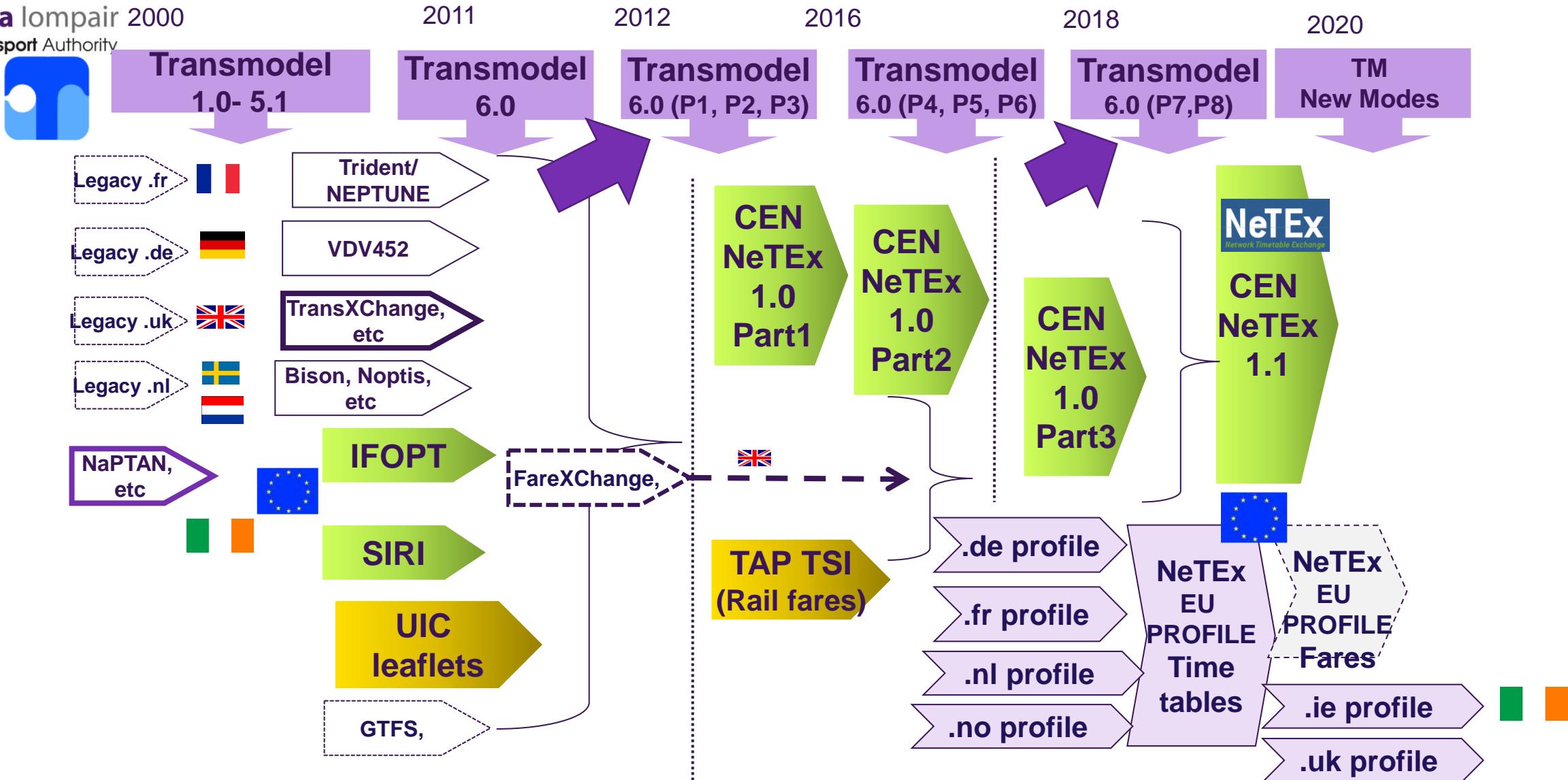
Public Transport data - Functional Activity vs Time of Travel

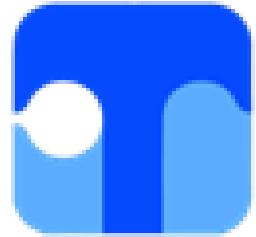




Údarás
Náisiúnta Iompair 2000
National Transport Authority

NeTEx – Evolution from National Standards





Harmonisation Consequences: Transmodel has been aligned with..

1. Detailed Format Mappings

- ▶ National Standards: VDV, BISON, NOPTIS, etc
- ▶ SIRI Functional services: (SIRI-SM/ST, SX, ET/PT...)
- ▶ OA DJP Trip planning: Functional Services
- ▶ TAP TSI Fares: B1 B2 B3
- ▶ GTFS Timetables Format

2. Functional Comparisons

- ▶ INSPIRE PT Model
- ▶ DATEX2 Situations
- ▶ Fares:
 - IFM sales & validation events
 - Account Based Ticketing Concepts, Interbob

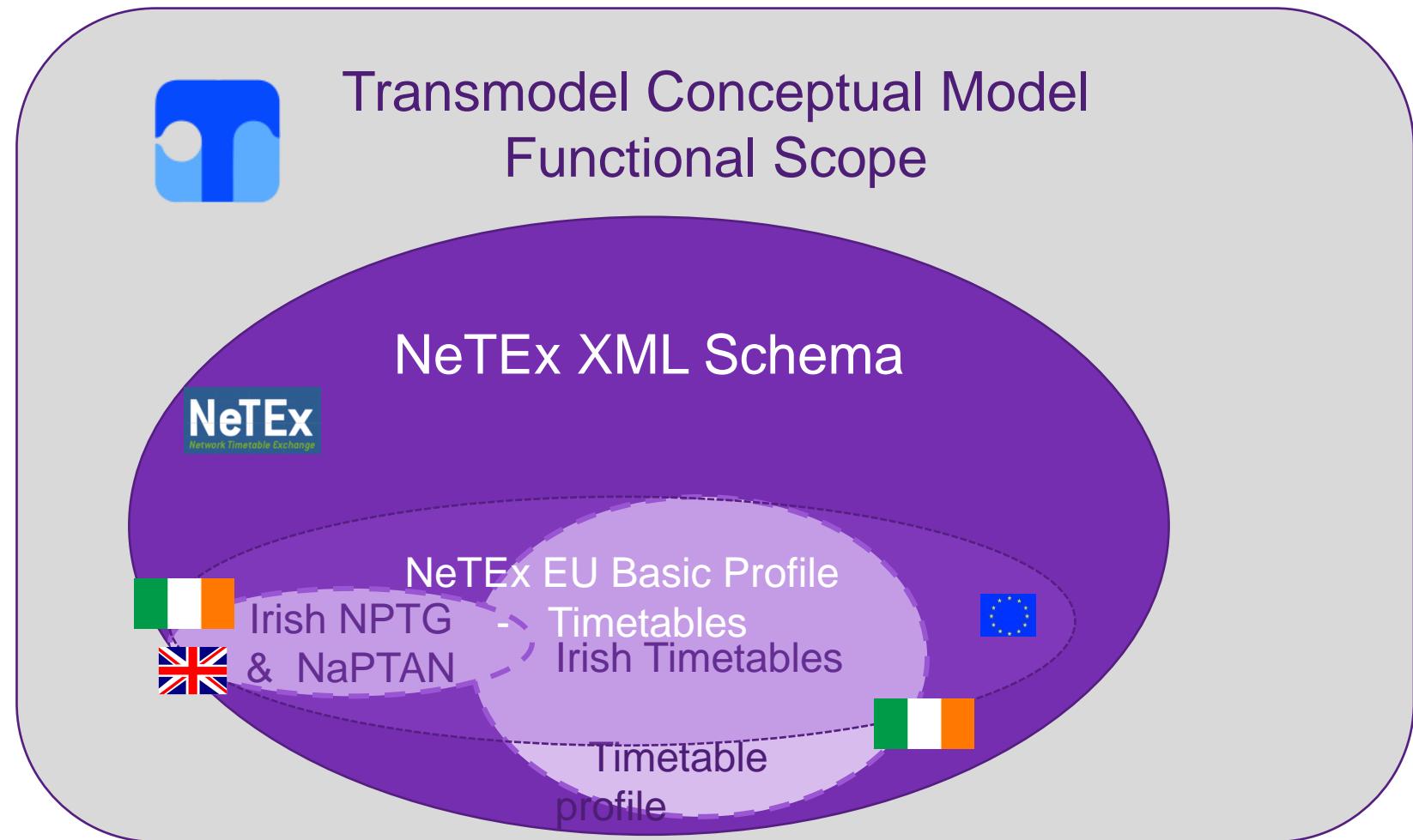
Aspects of a NeTEx Profile

- **Profile - Scope?**
 - Relevant subset of NeTEx data elements for specific local business requirements.?
 - Mapping of legacy data elements to NeTEx.
- **Profile - Local Technical Details?**
 - Use of identifiers & local codespaces?
 - Use of coordinate systems (O/S Grid, WGS85..), Time zones, etc.
- **Profile - Use in National Context ?**
 - Granularity of NeTEx data files?
 - Participants & Workflow of data exchange?
 - Validation & Verification processes?
- **Profile Management ?**
 - Stakeholders?
 - Governance processes for future evolution?

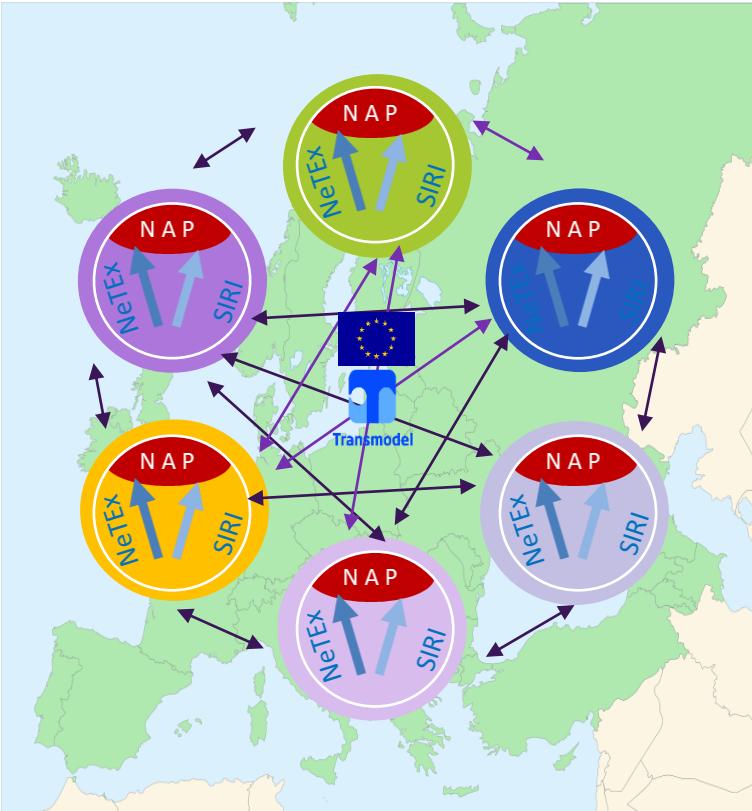


Comparing Irish data & Transmodel/NeTEx

- ▶ Transmodel covers many PT functional domains
 - Timetables, fares, scheduling, driver management, etc
- ▶ NeTEx implements a subset of Transmodel
 - Stops, Timetables, Fares, etc
- ▶ EU Basic NeTEx profile covers a subset of NeTEx
 - Stops, Timetables, Interchanges, etc
- ▶ EU Basic NeTEx profile covers NaPTAN and NPTG
- ▶ Some Irish Timetables include timing data concepts not in EPIP
 - Run Times, Walt Times,



European Passenger Information Profile



- Pan European profile for basic timetable exchange
 - Contents cope: GTFS ++

EPIP vs UK Profiles - comparison

Codespaces,
Identifiers,
Values,
Grouping
conventions,
etc



Irish Basic profile slightly extends
EPIP



Conformance to a Profile

▶ Strict Conformance



- ▶ Use only the identifier **codespaces, values, groupings**, etc of the profile.
- ▶ Use **only** the XML elements, and attributes mandated in the profile.
- ▶ A consumer system **must** interpret all elements and values.

▶ Augmented conformance



- ▶ Use only the identifier **codespaces, values, groupings**, etc for the profile elements.
- ▶ Allow **additional** NeTEx XML attributes and elements to be present.
- ▶ A consumer system must interpret and consume **all strict profile** elements and values.
- ▶ A consumer system **can ignore** any augmented elements.

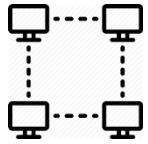
▶ Extended conformance

- ▶ Use only the identifier **codespaces, values, groupings**, etc for the profile elements.
- ▶ Allow **embedding** of user defined **extensions** to NeTEx .
 - Simple keylistt (value sets associated with elements),
 - Embedded user schemas
- ▶ A consumer system must interpret and consume **all strict profile** elements and values.
- ▶ A consumer system **can ignore** any augmentations and extensions.



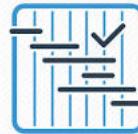
Timetable Profile Scope – Business Objectives?

► Use Cases for exchanging Timetables?



► Data Distribution:

- *Provide stop & timetable data as distributed open data for third party use (journey planners etc)?*



► Planning:

- *Exchange of routes, journey pattern and timing information between operator systems to enable building of timetables*



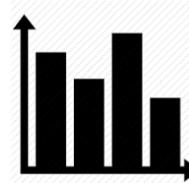
► Operations:

- *Providing additional vehicle and scheduling data to assist real-time.*
- *Provide data to link to ticketing and crew management*



► Registration

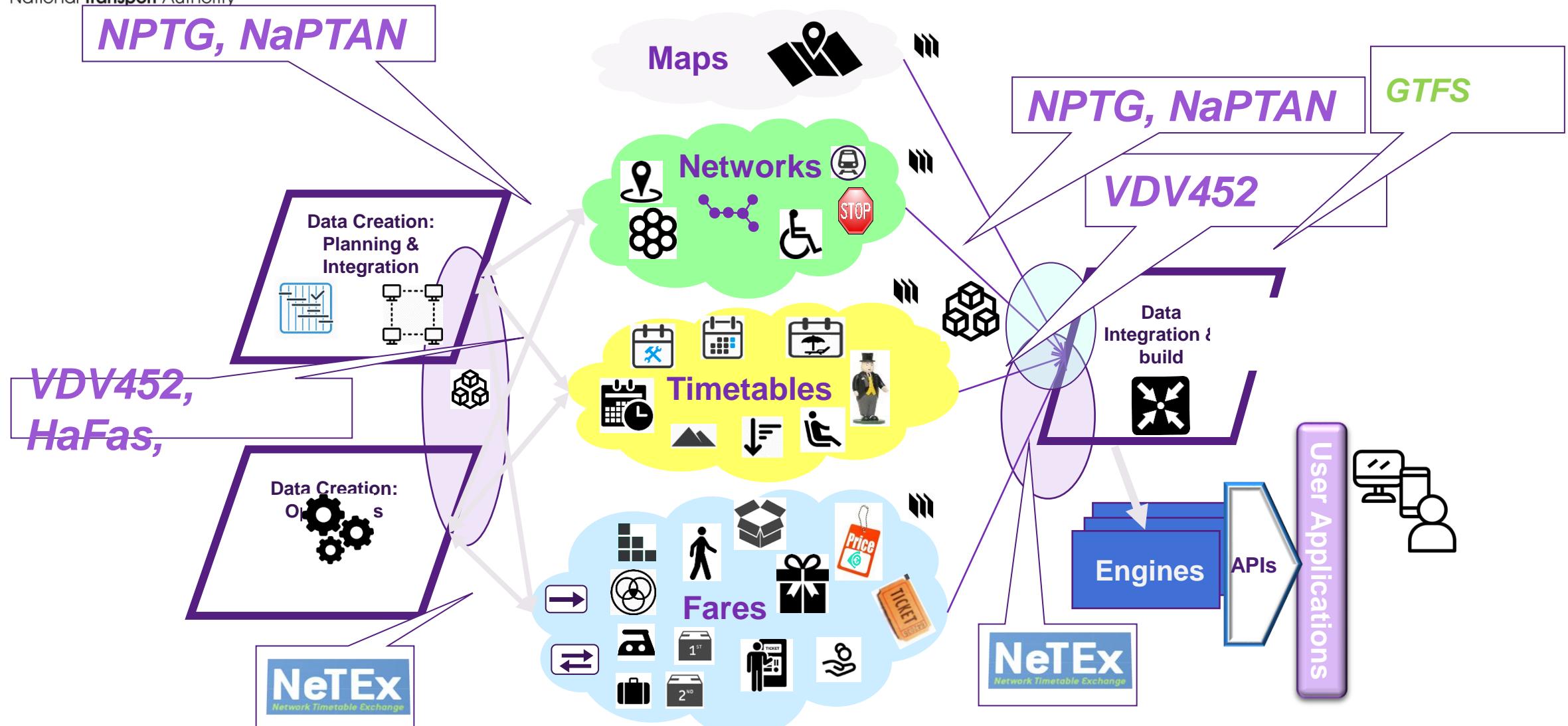
- *Provide control data for statutory processes*



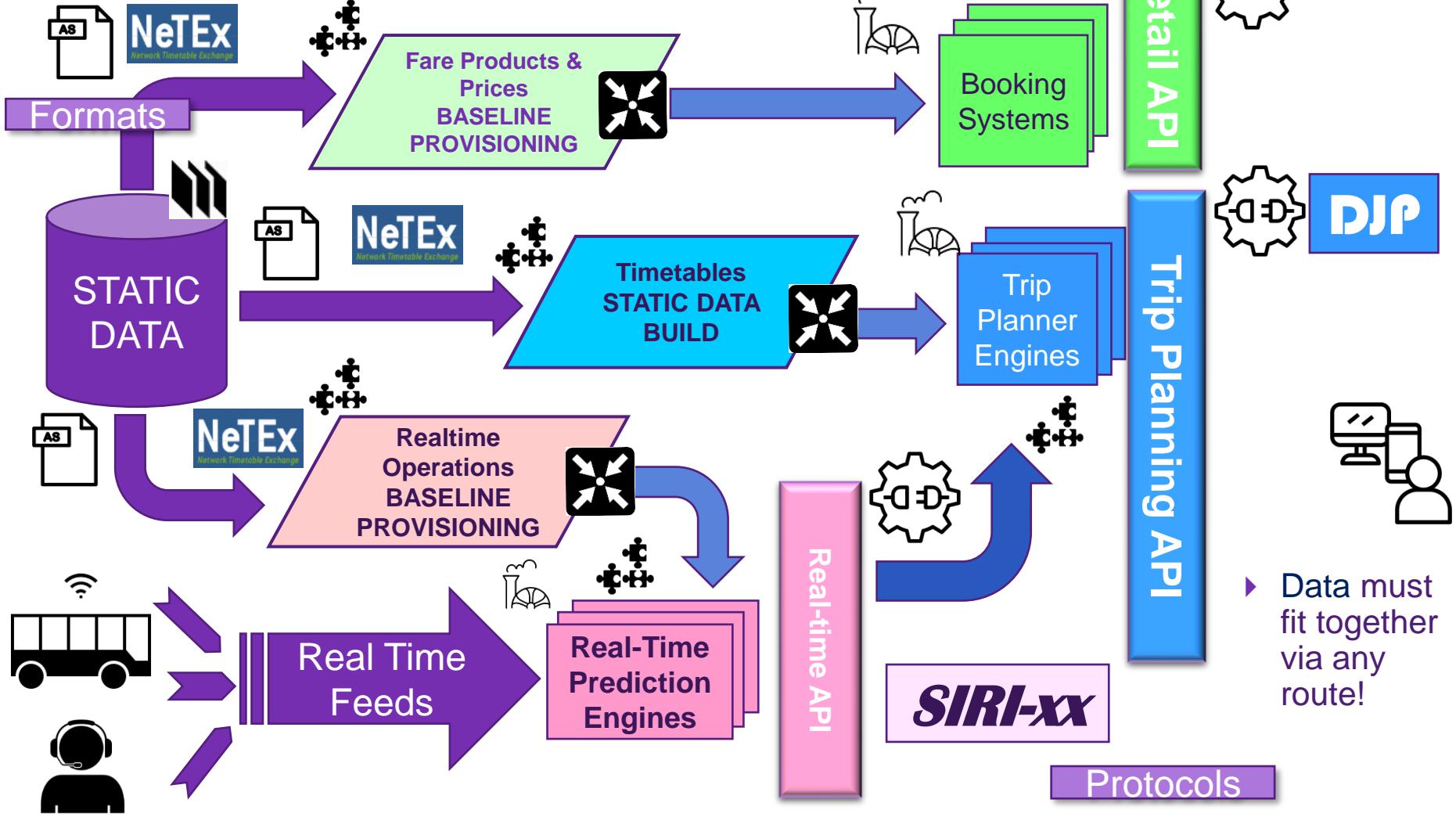
► Statistics:

- *Recording & Measuring UK Historical Timetables ?*

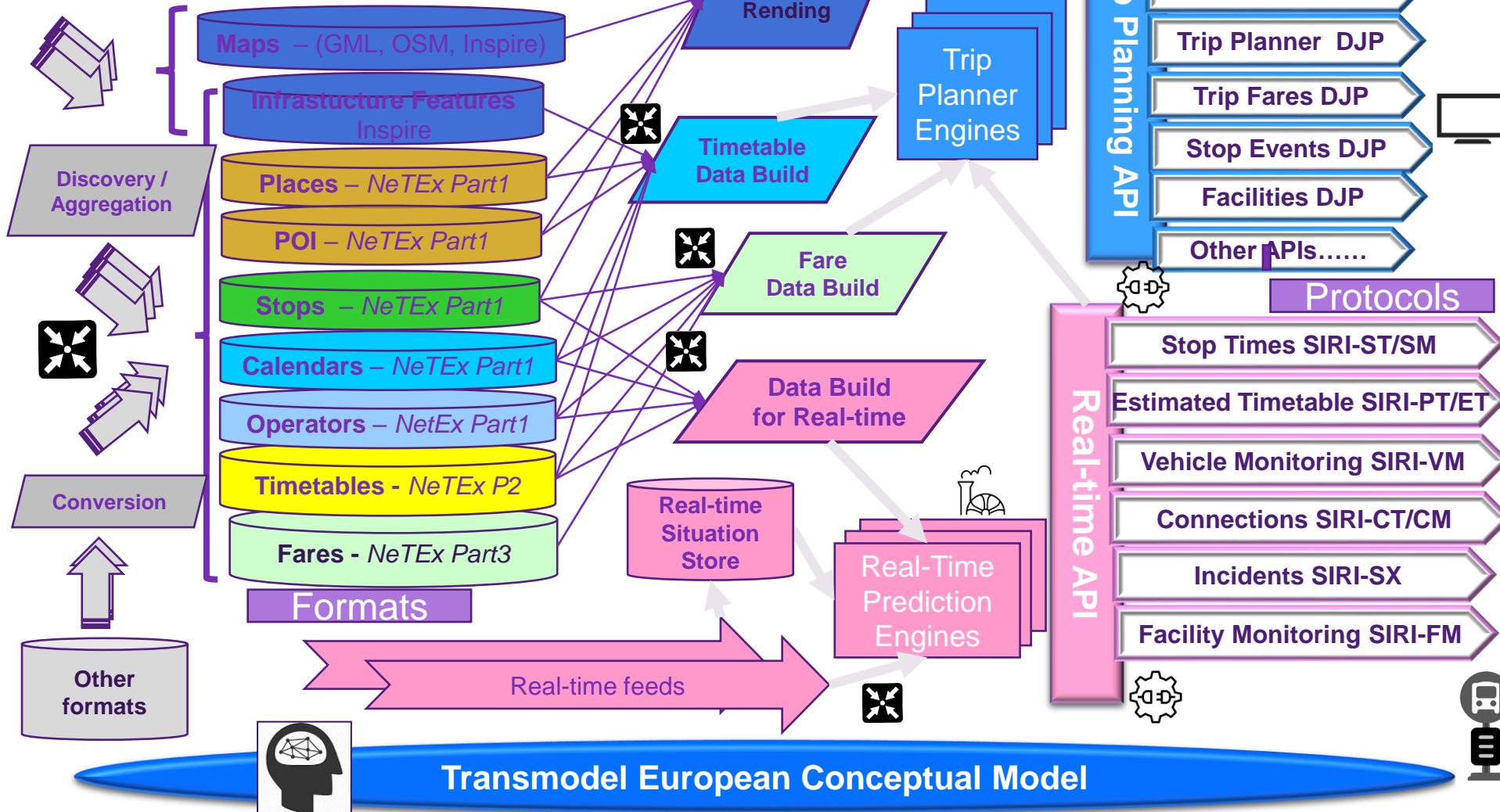
Upstream / Downstream use of standards



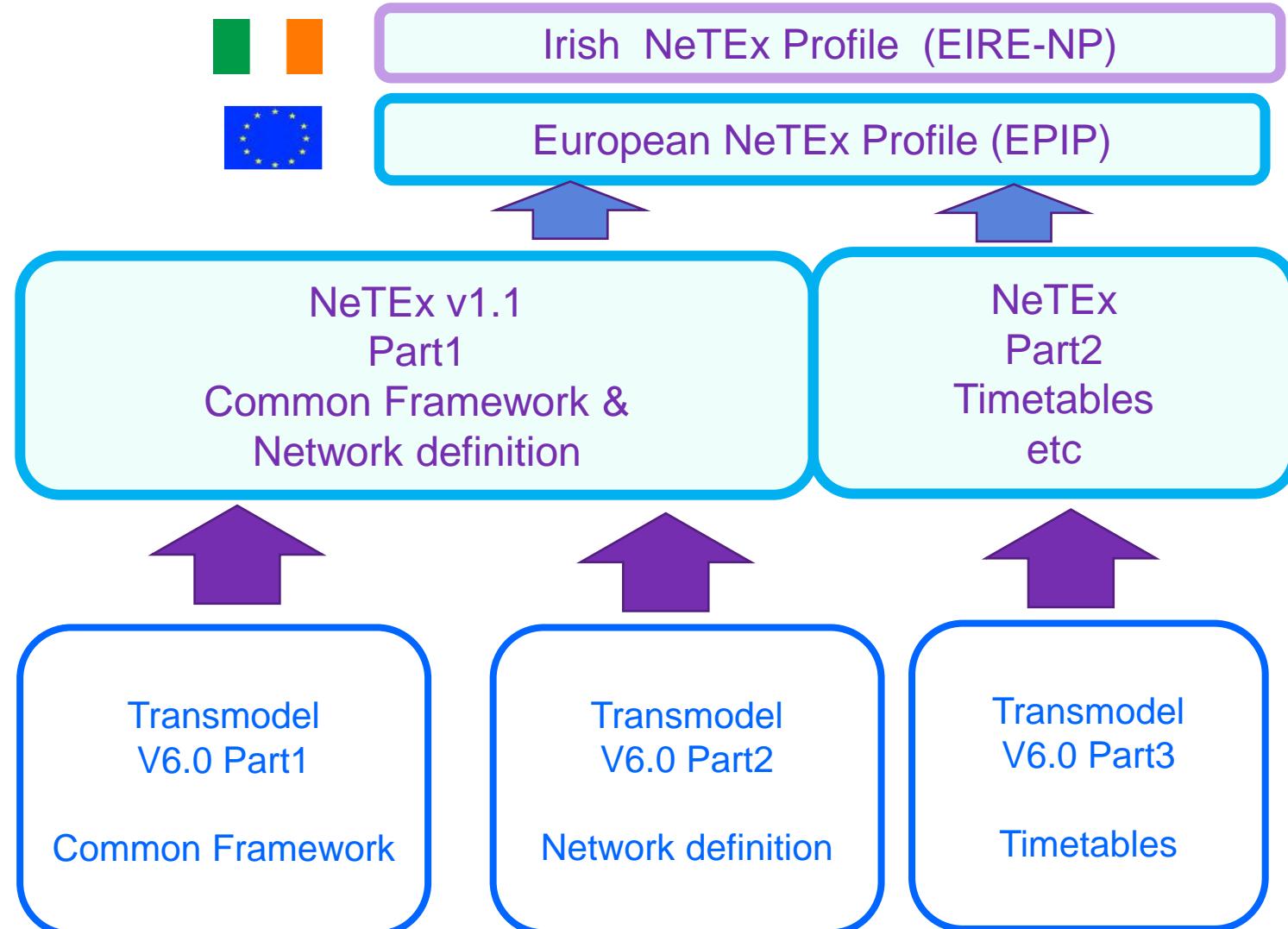
NeTEx is for bulk static data (SIRI is for real-time data)



Integrating data from different sources to create PI services



NeTEx & Transmodel CEN Specifications



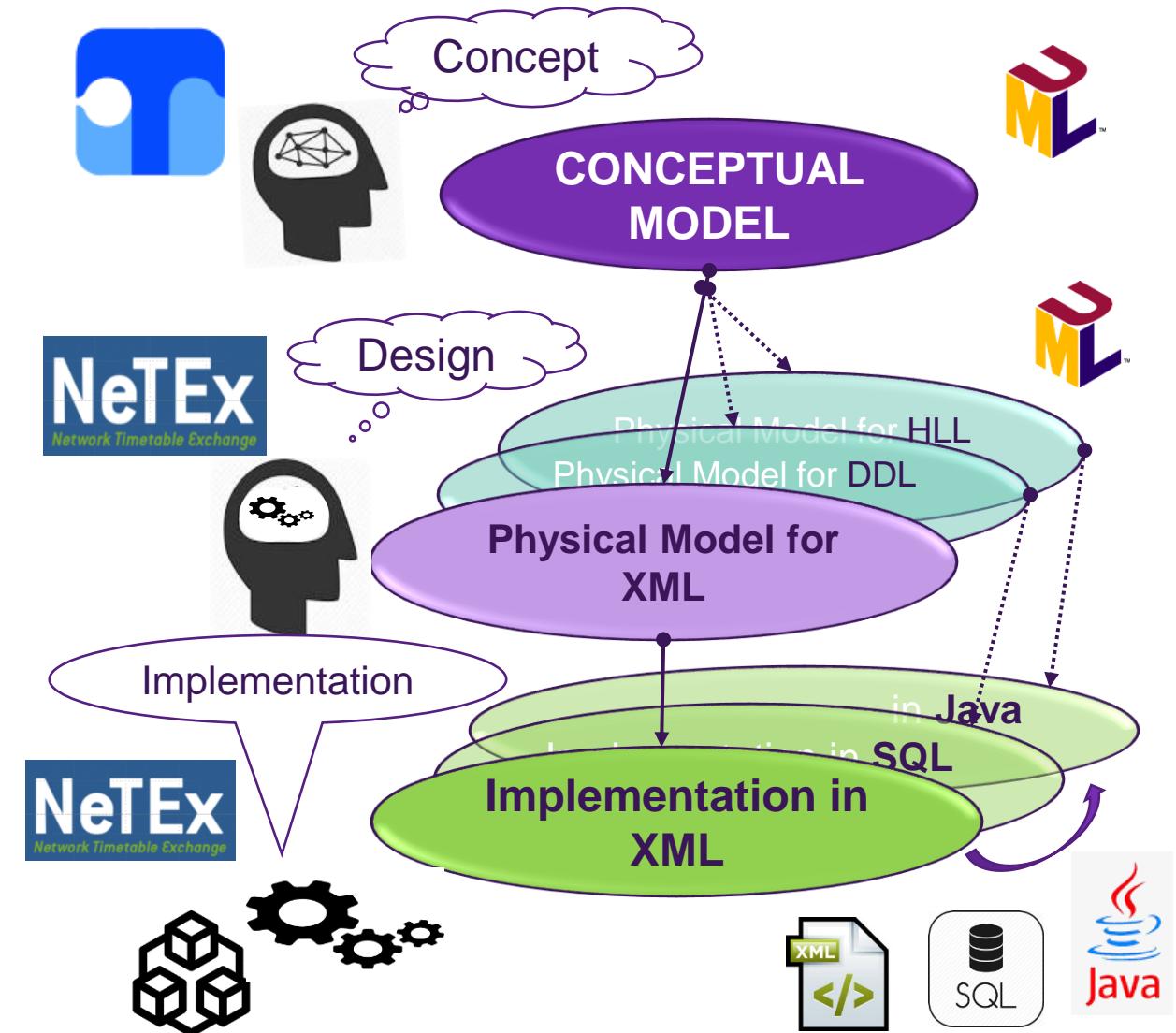


The Transmodel / NeTEx approach

Model Driven Design
Software engineering for robust standards

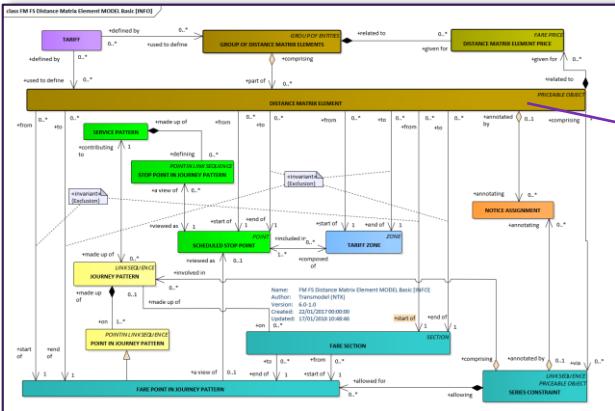
MODEL DRIVEN DESIGN

- ▶ Conceptual Model is implementation independent
 - “Joined up” architecture, modularised
 - Use to design against requirements
 - Addresses multiple use cases
 - Described in UML
- ▶ May have alternative Physical Models for different target implementations
 - XML Physical design as UML
- ▶ Implementation is derived from physical model.
 - NeTEx XML Schema



Designing a CEN Exchange format - Package & Element level traceability

CONCEPTUAL



Physical

NeTEx
Network Timetable Exchange



Schema

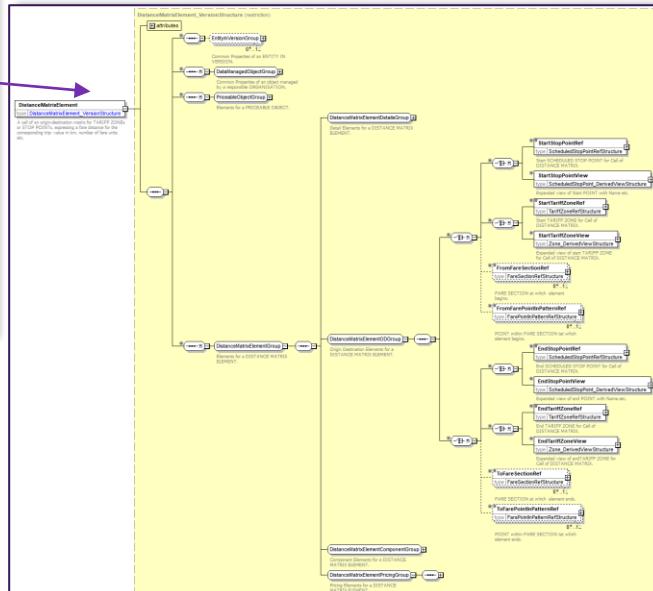
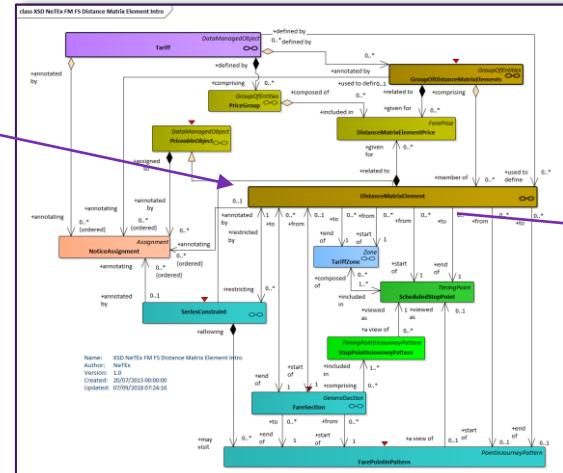
NeTEx
Network Timetable Exchange



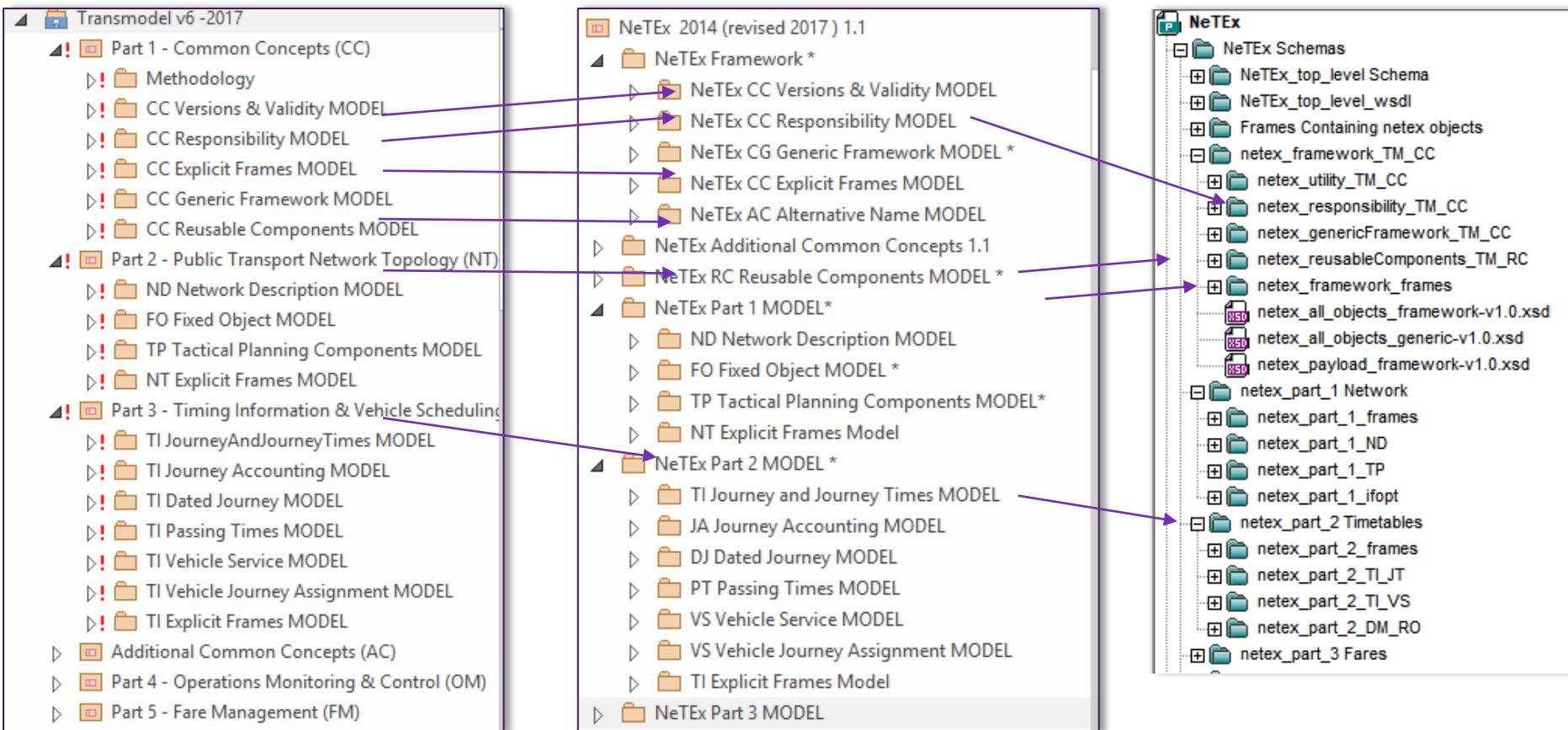
► Traceability

- Equivalent elements can be found at each level
- Physical design and Implementation each add further detail and constraints

► Tool support (EA, XmISPy, OXYGEN, etc)



Designing a CEN Exchange format - Package & Element level traceability



XML

- ▶ Schema specifies
 - ▶ Which tags can be present and in which order
 - ▶ What data types are present
 - E.g. date, time, email, enumerations
 - What cross references must be satisfied
 - “referential integrity”

```
> <Operator version="any" id="noc:868" changed="2018-08-  
20T10:23:00">  
>   <Name>Kealy's Coach Hire</Name>  
>   <ShortName>Kealy's</ShortName>  
>   <LegalName>Kealy's Coaches Ltd</LegalName>  
>   <TradingName>Kealy's Coaches Ltd</TradingName>  
>   <Address version="any" id="868">  
>     <AddressLine1>Lislehane</AddressLine1>  
>     <Town>Mallow</Town>  
>     <Suburb>Cullen</Suburb>  
>     <Province>Co.Cork</Province>  
>   </Address>  
>   <PrimaryMode>coach</PrimaryMode>  
> </Operator>
```

```
>  
> <Line id="B2" version="1">  
>   <OperatorRef ref="noc:868" version="01" />  
>
```

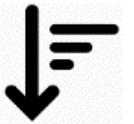
Advantages of Model Based Design

- **Reusable:**
 - ▶ The same concepts & data sets can be used for
 - **All PT domains:** e.g. Networks, Timetables & Fares,
 - **For all Modes,**
 - **For different use cases:** planning, operations, PI, etc
- **Precise, Modular**
 - ▶ Separates data sets of different stakeholders
 - ▶ Only need to use relevant components / modules
 - ▶ **Extensible**, Flexible, clear impact analysis
- **Data Quality**
 - ▶ Semantics can be used to drive automatic
- **Less complicated overall**
 - ▶ Single, uniform set of normalised concepts
 - ▶ Well-defined, multilingual documentation

Irish NeTEx Profile

Profile Elements for Stops, Routes and Timetables





Expressway
www.expressway.ie

22

1850 836611
08.30-18.00
7 DAYS A WEEK

expressway.ie



@expresswayIRE

ROUTE 22 DUBLIN to BALLINA

DAILY (including Public Holidays)

DUBLIN AIRPORT	atrium rd zone 13 stop 11	DEP.	-	1230	1530	1800	-	-
DUBLIN	BUSÁRAS		1000	1300P	1600P	1830P	2100	2300
DUBLIN	NORTH WALL QUAY 3 ARENA		1005P					2305P
DUBLIN AIRPORT	atrium rd zone 13 stop 11		1020P					2320P
DUBLIN	OPP HEUSTON STATION			1305P	1605P	1835P	2105P	
LIFFEY VALLEY	LUCAN ROAD			1315P	1615P	1845P	2115P	
LUCAN	SPA HOTEL		1040P					2340P
MAYNOOTH	67A TERMINUS		1050A	1330A	1630A	1900A	2130P	2350A
MULLINGAR	N4 SERVICE AREA - ESSO						2206D	0026D
MULLINGAR	CASTLE STREET		1132					
MULLINGAR	OPPOSITER REGIONAL HOSPITAL		1135					
BALLINALACK	MULLIGANS		1149	1419	1719	1949	2219	0039
RATHOWEN	GARD A STATION		1153	1423	1723	1953	2223	0043
EDGEWORTHSTOWN	POUND ST WESTBOUND		1200	1430	1730	2000	2230	0050
LONGFORD	DUBLIN ROAD - ST JOSEPHS		1212	1442	1742	2012	2242	0102
LONGFORD	RAIL STATION	ARR.	1215	1445	1745	2015		
LONGFORD	RAIL STATION	DEP.	1220	1450	1750	2020		
LONGFORD	COURTHOUSE - MAIN ST						2245	0105
TARMONBARRY	GARD A STATION		1230	1500	1800	2030	2255	0115
STROKESTOWN	PERCY FRENCH HOTEL		1240	1510	1810	2040	2305	0125
TULSK	CONWAYS		1255	1525	1825	2055	2320	0135
BALLINAGARE	N5 WESTBOUND STOP		1305	1535	1835	2105	2330	0145
FRENCHPARK	POST OFFICE		1309	1539	1839	2109	2334	0149
BALLAGHADERREEN	HANLEYS		1319	1549	1849	2119	2344	0159
CARRACastle CHURCH				1600		2130		
CHARLESTOWN	MARKET SQUARE - GARVEYS		1335	1607	1905	2137	0000	0215D
SWINFORD	CARDS & GIFTS SHOP		1346	1618	1916	2148	0011	0226D
FOXFORD	BROWNS MONUMENT		1358	1630	1928	2200	0023	0238D
BALLINA	BUS STATION	ARR.	1415	1647	1945	2217	0040	0250

Temporary Timetable Effective From 7th June 2020

P = Pick-up stop only.

D = Drop-off stop only.

A = Will carry passengers from Dublin Airport to Maynooth, but may not carry passengers from city centre to Maynooth.
SuX = Operates Monday to Saturday only - does not operate on Public Holidays

SuO = Operates Sundays and Public Holidays only.

During College terms only, the following extra services will operate:

Thursday & Friday only 0930 ex Ballina to Dublin Airport;
Friday only 1230 ex Ballina to Dublin Airport.

Thursday & Friday only 1530 ex Dublin Airport to Ballina;
Friday only 1800 ex Dublin Airport to Ballina; Friday only 1900 ex Maynooth (67A Terminus) to Longford (Rail Station).

FOR SERVICES STOPPING AT LONGFORD RAIL STATION,
THERE WILL BE A SHORT COMFORT STOP. TOILET FACILITIES ARE AVAILABLE.

NO SERVICES ON CHRISTMAS DAY. ENQUIRE ABOUT ST. STEPHEN'S DAY SERVICES.

<https://expressway.ie/Route-22-dublin-airport-to-ballina>

Or this.....

12:00 • Dublin Heuston S 1 2h 02m 0 changes

• 14:02 Mallow [Hide details -](#)

If this train is an **InterCity** service it is sold out.
Please select an alternative. To purchase **DART** or **Commuter** tickets, please go to your local station.

JOURNEY DETAILS

InterCity to Cork (Kent) 12:00 Dep Dublin Heuston [Close](#) S 1

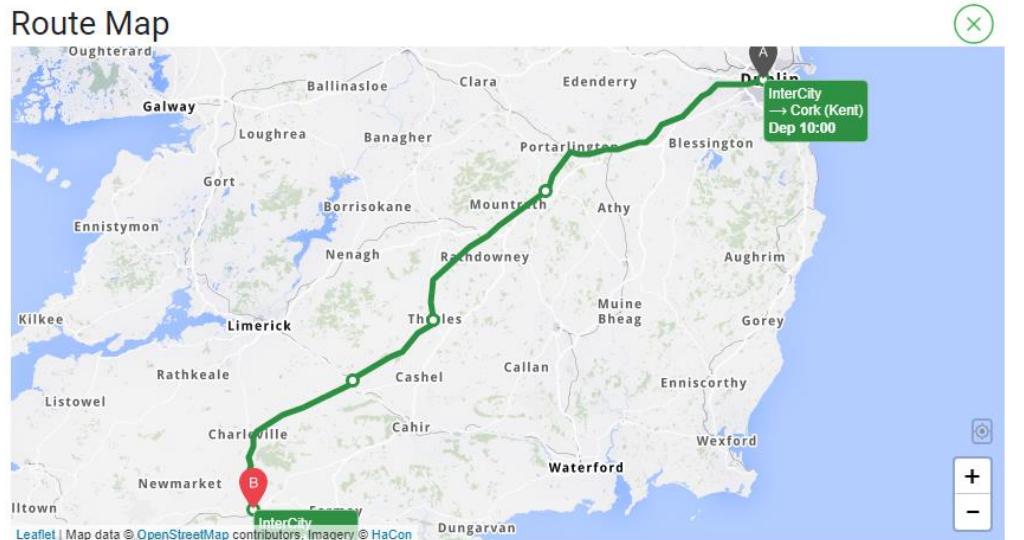
12:41 Arr 12:41 Dep Portlaoise

13:13 Arr 13:13 Dep Thurles

13:30 Arr 13:30 Dep Limerick Junction

14:02 Arr Mallow

[Print](#) [Show Map](#)



The route map shows the InterCity line from Dublin Heuston through Portlaoise, Thurles, and Limerick Junction to Mallow. A green line indicates the route, with red dots marking the stations. A callout box highlights the departure from Dublin Heuston at 12:00 for an InterCity service to Cork (Kent). Another callout box at the bottom right indicates a stop at Newmarket.

<https://journeyplanner.irishrail.ie/>



DAY TYPE

LINE



ROUTE 22 DUBLIN to BALLINA

DAILY (including Public Holidays)

SCHEDULED
STOP POINTs

DUBLIN AIRPORT	ATRIUM RD ZONE 13 STOP 11	DEP.	-	1230	1530	1800	-	
DUBLIN	BUSÁRS		1000	1300P	1600P	1800P	2000	2300
DUBLIN	NORTH WALL QUAY 3 ARENA		1005P	I	I	I	I	2305P
DUBLIN AIRPORT	ATRIUM RD ZONE 13 STOP 11		1020P	I	I	I	I	2320P
DUBLIN	OPP HEUSTON STATION		I	1305P	1605P	1850P	2050P	I
LIFFEY VALLEY	LUCAN ROAD		I	1315P	1615P	1855P	2055P	I
LUCAN	SPA HOTEL		1040P	I	I	I	I	2340P
MAYNOOTH	67A TERMINUS		1050A	1330A	1630A	1900A	2030P	2350A
MULLINGAR	N4 SERVICE AREA - ESSO		I	I	I	I	0600	0026D
MULLINGAR	CASTLE STREET		1132	I	I	I	I	I
MULLINGAR	OPPOSITE REGIONAL HOSPITAL		1135	I	I	I	I	I
BALLINALACK	MULLIGANS		1149	1419	1719	1919	2119	0039
RATHOWEN	GARD A STATION		1153	1423	1723	1923	2123	0043
EDGEWORTHSTOWN	POUND ST WESTBOUND		1200	1430	1730	1930	2130	0050
LONGFORD	DUBLIN ROAD - ST JOSEPHS		1212	1442	1742	1942	2142	0102
LONGFORD	RAIL STATION	ARR.	1215	1445	1745	1945	2145	I
LONGFORD	RAIL STATION	DEP.	1220	1450	1750	1950	2150	I
LONGFORD	COURTHOUSE - MAIN ST		I	I	I	I	1945	0105
TARMONBARRY	GARD A STATION		1230	1500	1800	2000	2200	0115
STROKESTOWN	PERCY FRENCH HOTEL		1240	1510	1810	2010	2205	0125
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BALLAGHADERREEN	HANLEYS		1319	1549	1849	2049	2244	0159
CARRACastle CHURCH			I	1600	I	2000	I	I
CHARLESTOWN	MARKET SQUARE - GARVEYS		1335	1607	1905	2047	2000	0215D
SWINFORD	CARDS & GIFTS SHOP		1346	1618	1916	2048	2011	0226D
FOXFORD	BROWNS MONUMENT		1358	1630	1928	2050	2023	0238D
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<https://expressway.ie/Route-22-dublin-airport-to-ballina>

VALIDITY CONDITION

OPERATOR

TIMETABLE

1850 836611

08.30-18.00

7 DAYS A WEEK



expressway.ie
@expresswayIRE

Temporary Timetable Effective From 7th June 2020

SERVICE
LINKs

CONNECTION

SERVICE
PATTERN

POINTs IN
JOURNEY
PATTERn

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D = Drop-off stop only.
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JOURNEY
PATTERnS

PASSING TIMES

NOTICeS

VEHICLE JOURNEYs





LINE

VALIDITY CONDITION

Or this.....

DAY TYPE

ACCESEBILITY
ASSESSMENT

LINE
NETWORK

NOTICE

FACILITIES

SERVICE JOURNEY

INTERCHANGE

SCHEDULED
STOP POINTs

Iarnród Éireann
Irish Rail

If this train is an **InterCity** service it is sold out.
Please select an alternative. To purchase **DART** or
Commuter tickets, please go to your local station.

SERVICE
LINKs

JOURNEY
PATTERn

12:00

Dublin Heuston

2h 02m
S 1 0 changes

14:02

Mallow

[Hide details -](#)

↑↓ JOURNEY DETAILS

InterCity to Cork (Kent)

12:00 Dep
12:41 Arr
12:41 Dep
13:13 Arr
13:13 Dep
13:30 Arr
13:30 Dep
14:02 Arr

Dublin Heuston [Close](#) S 1

Portlaoise

Thurles

Limerick Junction

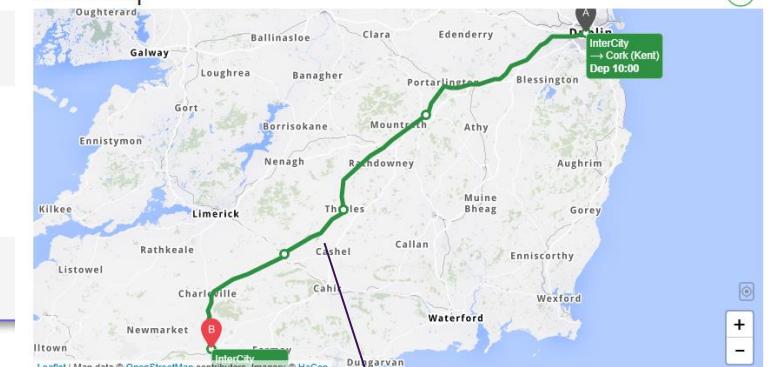
Mallow

SERVICE
PATTERn

[Print](#) [Show Map](#)

PASSING TIMES

Route Map



Irish NeTEx Profile – Timetable Related Elements



- **Network:**

1. Stops,
2. Connections
3. Lines & Routes,
4. Service Patterns

- **Timetables:**

1. Service Journeys
2. Passing Times,
3. Interchanges
4. Day Types, Service Calendars:
5. Groups of Journeys, Facilities
6. Journey Parts, Coupled Journeys

- **Ancillary**

1. Operators
2. Modes
3. Notices /Footnotes
4. Accessibility:

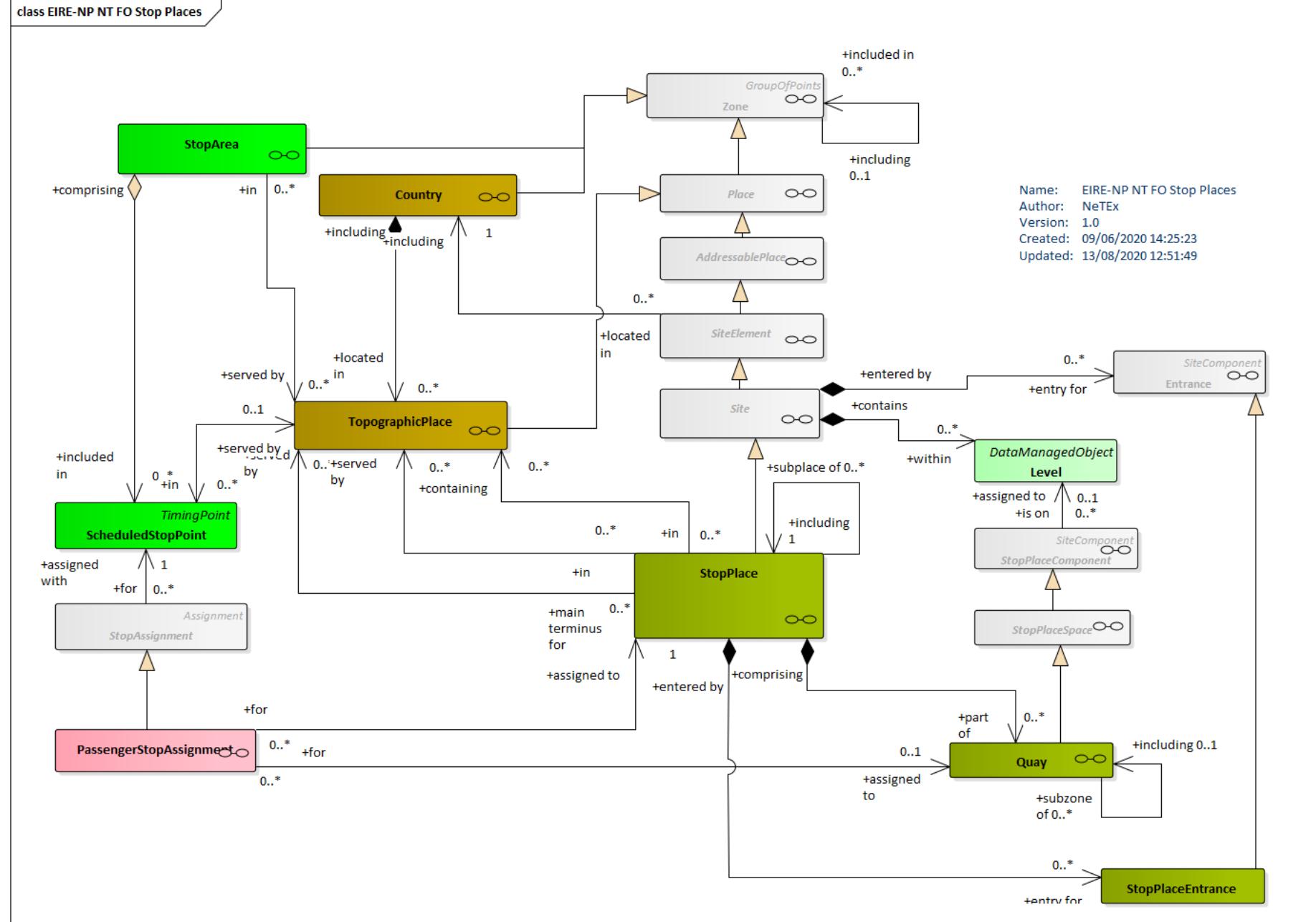


#2.1



Irish NeTEx Profile → Stops

Similar to NPTG
NaPTAN, but
distinguishes
between physical
and timetable use

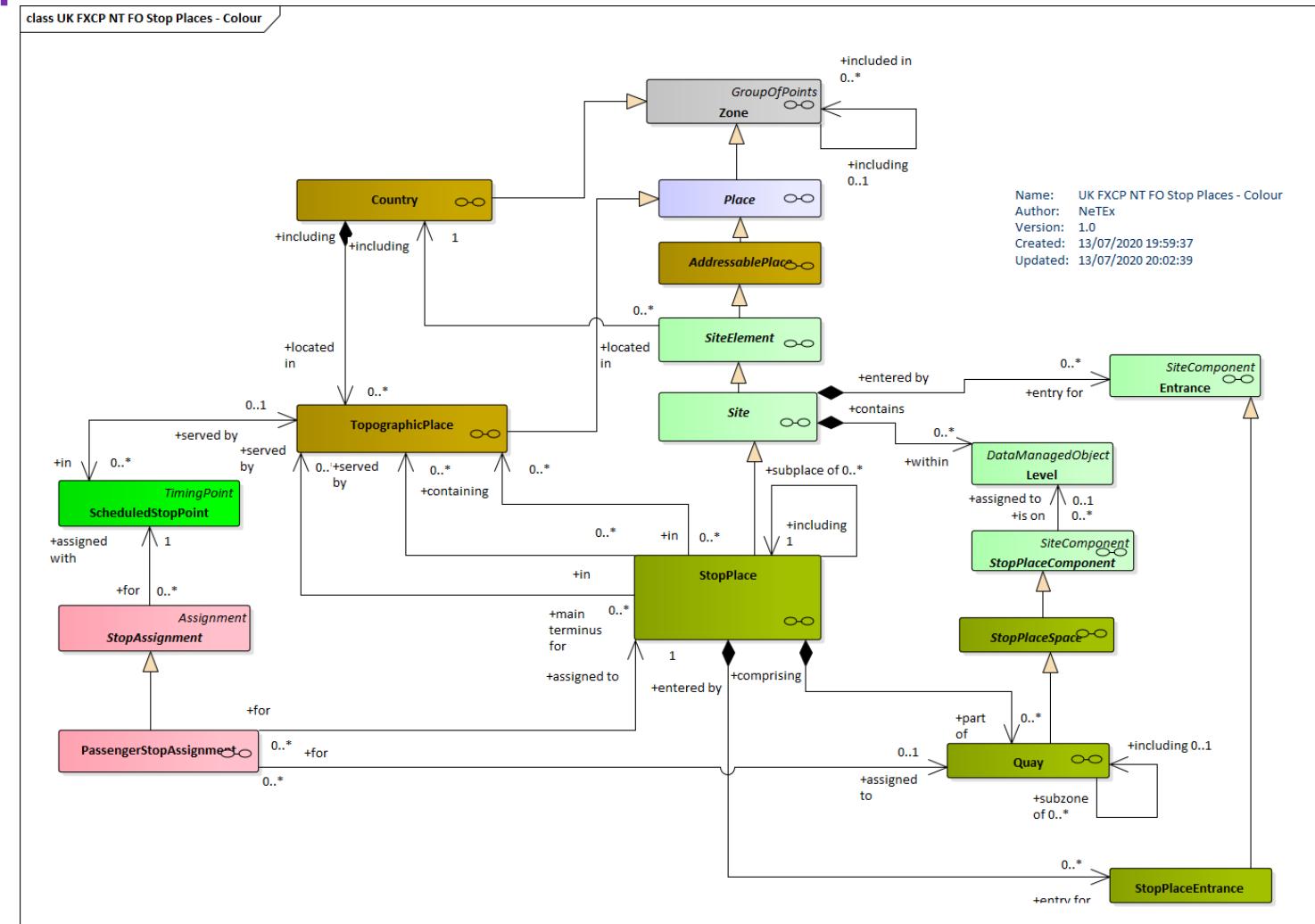


Note on diagram presentation conventions

- ▶ In NeTEx UML diagrams, Colour indicates functional area .
 - E.g. yellow is used for JOURNEY related elements
- ▶ In NeTEx Profile UML diagrams Abstract elements are faded out in grey: only concrete elements are coloured.
 - E.g. JOURNEY is grey, SERVICE JOURNEY related elements

NeTEx Stop Mode – Full Colour

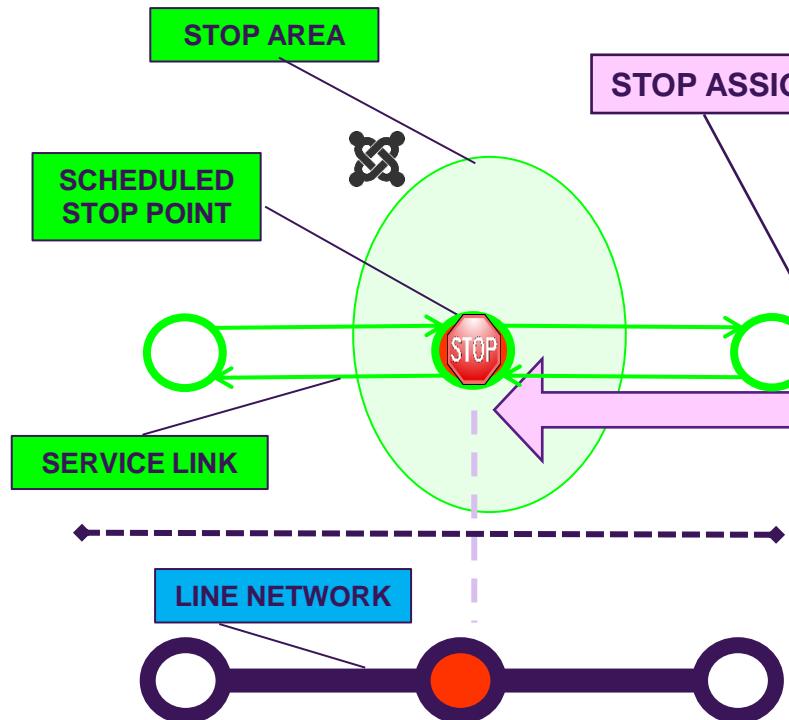
- ▶ **Geographical Context**
 - **TOPOGRAPHIC PLACE**
 - (NPTG Locality),
 - **Physical Stop**
 - **STOP PLACE**
 - (NaPTAN Stop)
- **Timetable Stop**
 - **SCHEDULED STOP POINTs**
 - (TXC reference to a NaPTAN STOP)
- **Link them with**
 - **STOP ASSIGNMENT**



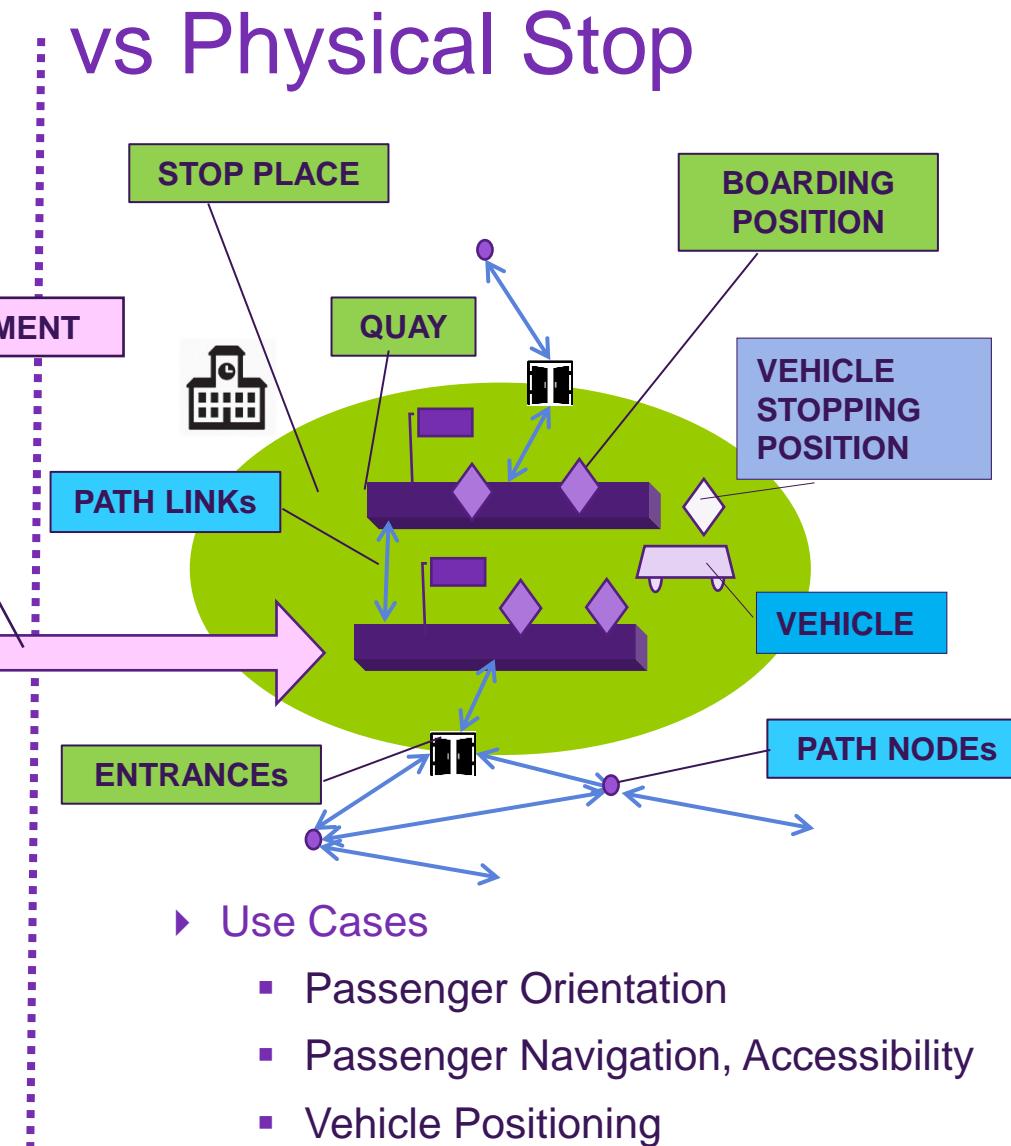


Timetable Stop vs Physical Stop

A 10:20
B 10:25
C 10:28
D 10:45

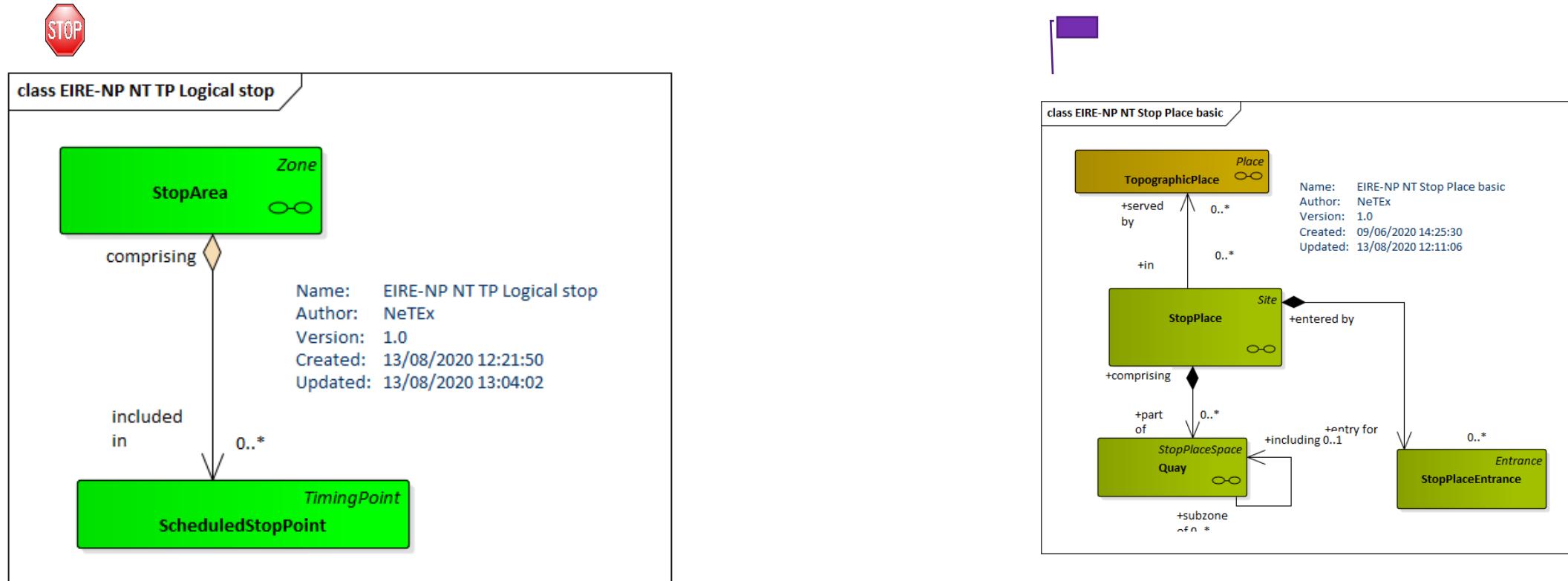


- ▶ Use Cases
 - Scheduling
 - Trip Planning



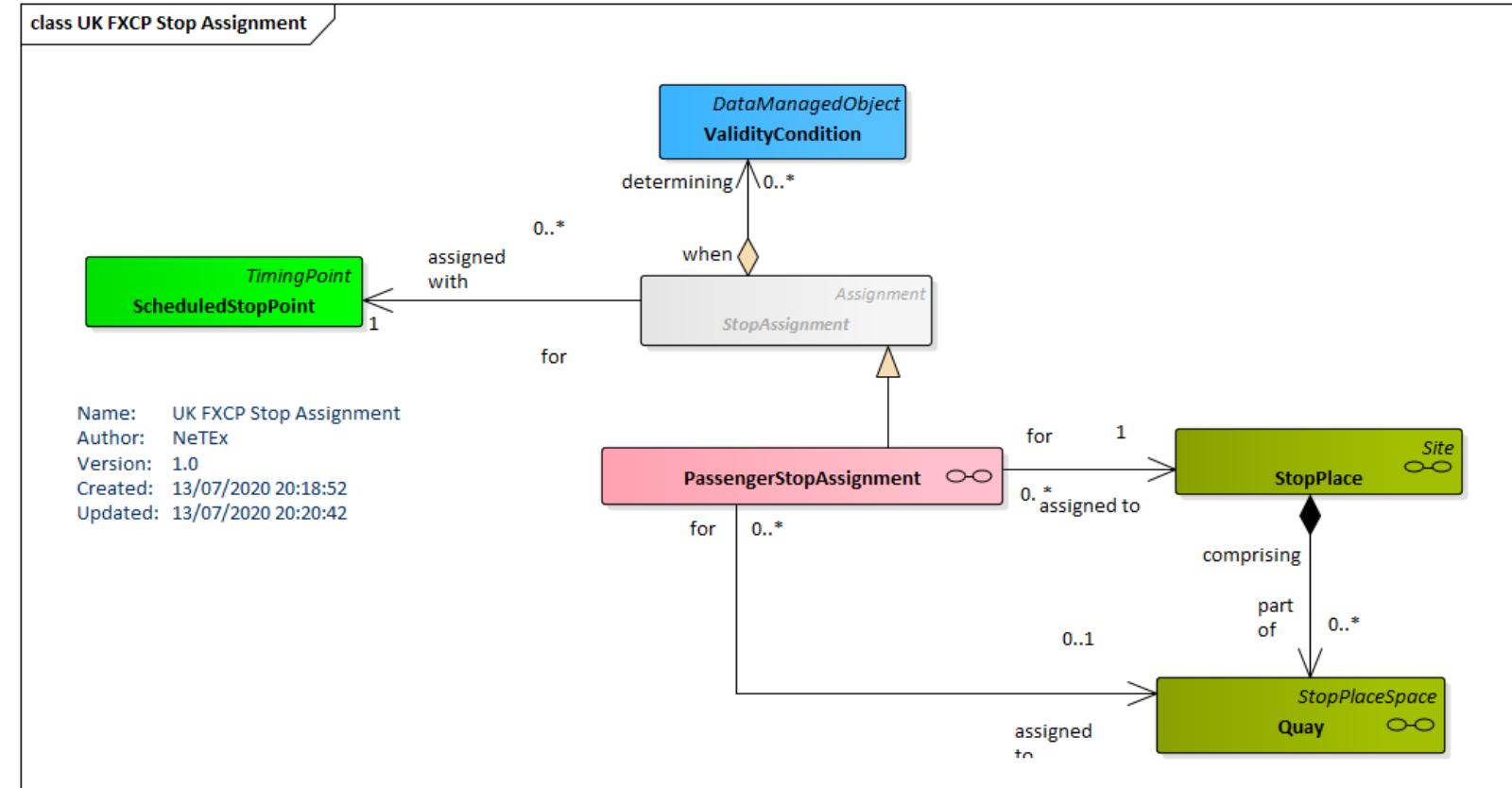
- ▶ Use Cases
 - Passenger Orientation
 - Passenger Navigation, Accessibility
 - Vehicle Positioning
 - Detailed Trip Planning

Stop in Timetable vs Physical stop



Linking Physical and logical Stop Models

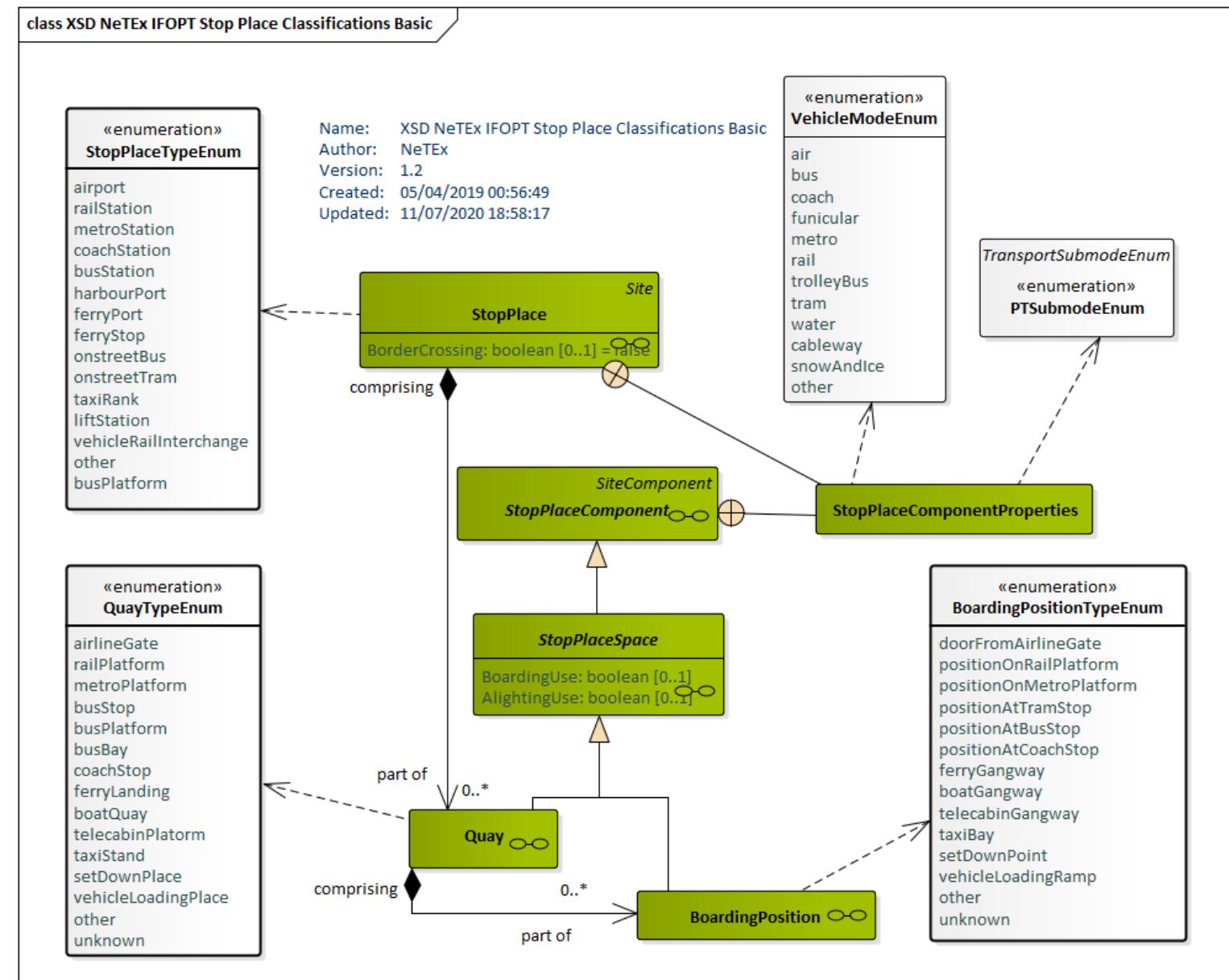
- Timetabled
 - SCHEDULED STOP POINT
- Physical
 - STOP PLACE, QUAY, etc
- Linked by
 - STOP ASSIGNMENT
 - Can be implicit
- Rail:
 - STOP PLACE is station,
 - QUAY is Platform
- Bus, etc
 - STOP PLACE is (usually) a pair of stops
 - QUAY is pole





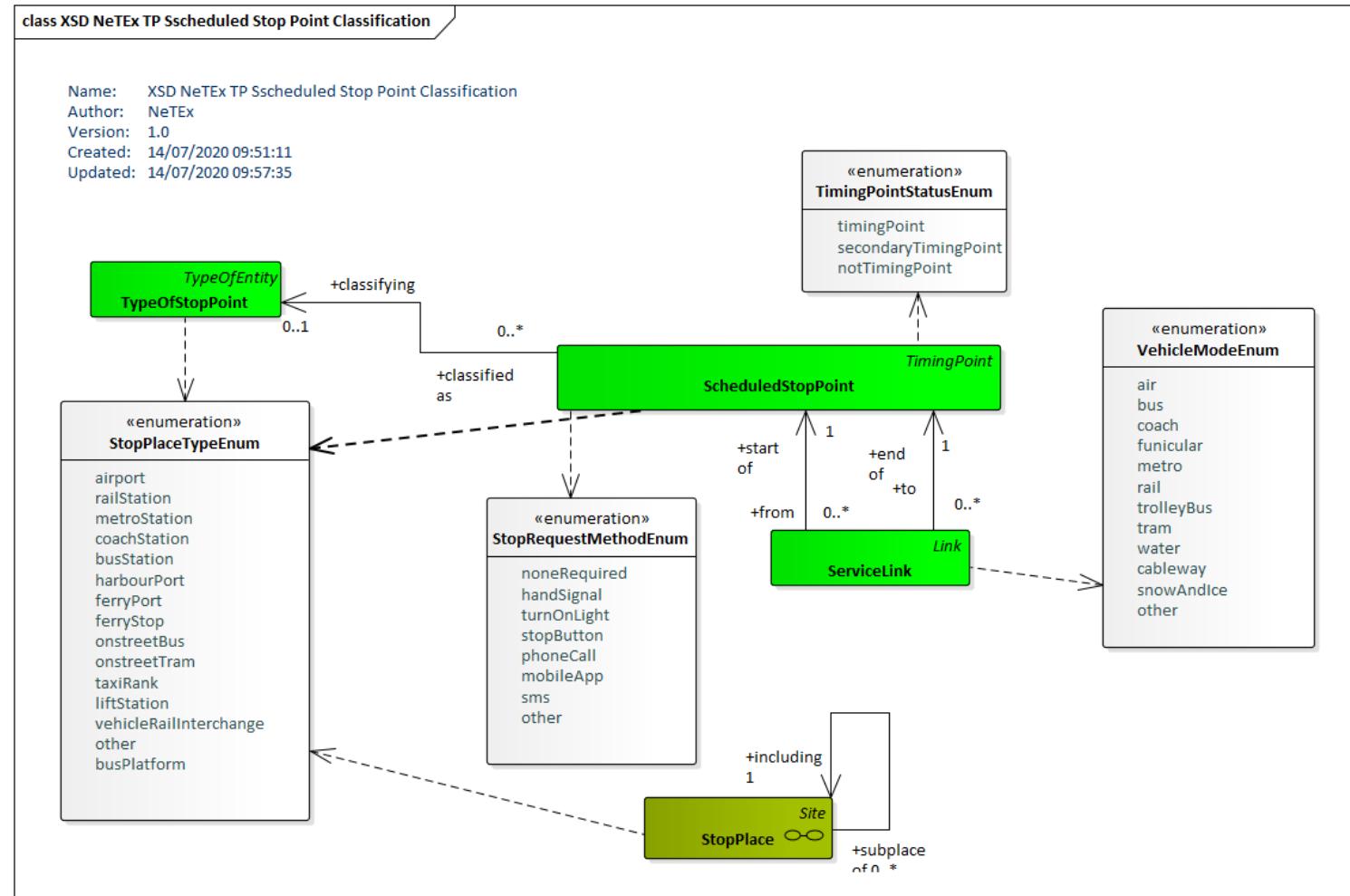
Stop Place Classification

- Standardised values
- Existing values can be retained as annotations



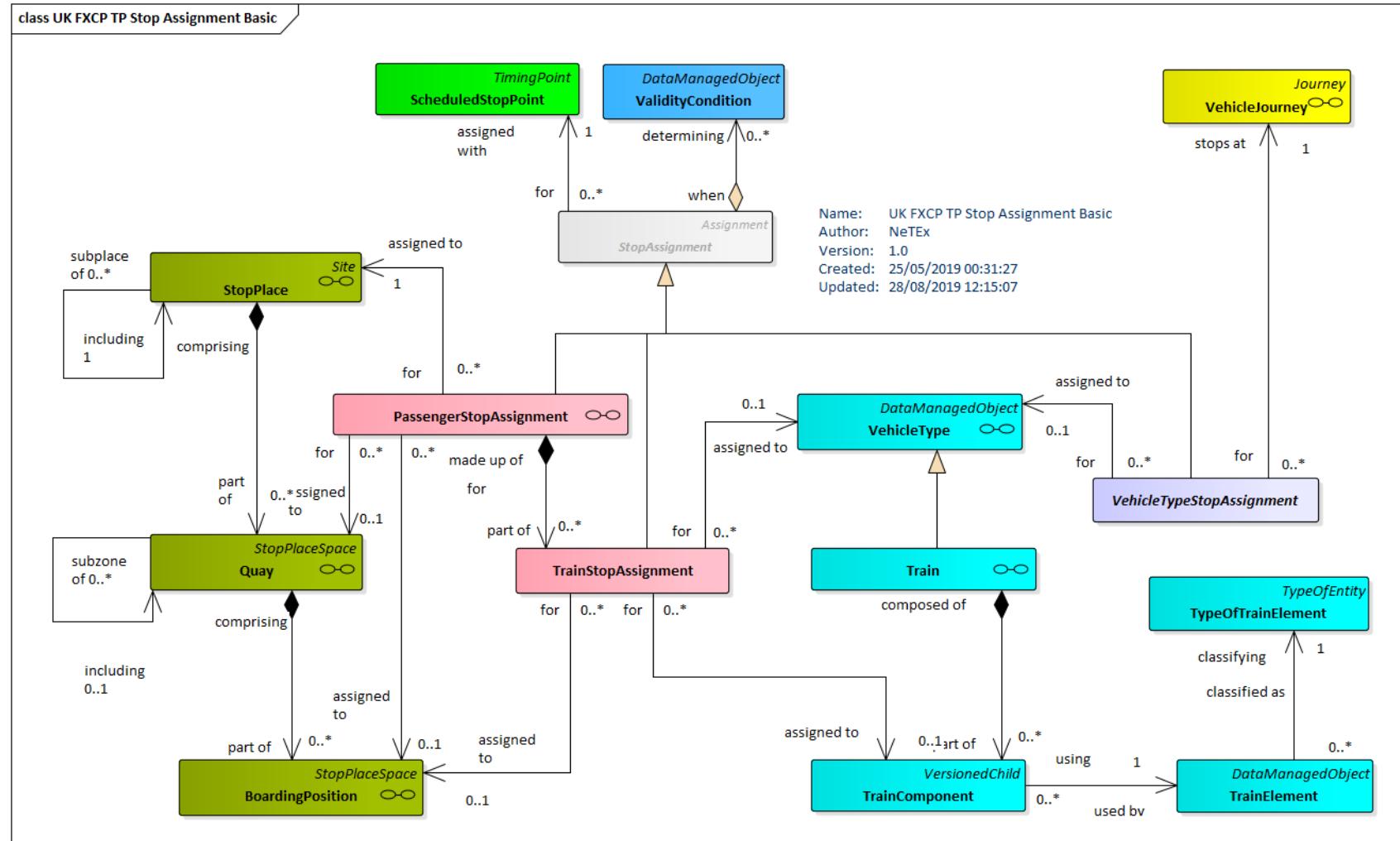
Stop Classification

- Same values on
 - SCHEDULED STOP POINT
 - STOP PLACE



Train Stop Assignment – train platforms for a specific journey

- Assign a specific train journey to platform
- Assign TRAIN ELEMENT (Carriage) to boarding position BOARDING POSITION
- Train makeup can also be described



Train Make up & Boarding Positions

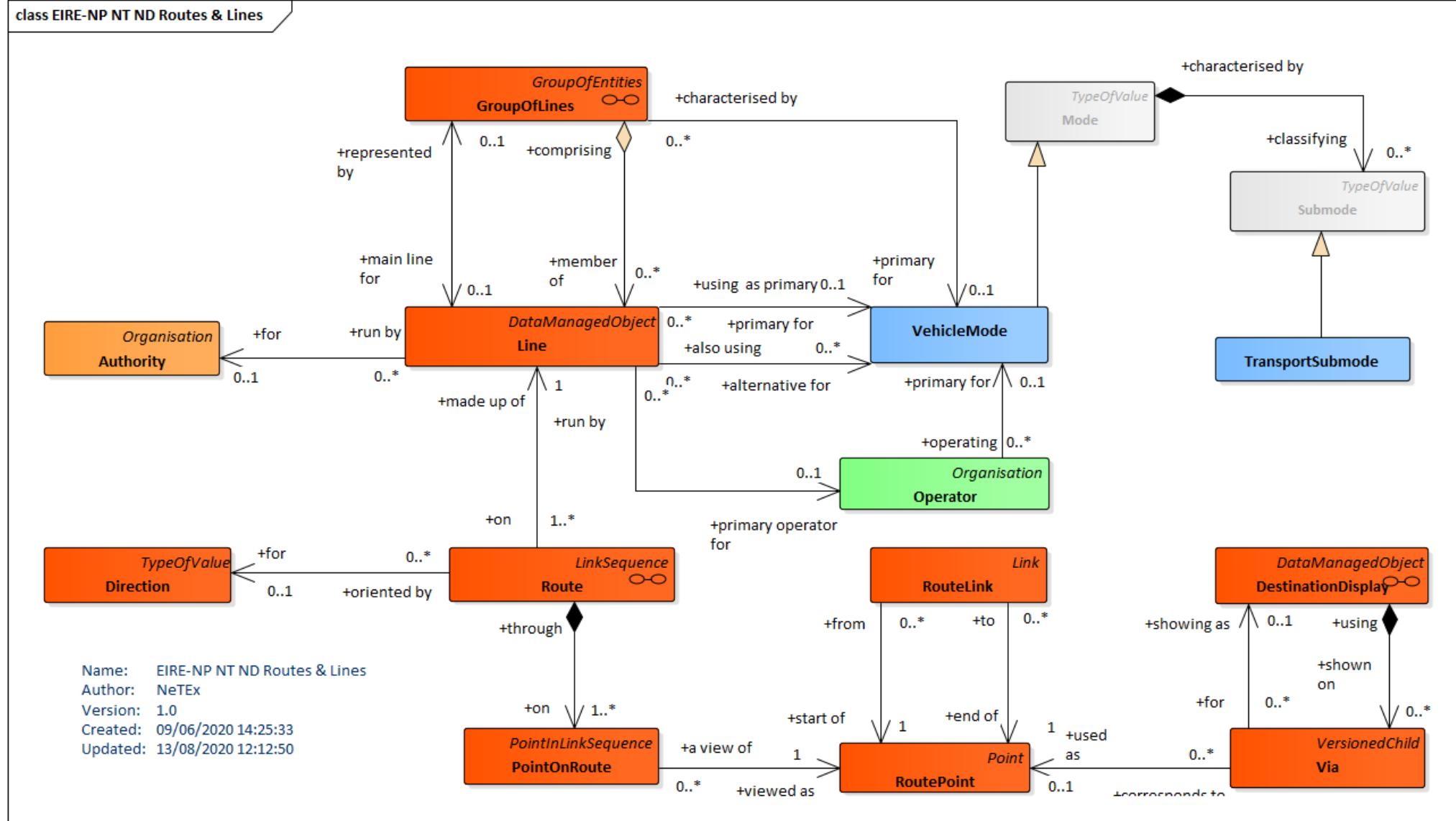




#2.2

Irish NeTEx Profile → Lines and Routes

Similar to VDV452,
GTFS

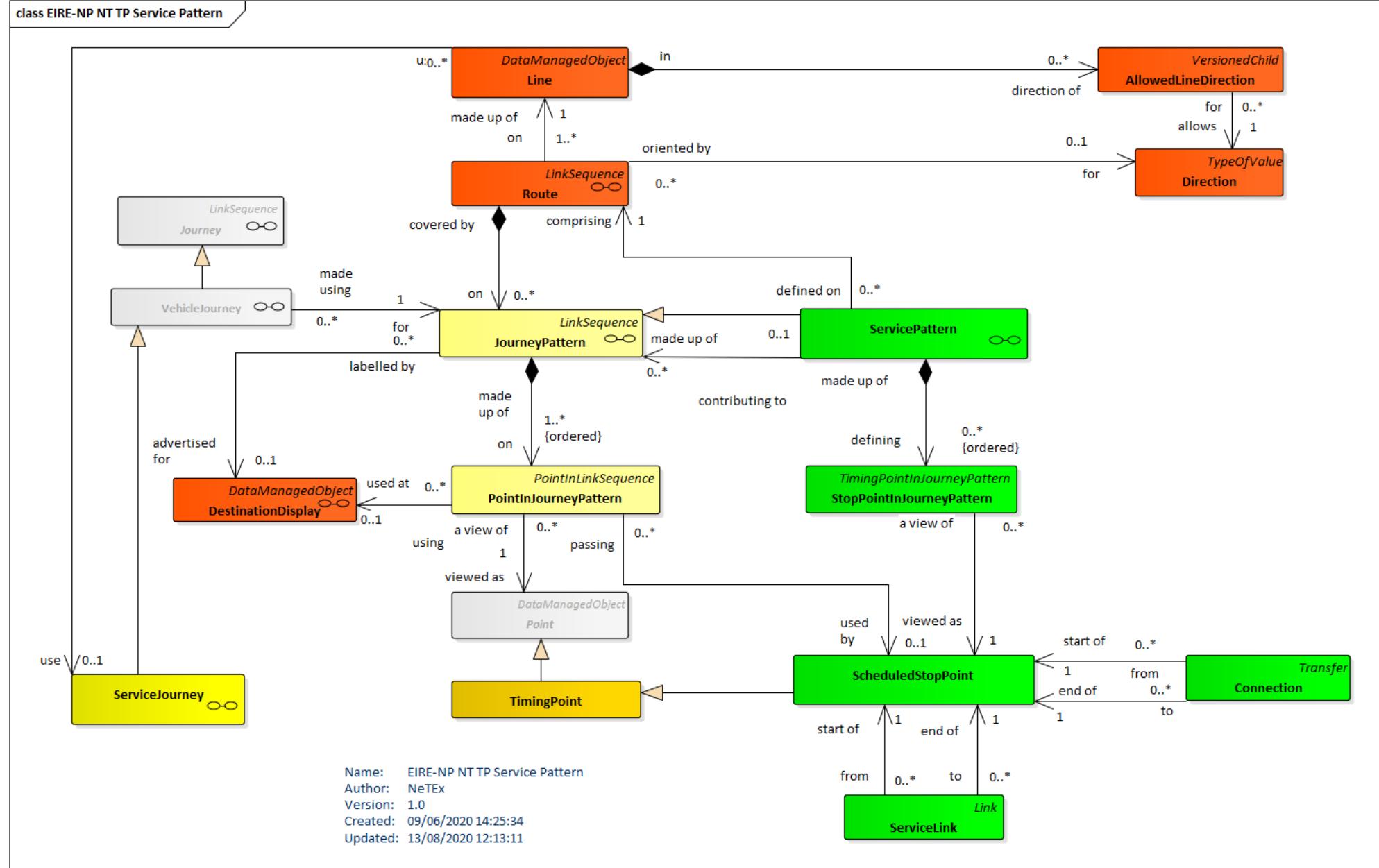




#2.3

Irish NeTEx Profile → Service Patterns

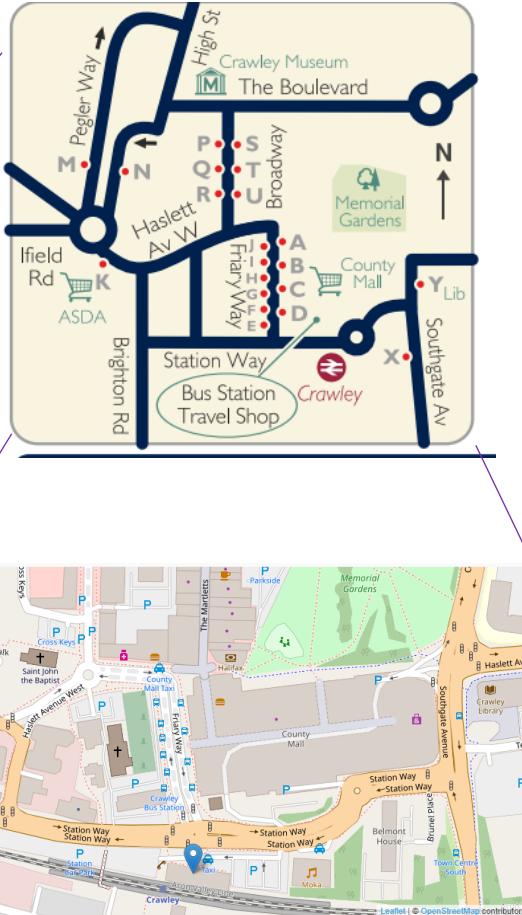
Similar to VDV452,
POINT / LINK
representation



A Typical Bus Route (Metrobus Route 1)



© Metrobus 2018





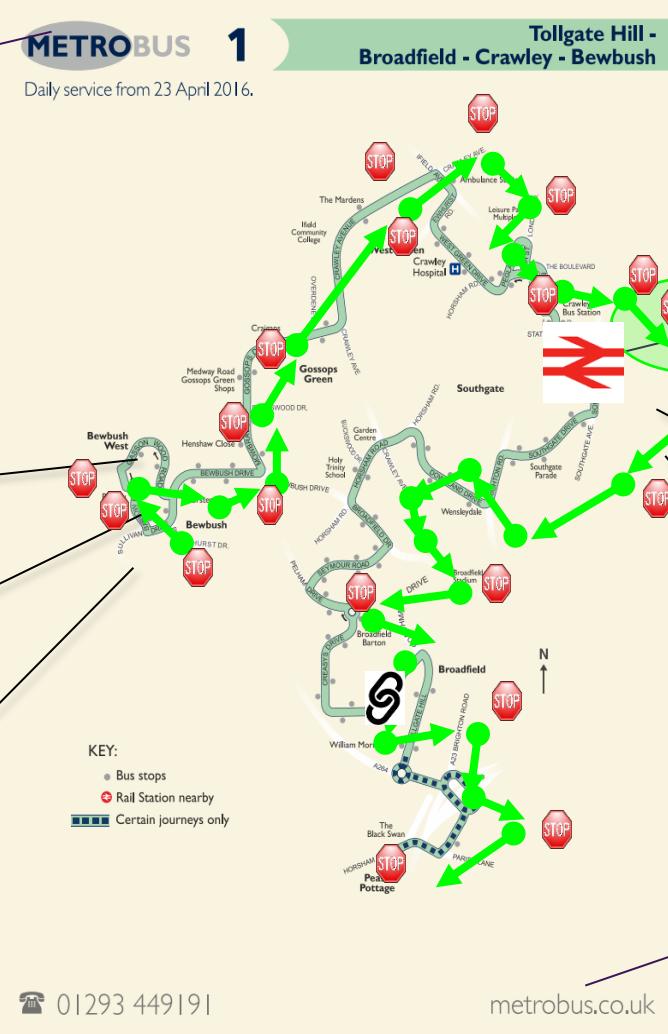
MODE



TM: The Network Description



LINE



POINT OF INTEREST
(hospital)



CONNECTION
(rail)



STOP AREA



SCHEDULED
STOP POINT
(rail)



TOPOGRAPHIC
PLACES



OPERATOR



SCHEDULED
STOP POINTs
(bus)



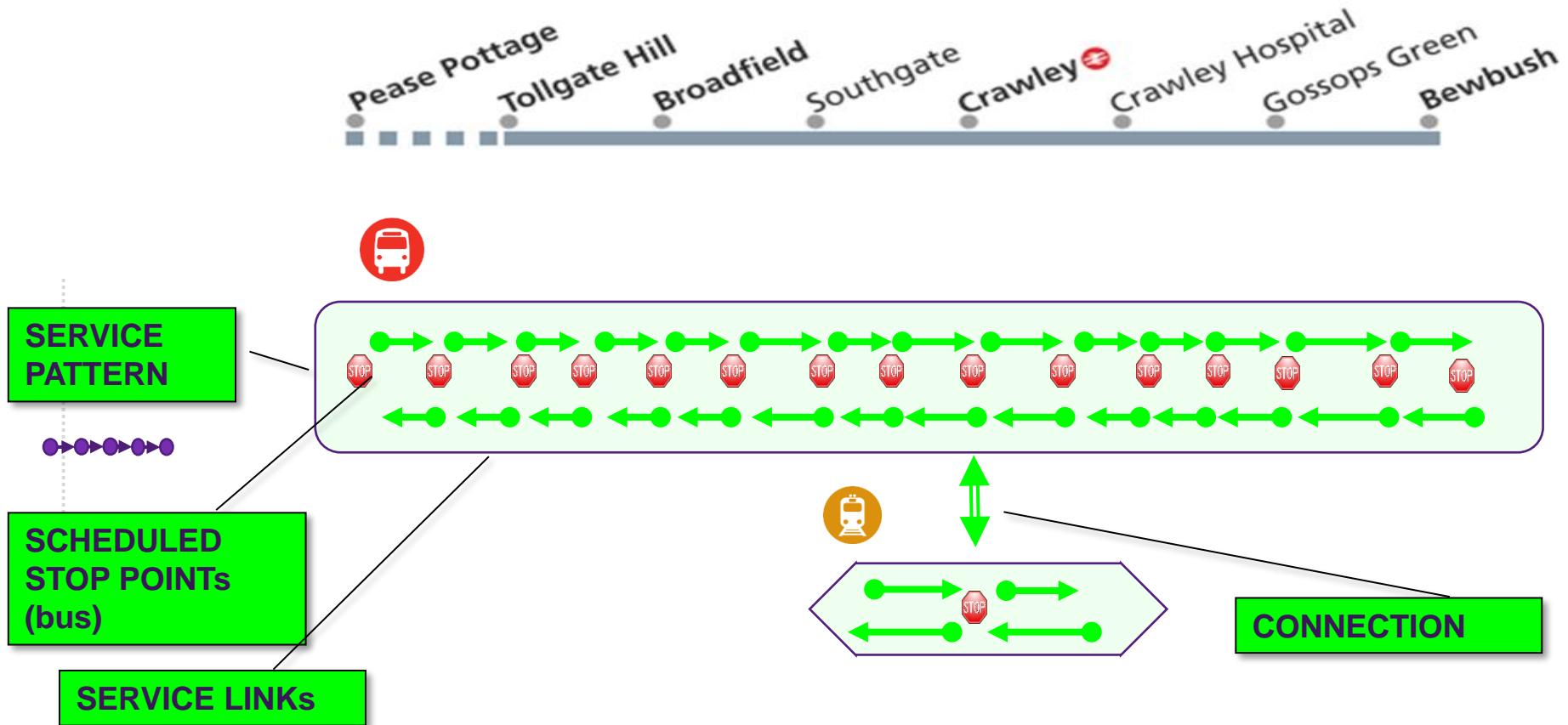
SERVICE LINKs



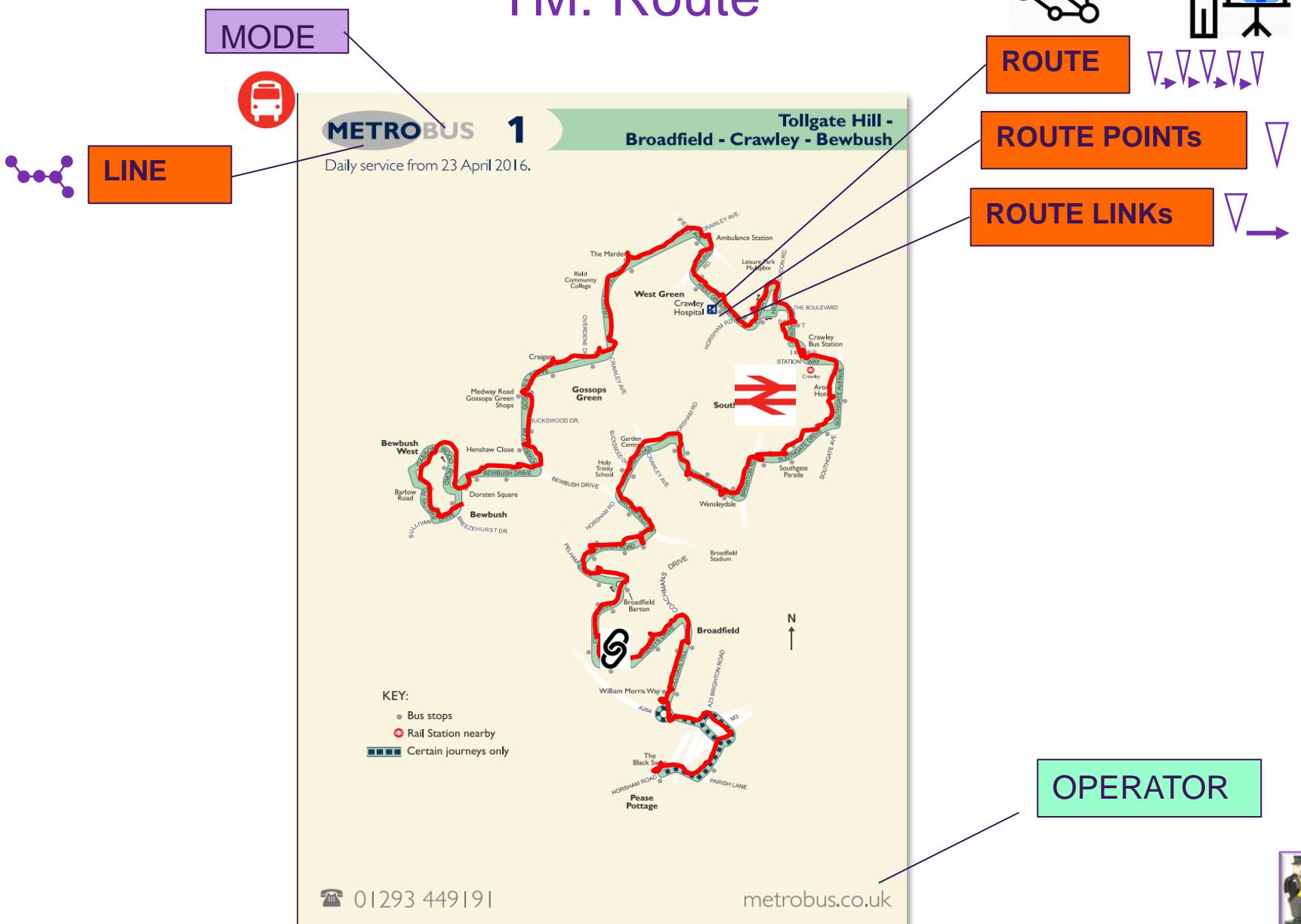
SERVICE
PATTERNs



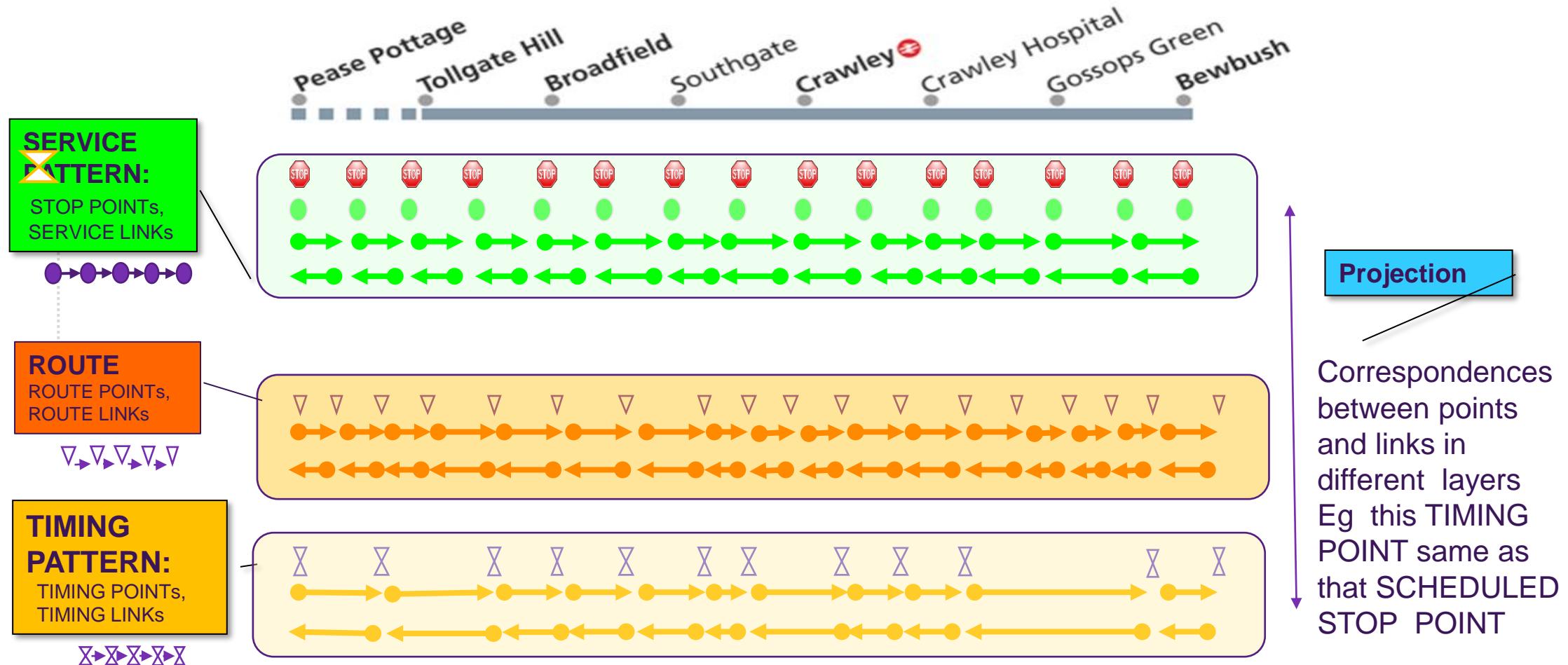
The Network as the Timetabled Stops & Links



TM: Route



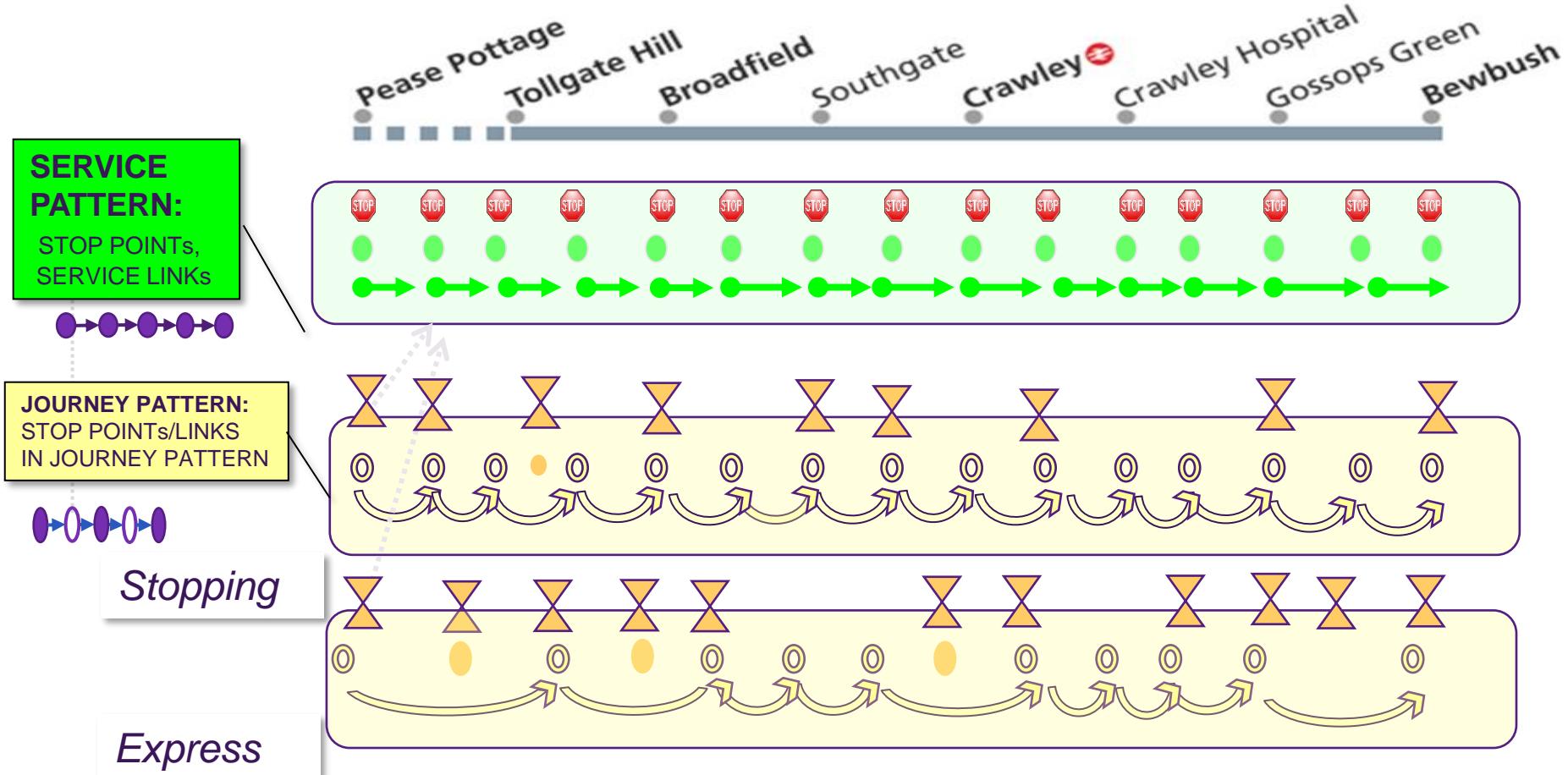
The Network as the Operational route



The Network for use in timetabling

The subset of a JOURNEY PATTERN made up only of STOP POINTS IN JOURNEY PATTERN.

An ordered list of SCHEDULED STOP POINTs and TIMING POINTs on a single ROUTE, describing the pattern of working for public transport vehicles

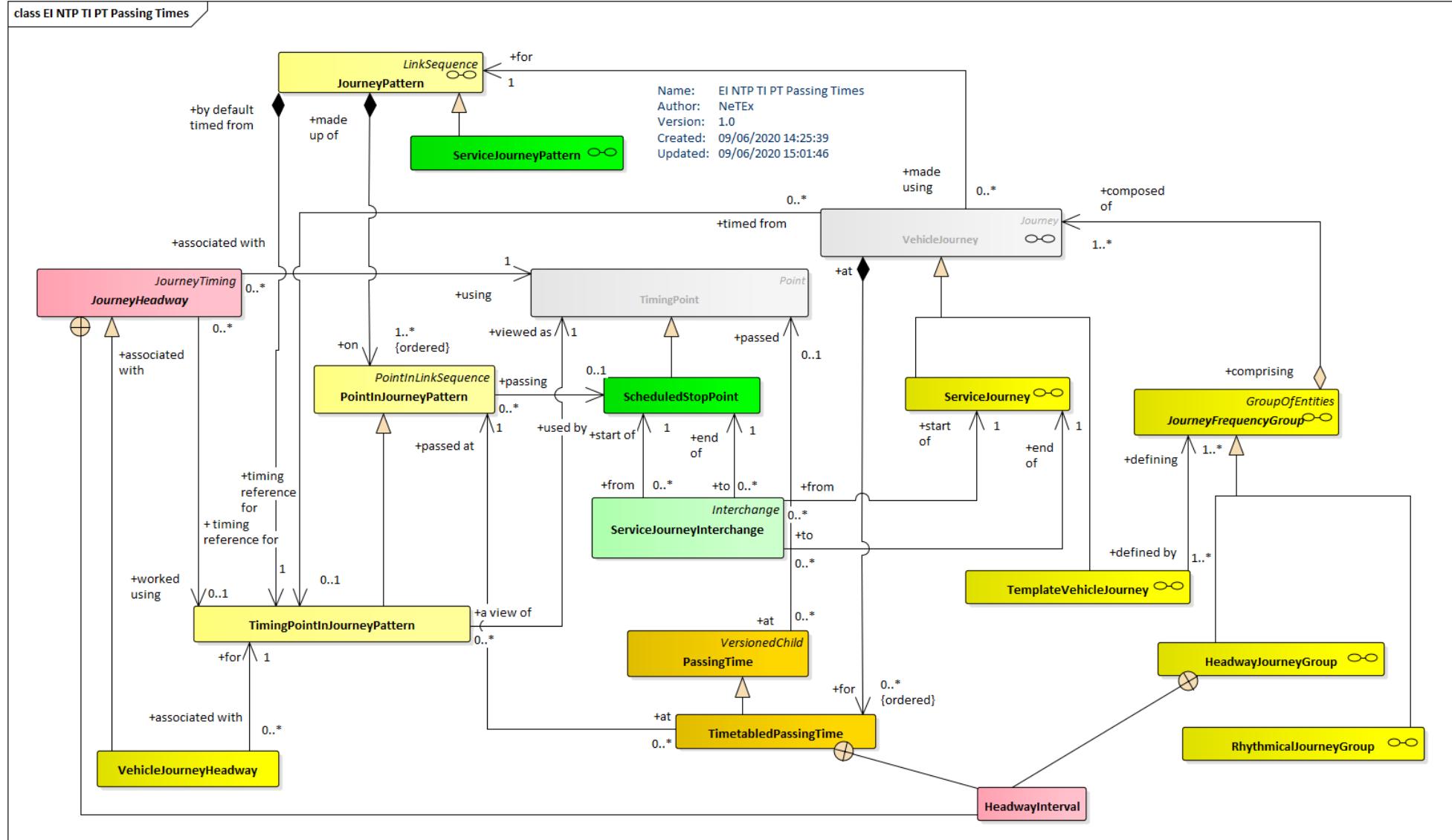




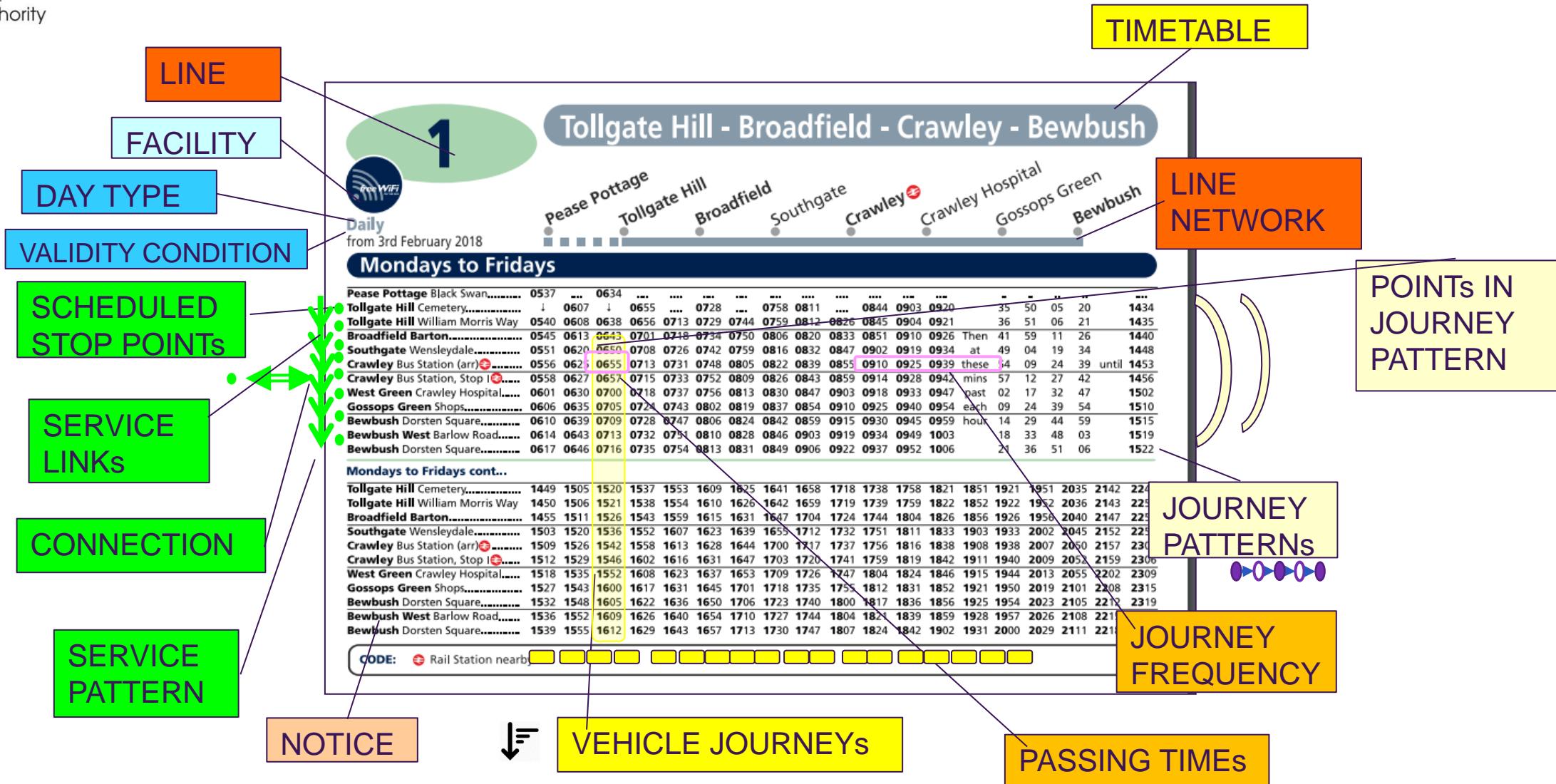
Irish NeTEx Profile

→ Journeys, Passing Times, interchanges

#2.4



TM: A Bus timetable as model elements





TM: The Network Description

JOURNEY PATTERNS



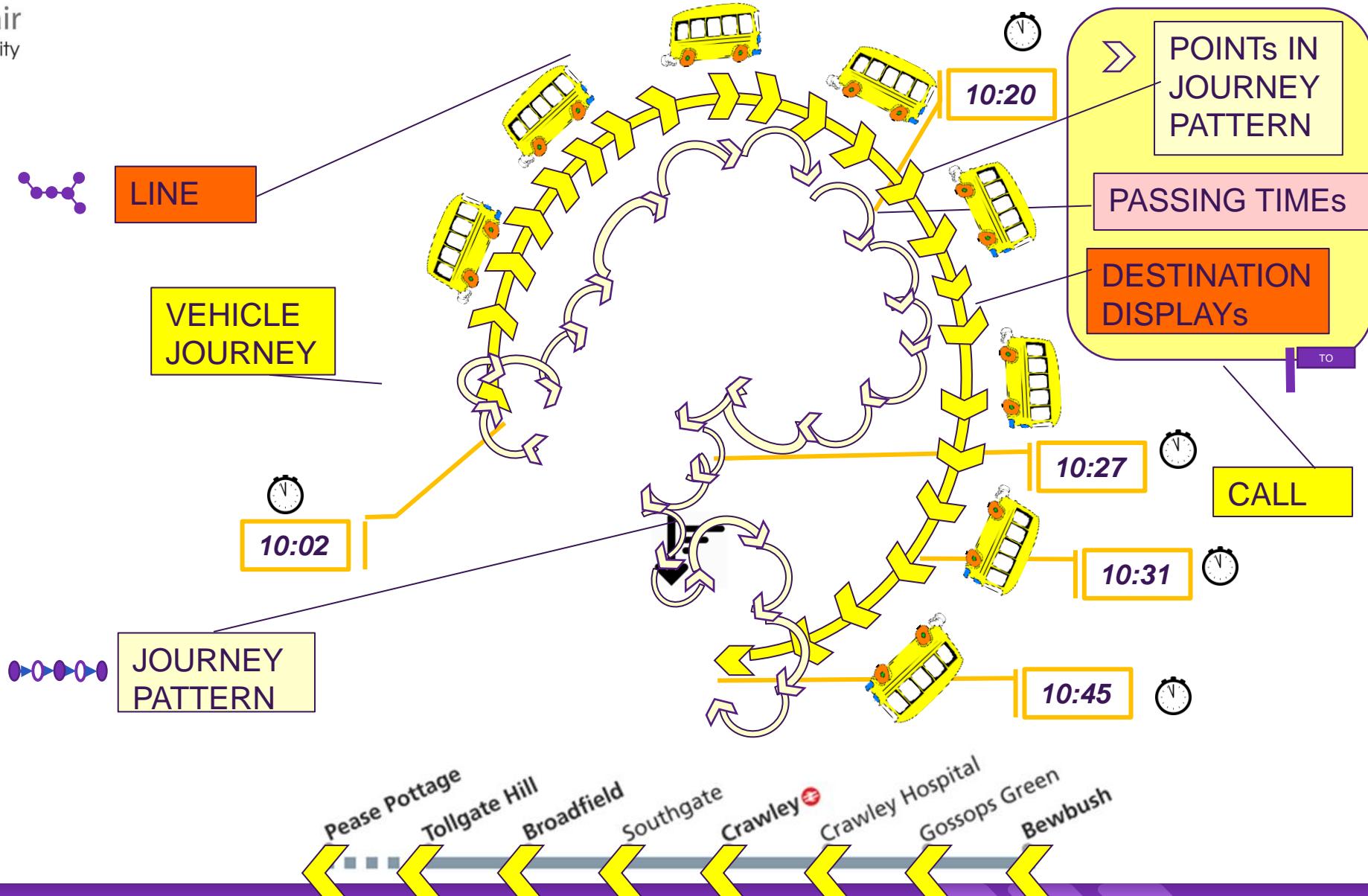
POINTs IN JOURNEY PATTERN

POINTs IN JOURNEY PATTERN

OPERATOR

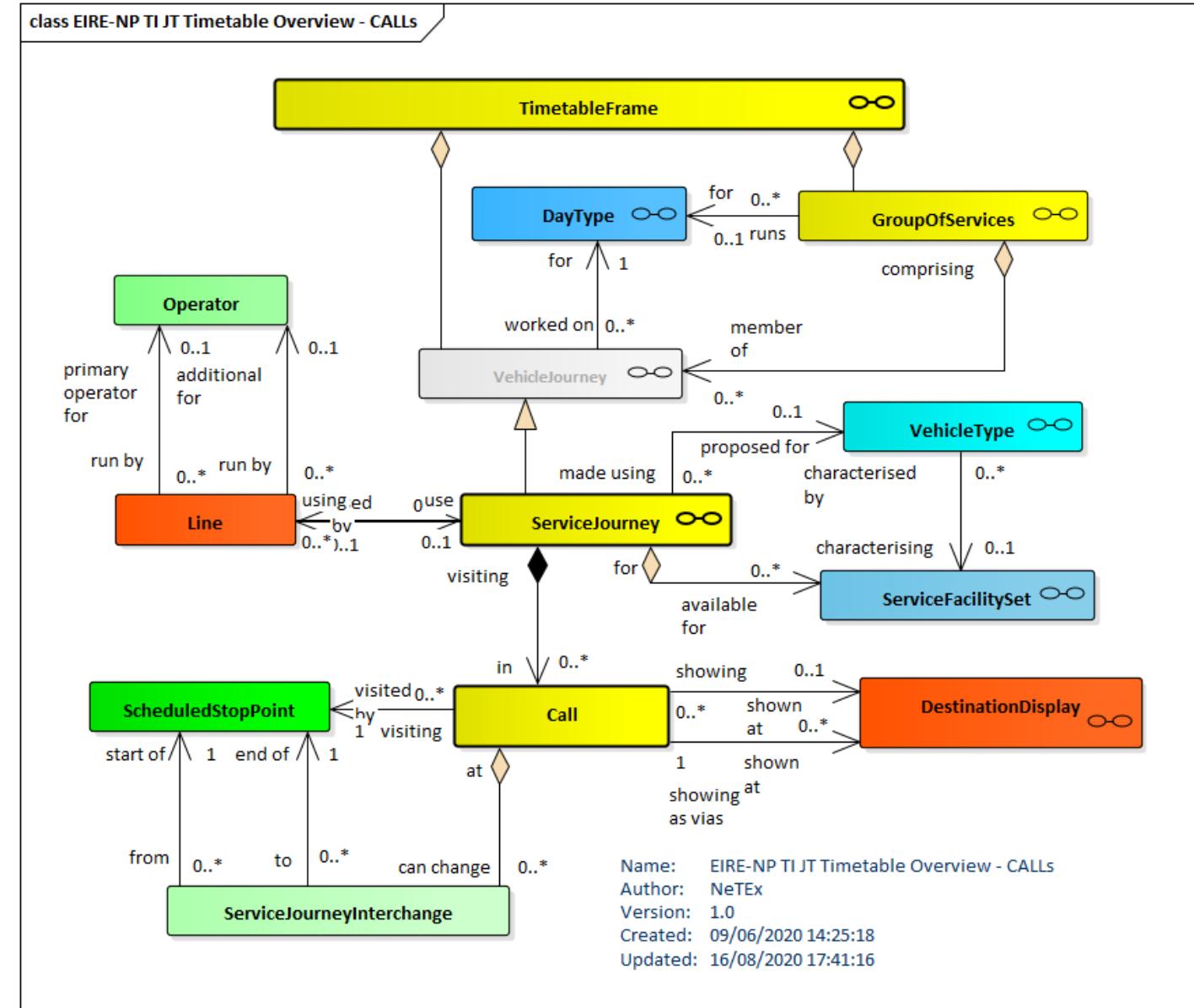


TM: A Vehicle Journey



Irish NeTEx Profile → Journeys, using Calls

- A CALL is a view element that assembles POINT IN PATTERN, PASSING TIMES. Etc into a single element – similar to GTFS stop_times

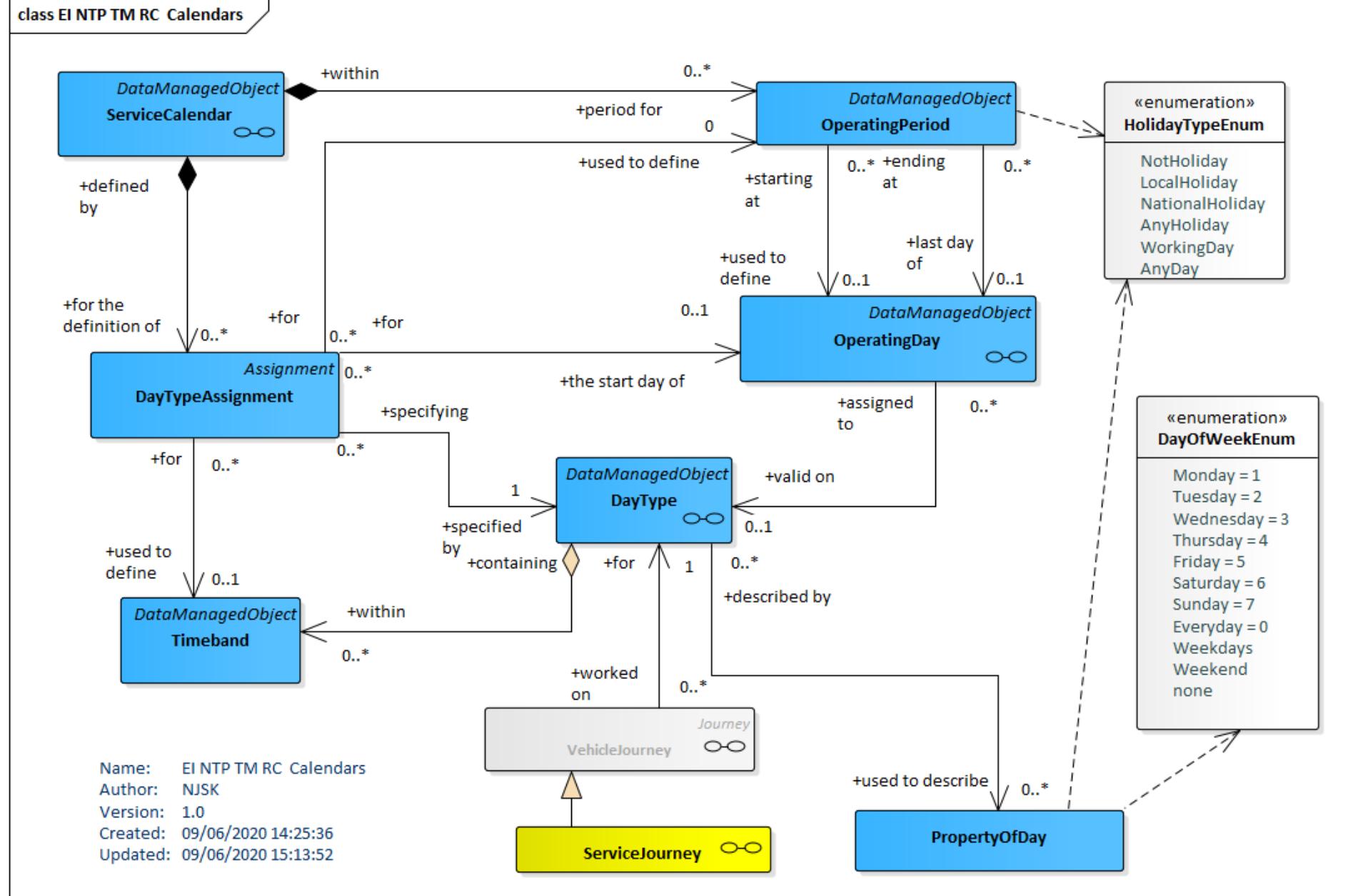




#2.5

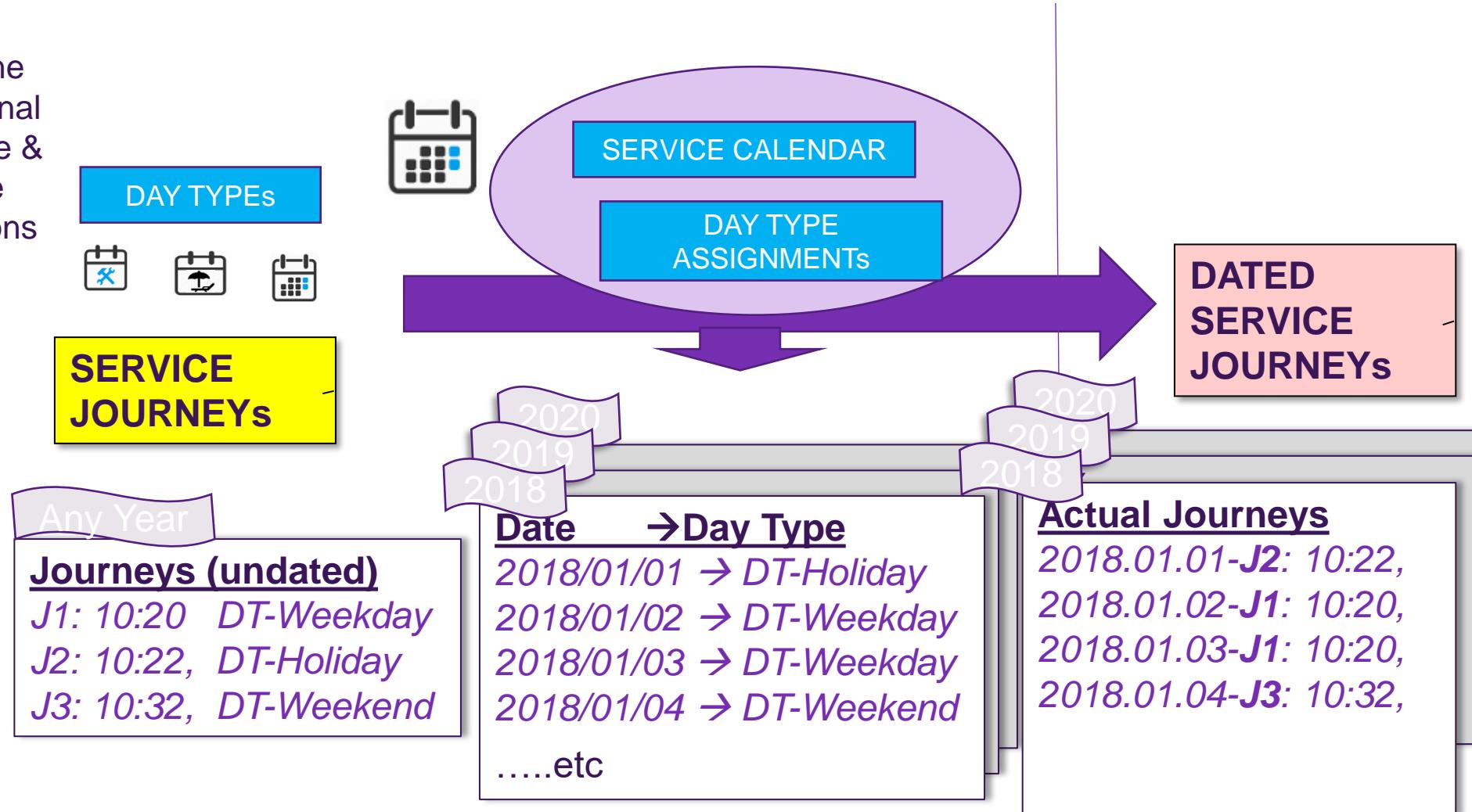
Irish NeTEx Profile

Day Types & Service Calendar

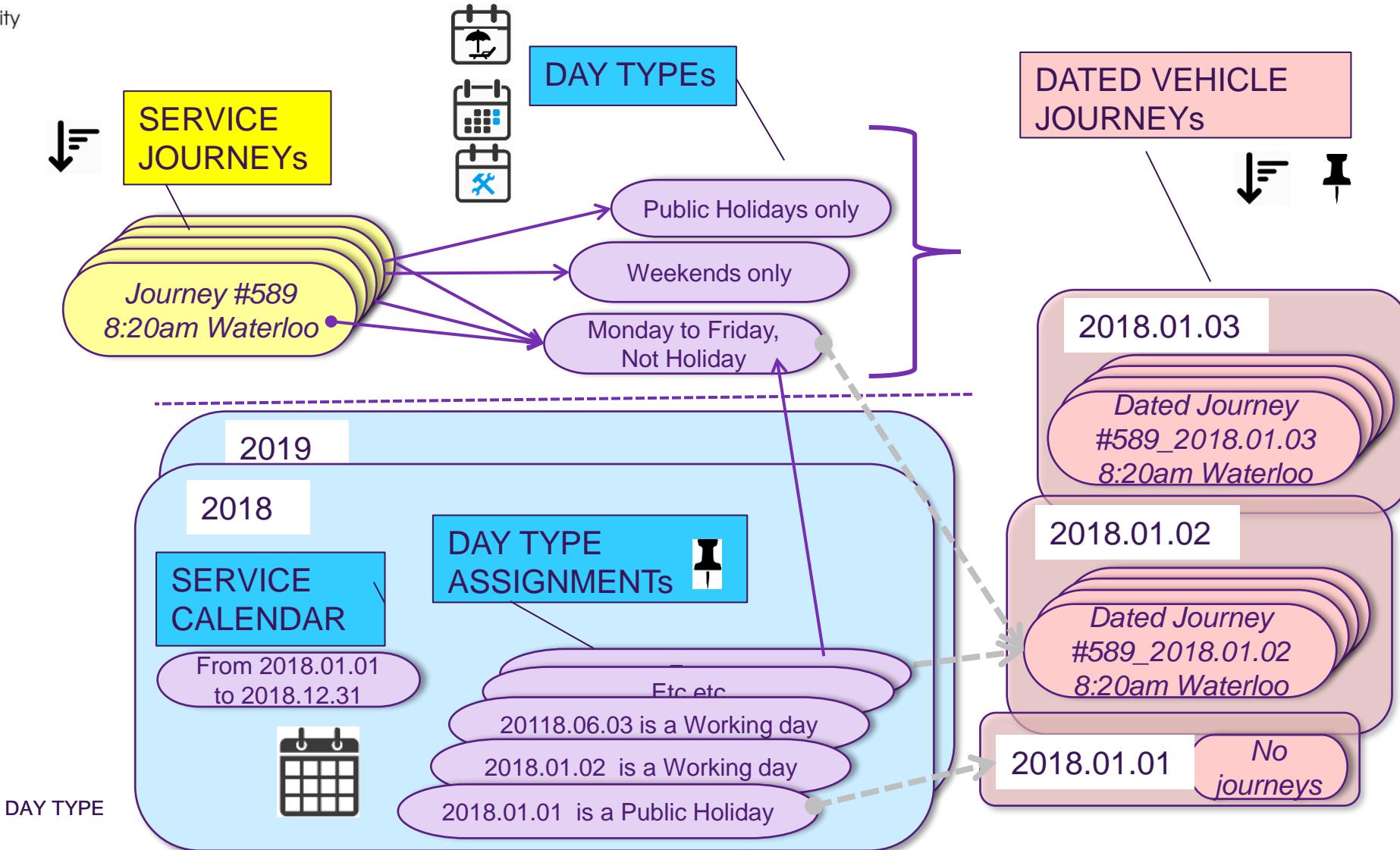


Day types and Service Journeys

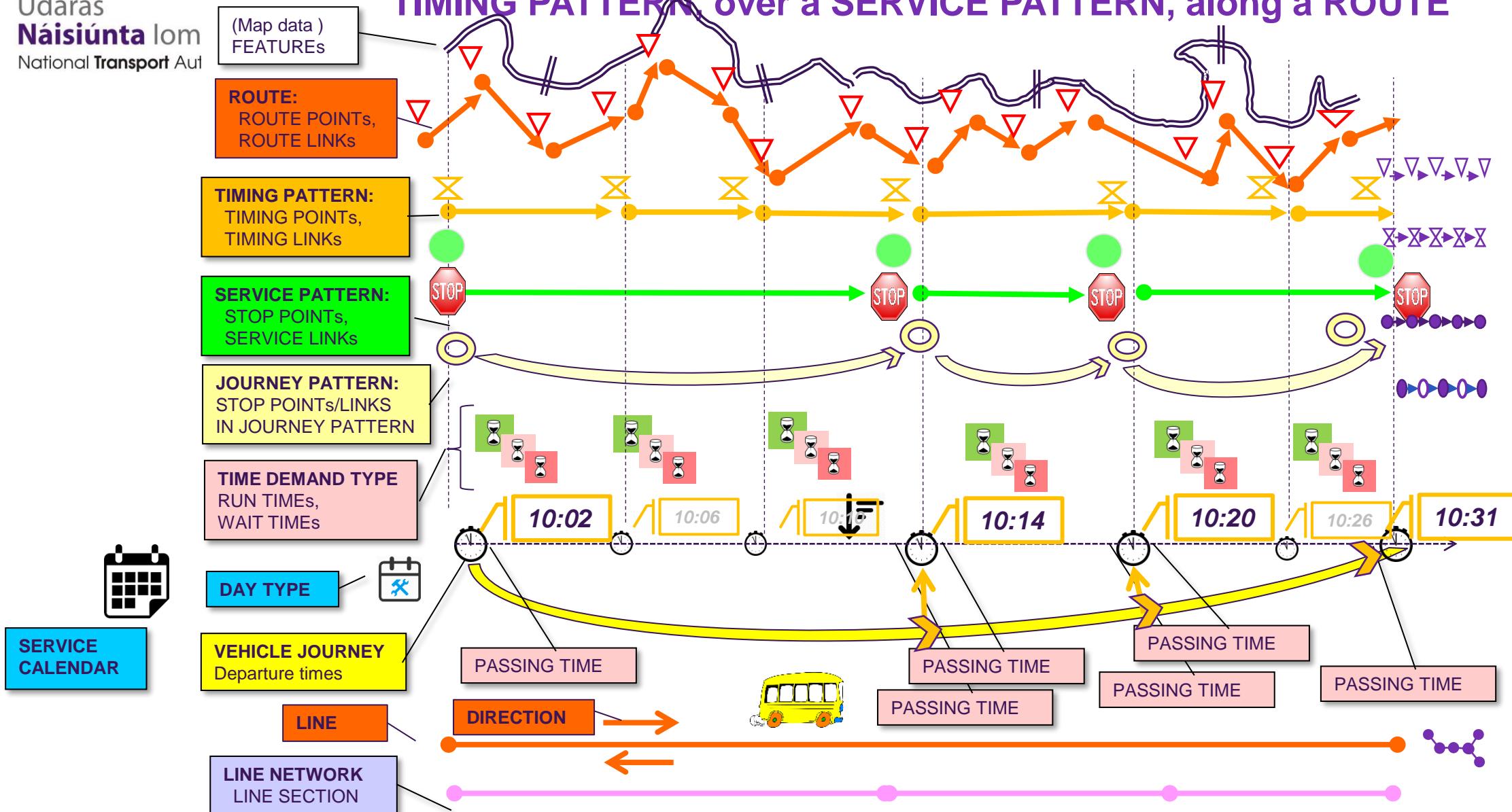
- Used to determine operational timetable & real time predictions



Dated and undated journeys



A VEHICLE JOURNEY follows a JOURNEY PATTERN, to a TIMING PATTERN, over a SERVICE PATTERN, along a ROUTE





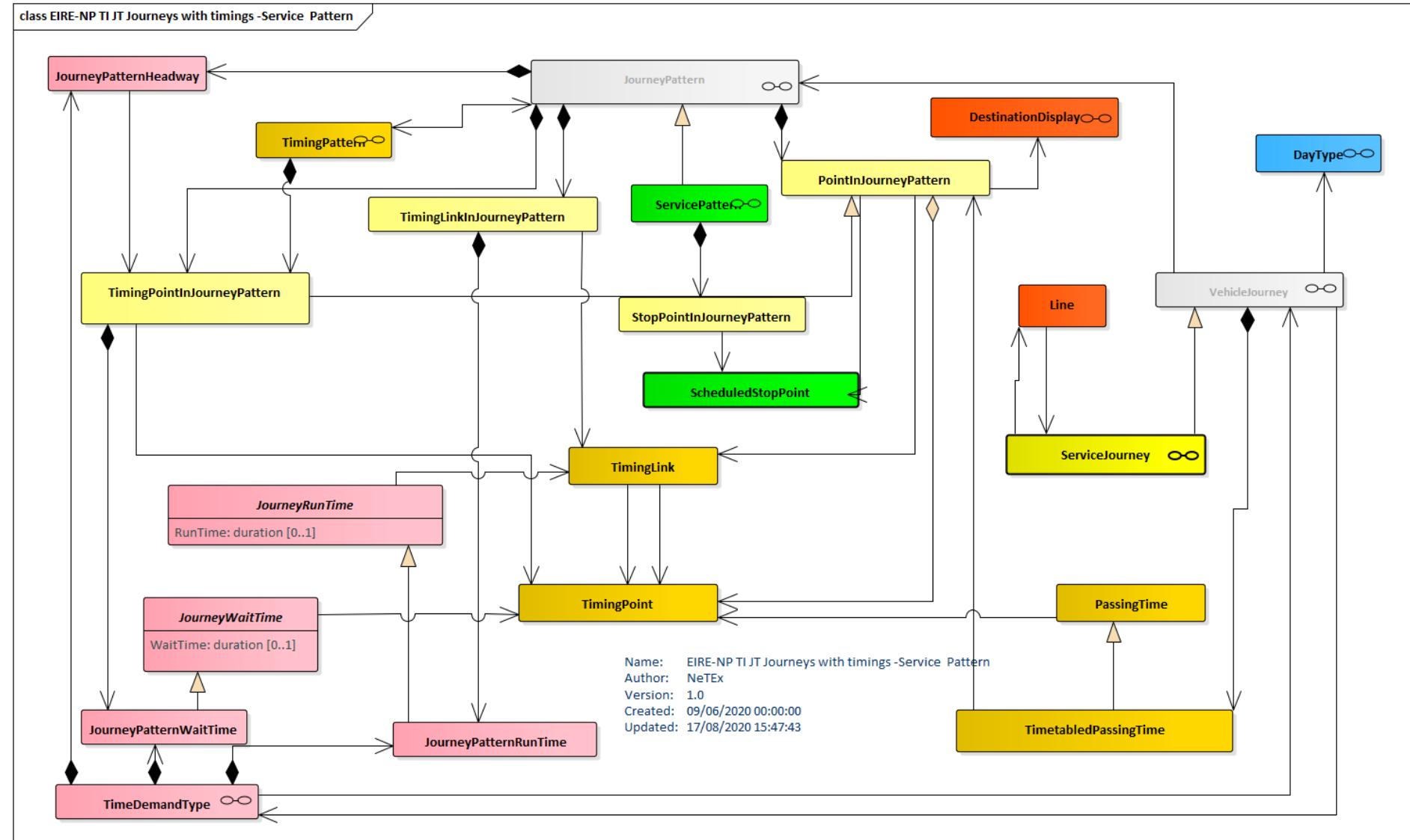
#3.2

Irish NeTEx Profile

Journey Timings Service Pattern Run Times & WaitTimes

- Useful for Real-time prediction and for schedule creation

Timing Information





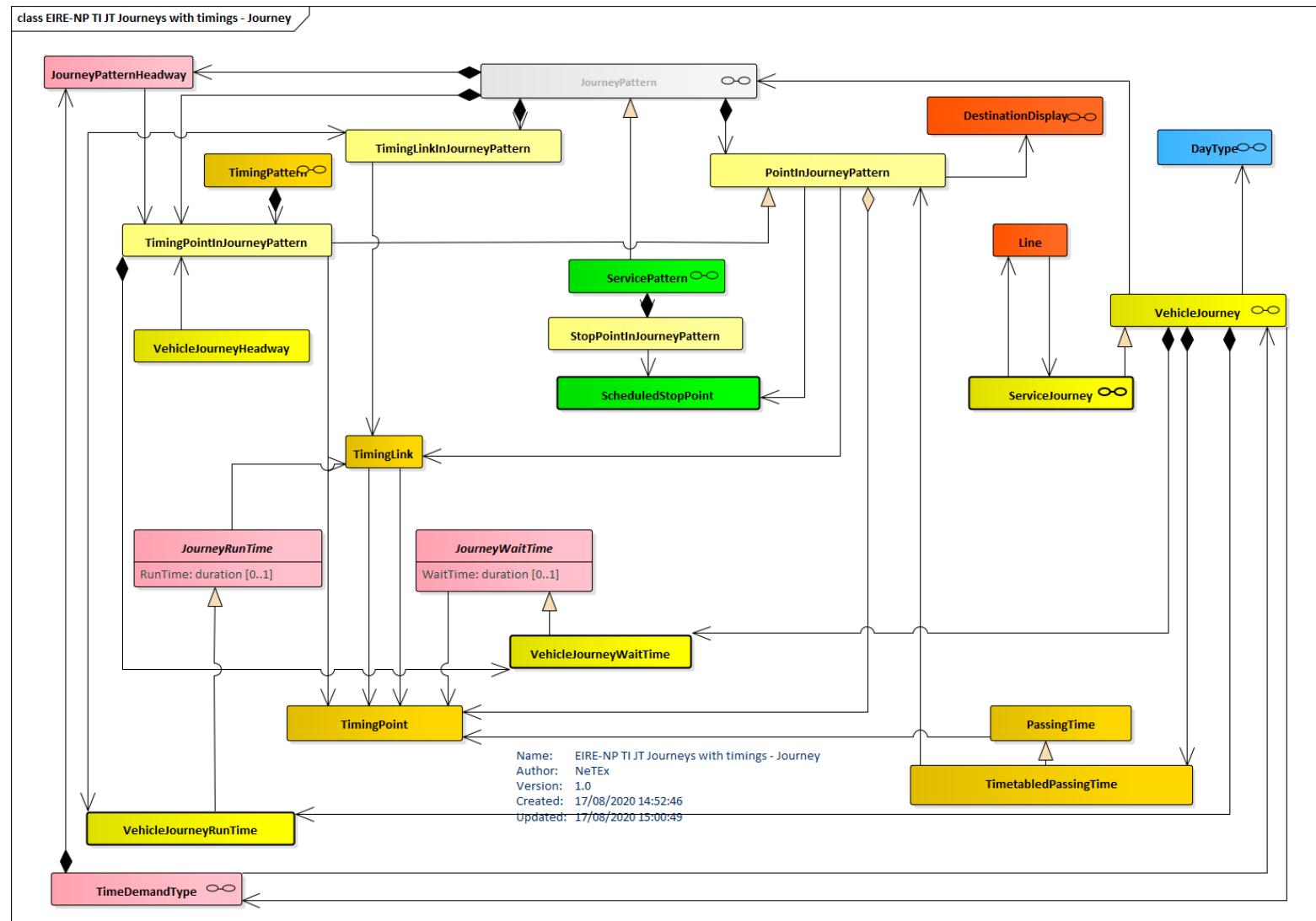
#3.3

Timing Information

Irish NeTEx Profile

Journey Timings Service Journey Run Times & WaitTimes

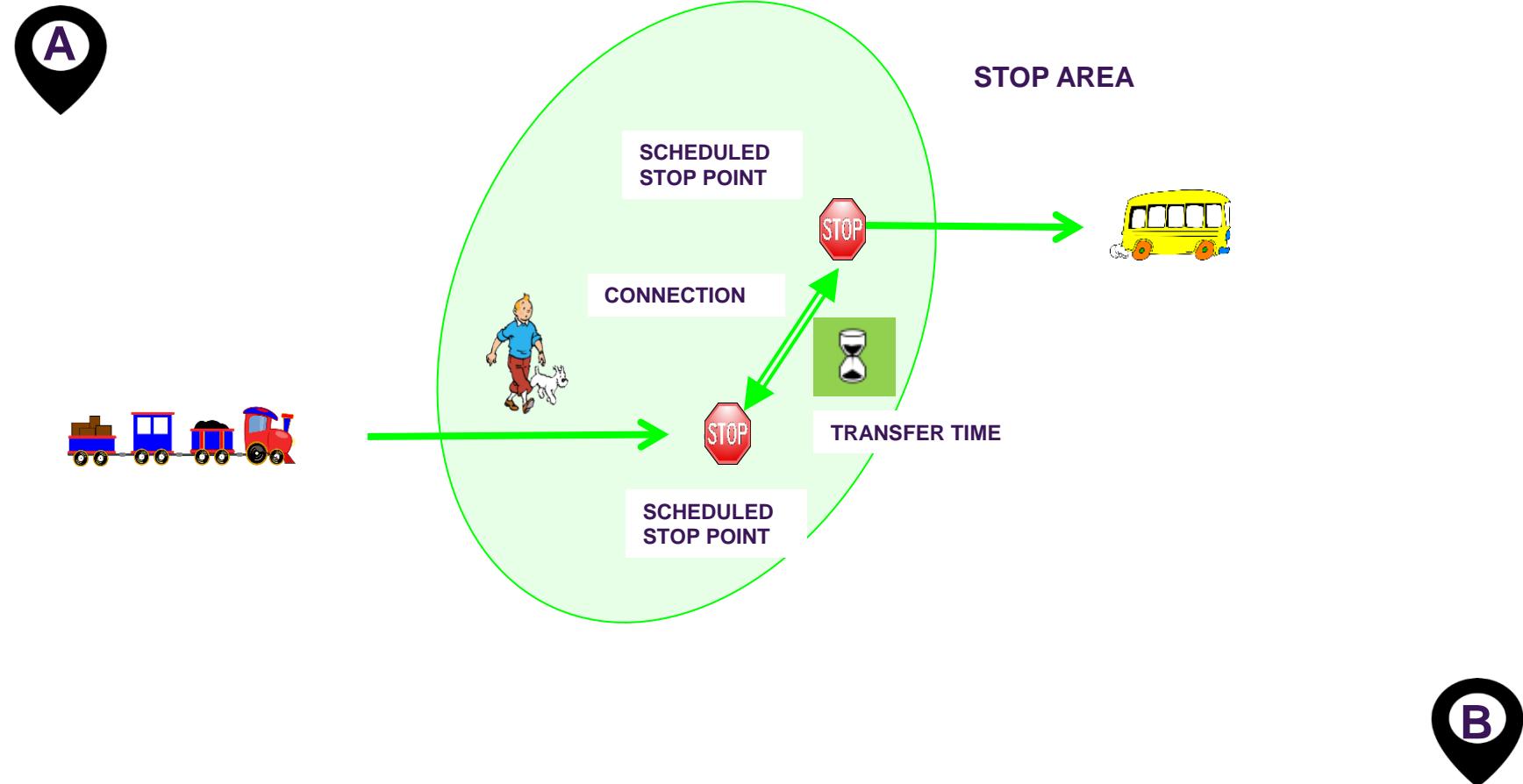
- Useful for Real-time prediction and for schedule creation





Connections & Interchanges in the timetable

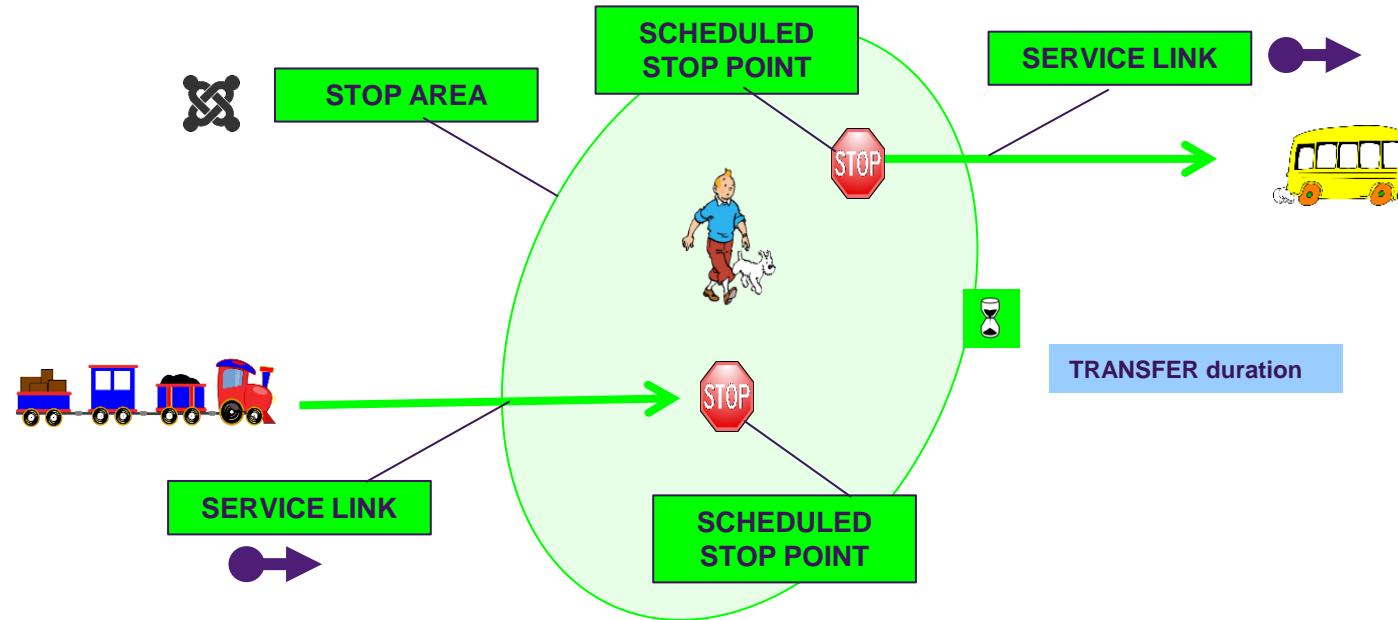
- ▶ Classical representation of an interchange is just as Station / Stops



Transport Interchanges - Proximity



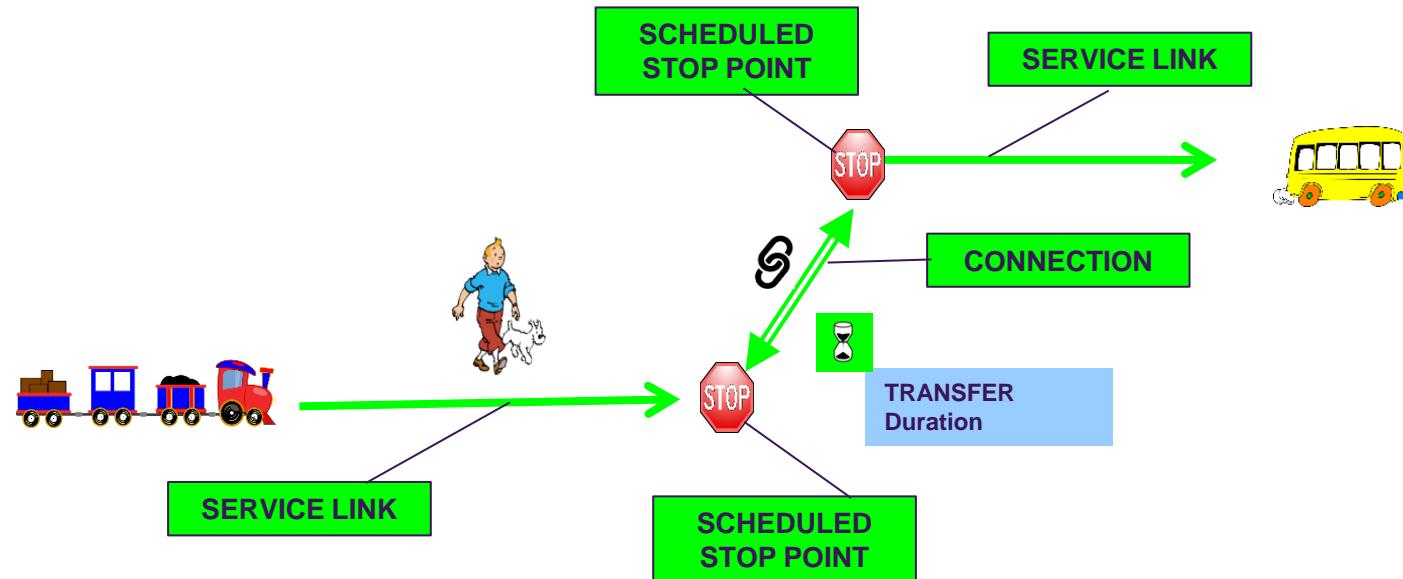
- ▶ Possibility of transfer between any nearby STOP POINTs within a STOP AREA



Transport Interchanges - explicit Connection



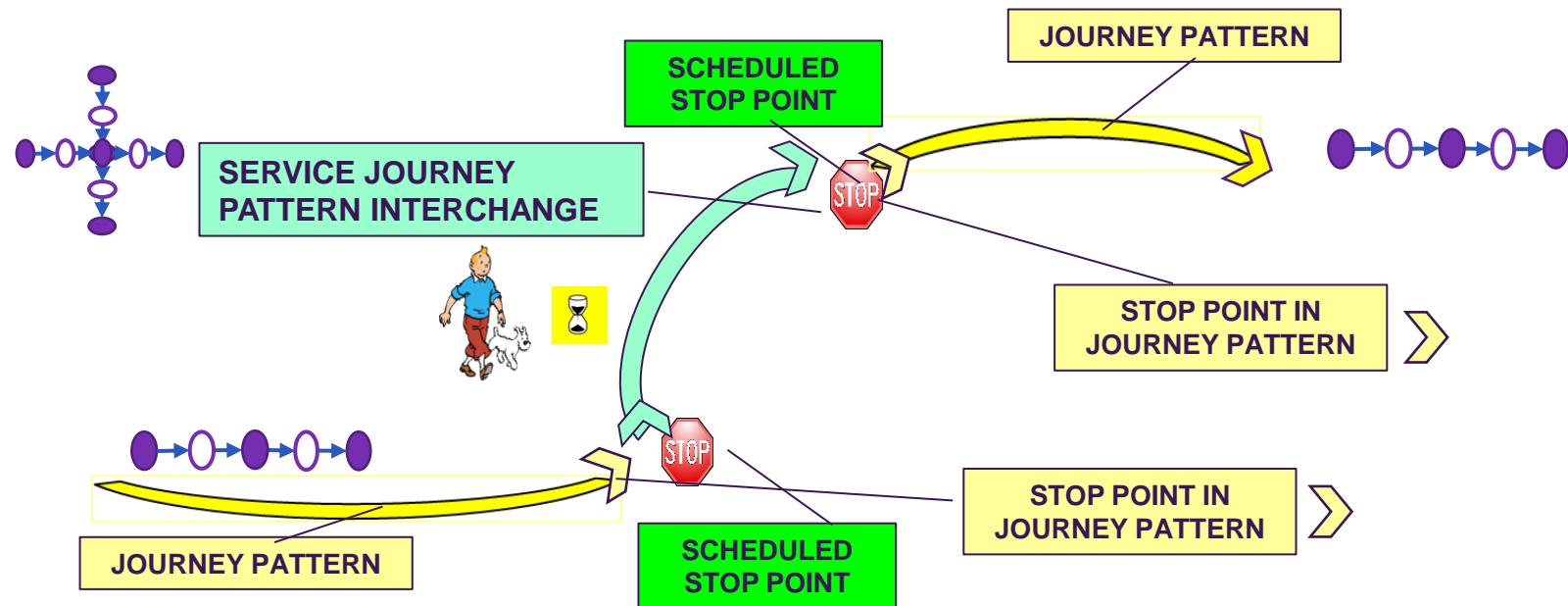
- ▶ Possibility of transfer between two specific STOP POINTs





Transport Interchanges – between specific Patterns

- ▶ General vs Specific
 - ▶ SERVICE JOURNEY PATTERN INTERCHANGE = possible transfer between two specific scheduled POINTS IN JOURNEY PATTERN at specific SCHEDULED STOP POINTS
 - Any journey following pattern may interchange with journeys on other pattern



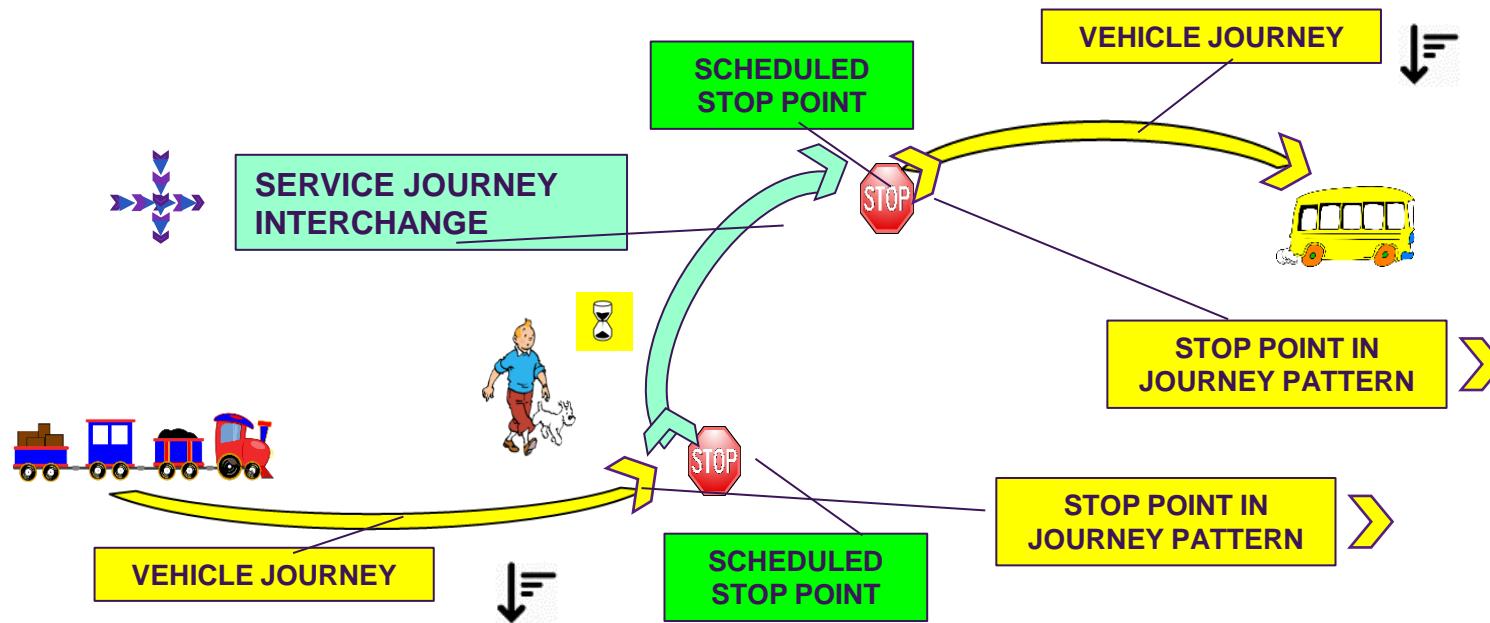


Transport Interchanges – between specific Journeys

► General vs Specific

► SERVICE JOURNEY INTERCHANGE = possible transfer between two specific scheduled VEHICLE JOURNEYS at specific SCHEDULED STOP POINTS

- May be managed (“Guaranteed”)
- May be on same or different vehicles

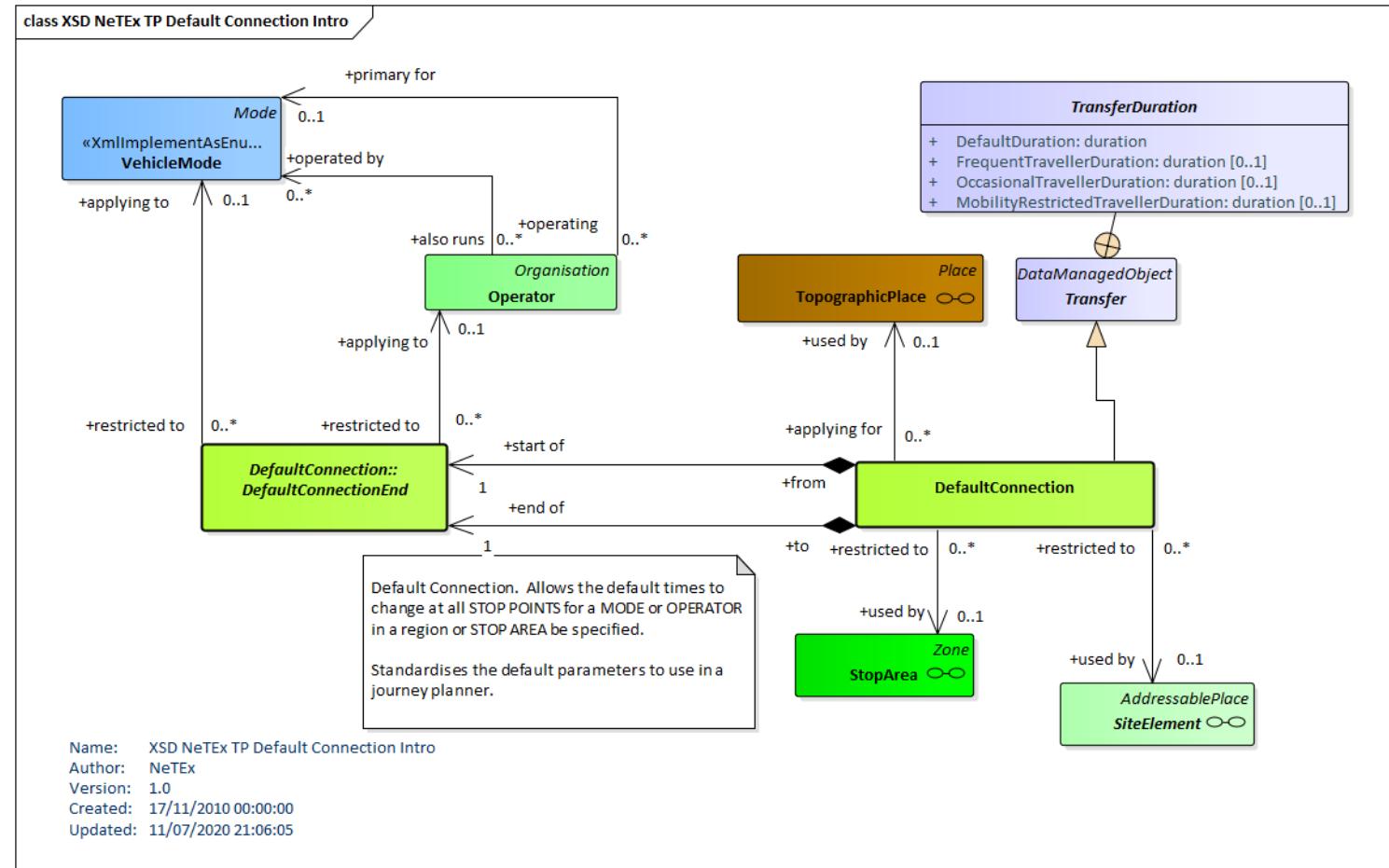




Specifying default transfer times for operators/ modes

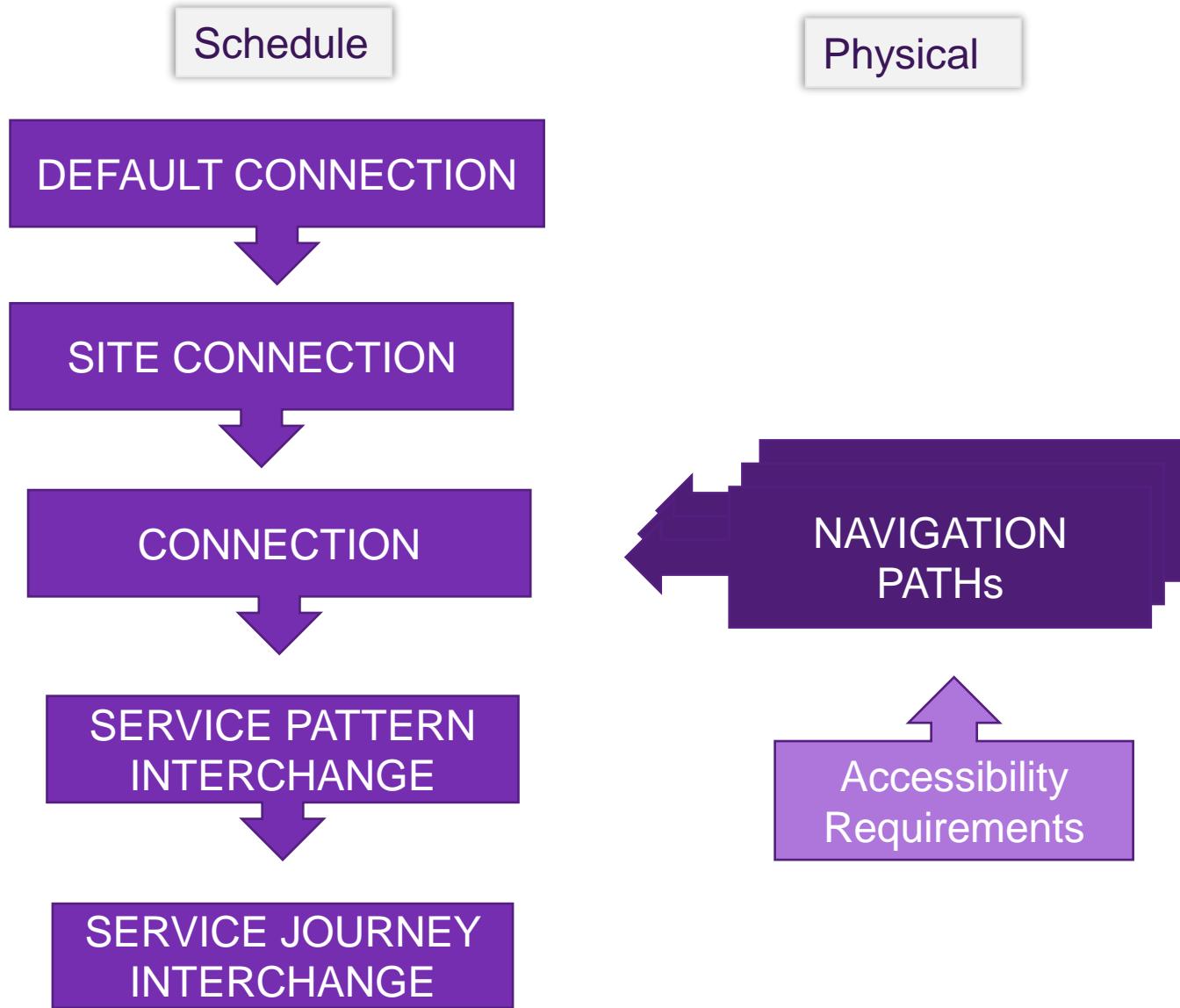
- Default times for intermodal or inter-operator transfers, regardless of location
 - DEFAULT CONNECTION
- Can be specific to site
 - SITE CONNECTION

NB use CONNECTION for Point to point override



Transfer times

- ▶ Transfer timings for scheduling may be specified at different levels
 1. Countrywide defaults for mode & operator
 - DEFAULT CONNECTION
 2. Site defaults for mode & operator
 - SITE CONNECTION
 3. Specific stop pairs
 - CONNECTION
 4. Interchange between two services over a CONNECTION
 - SERVICE PATTERN INTERCHANGE
 5. Interchange between specific journeys
- ▶ Transfer timings between stop pairs for specific accessibility needs may be specified on NAVIGATION PATH.



Service Facilities

14:00

Dublin Heuston

!     S 1 2h 35m

0 changes

Iarnród Éireann InterCity Services

Intercity services run between Ireland's major cities and towns. Dublin Heuston and Dublin Connolly are linked by the [LUAS Red Line / Dublin Bus No. 90 services](#). Dublin Bus operates a frequent [747 service](#) from Dublin Heuston to Dublin Airport.

Dublin Heuston - Cork Services

Train: Mark IV and ICR Fleet

First Class Features:



- Onboard Wi-Fi
- Ergonomic electronically adjustable seats
- Power points
- Overhead lighting

Inseat catering available:

When selecting a train on the journey planner select 'i' icon. This will provide you with the catering information relevant to that service.

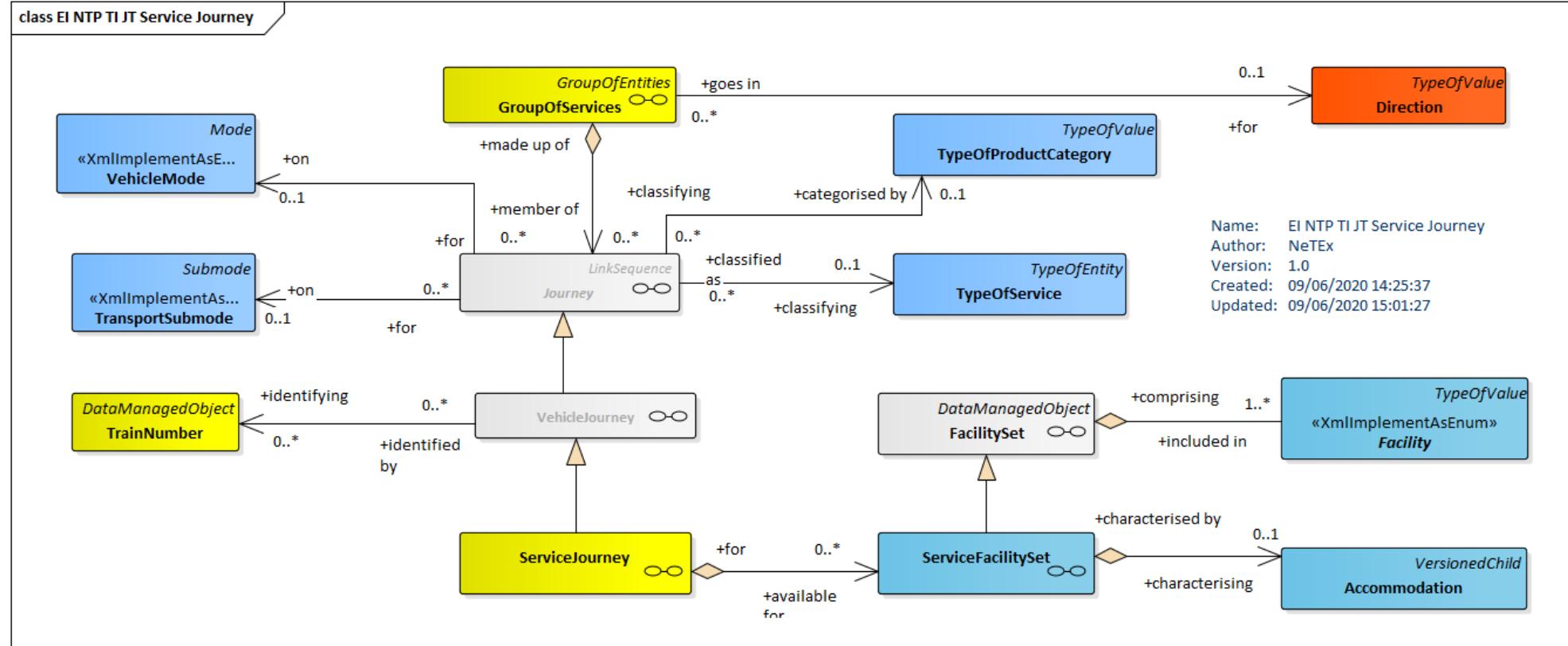
Standard Class Features:

- Onboard Wi-Fi
- Electronic audio and visual passenger information systems
- Electronic seat reservation displays
- CCTV
- Air conditioning



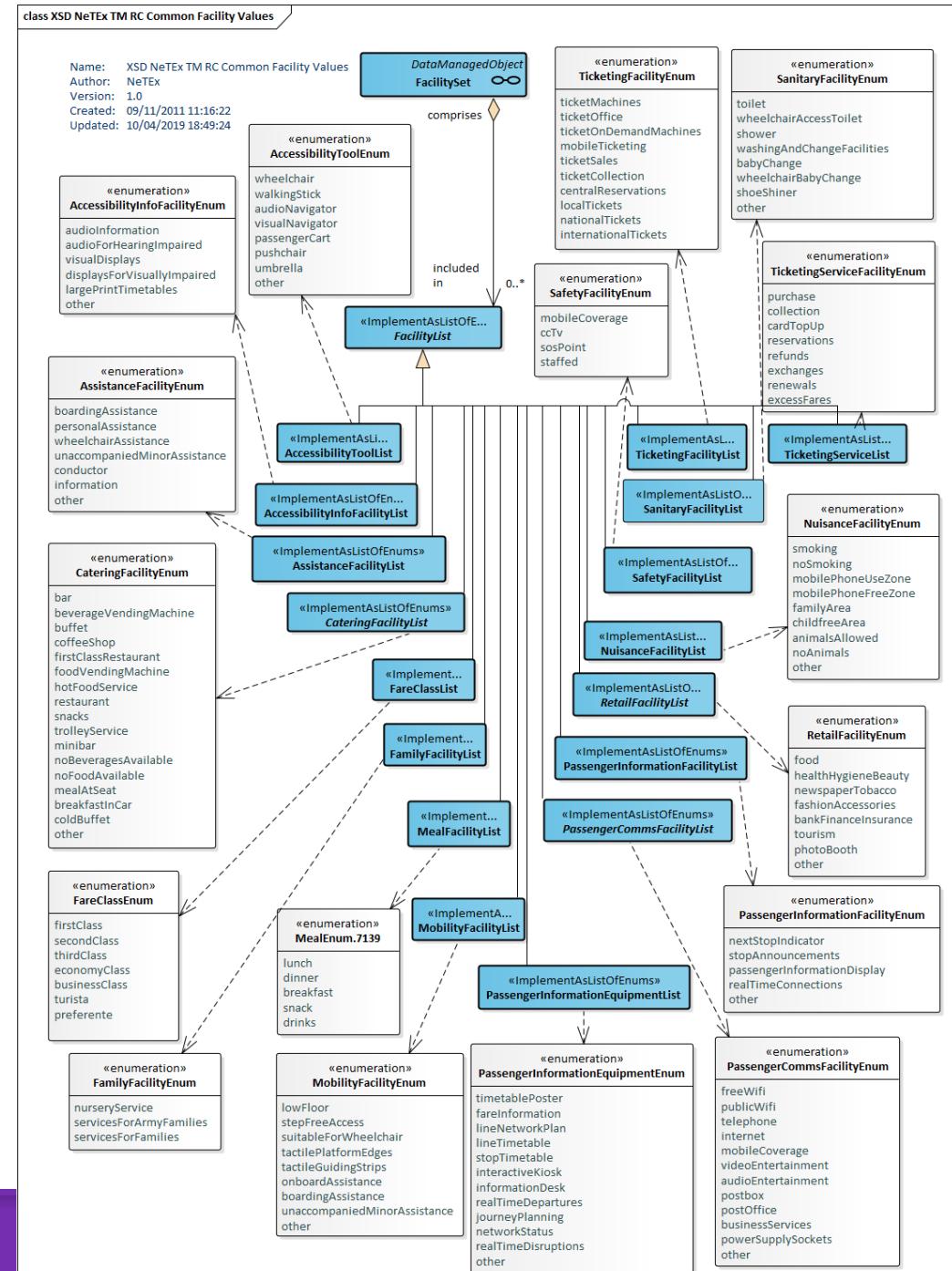
#2.6

Irish NeTEx Profile → Groups of Journeys, Facilities, Train Numbers



Facilities for SERVICE JOURNEYs and SITEs

- ▶ Uniform representation of onboard and at stop facilities
- ▶ Standardised text categorisations
- ▶ More detailed EQUIPMENT descriptions also possible





NeTEx
Network Timetable Exchange



DAY TYPES

VEHICLE JOURNEYS

FOOTNOTES

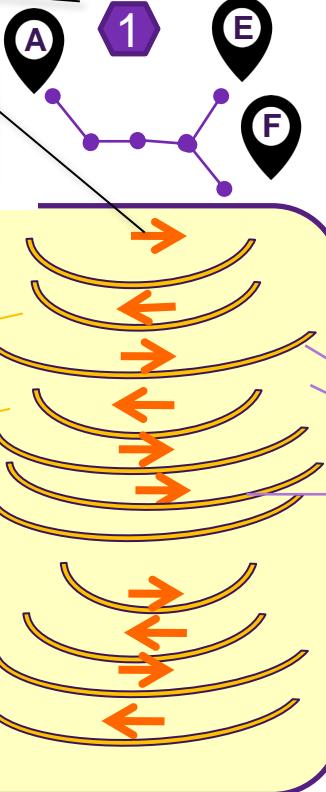


SERVICE CALENDAR

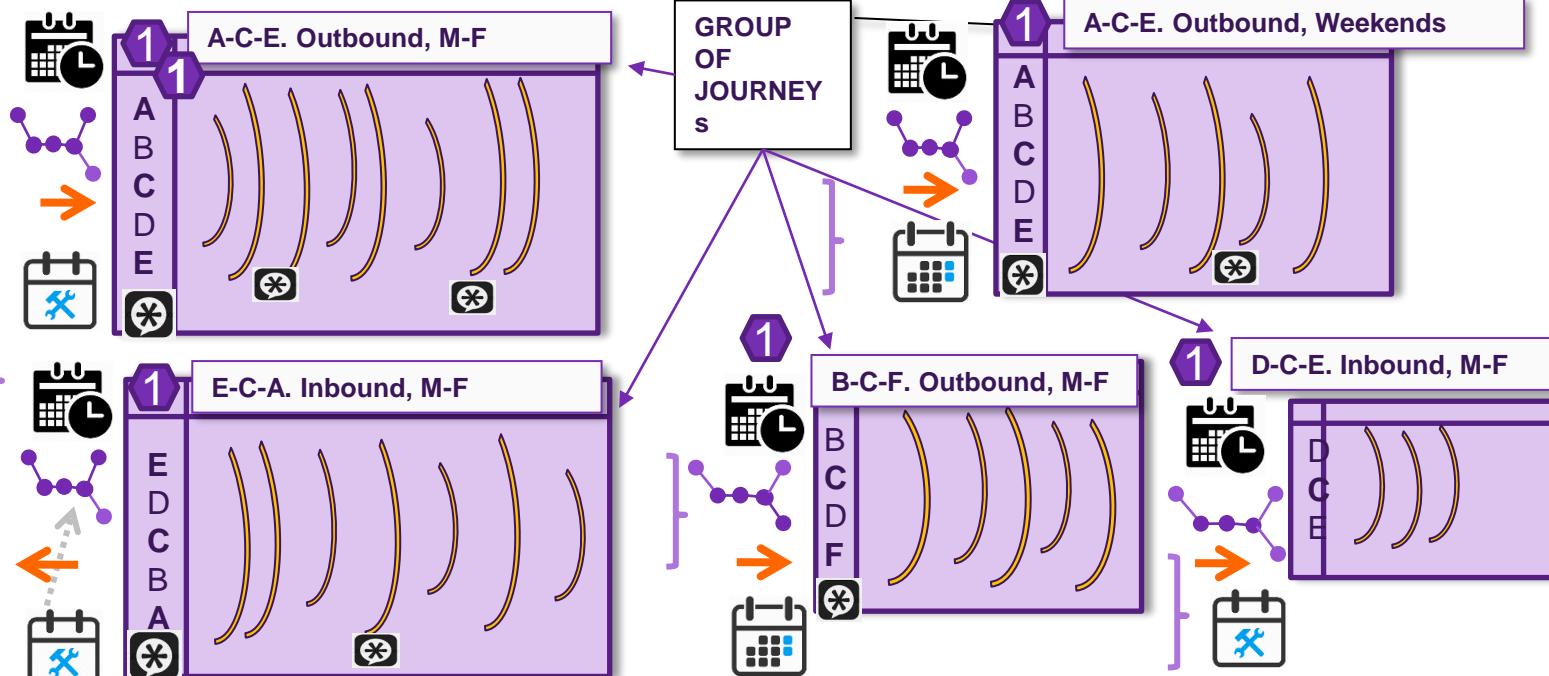
2018/01/01=DT-H
2018/01/02=DT-W
2018/01/03=DT-W
2018/01/04=DT-WE
....etc

LINE

DIRECTIONS
Inbound,
outbound



Presenting timetable data to the user



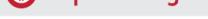
- ▶ A set of timetable data for a given line may include journeys following many different patterns, in different directions and subject to different validity conditions
- ▶ To the user this is usually presented in subsets of similar data by direction, etc
 - E.g. Weekday outbound, Weekday inbound, Saturday outbound, Sunday outbound, etc
 - E.g. Journeys for Patterns A-B-C-E, A-D-C-E, A-B-F, B-C-E, etc
 - Number of useful sub groupings depends on size & complexity of data set

Typical Journey groupings

Expressway
www.expressway.ie

22

1850 836611
08.30-18.00
7 DAYS A WEEK



expressway.ie
@expresswayIRE

ROUTE 22 DUBLIN to BALLINA

DAILY (including Public Holidays)

ROUTE 22 DUBLIN to BALLINA		DEP.	1230	1530	1800	-	2300
DUBLIN AIRPORT	ATRIUM RD ZONE 13 STOP 11		1000	1300P	1600P	1830P	2100
DUBLIN	BUSÁRAS						
DUBLIN	NORTH WALL QUAY 3 ARENA		1005P	—	—	—	2305P
DUBLIN AIRPORT	ATRIUM RD ZONE 13 STOP 11		1020P	—	—	—	2320P
DUBLIN	OPHEUSTON STATION		—	1305P	1605P	1835P	2105P
LIFFEY VALLEY	LUCAN ROAD		—	1315P	1615P	1845P	2115P
LUCAN	SPA HOTEL		1040P	—	—	—	2340P
MAYNOOTH	67A TERMINUS		1050A	1330A	1630A	1900A	2130P
MULLINGAR	NA SERVICE AREA - ESSO		—	—	—	2206D	0026D
MULLINGAR	CASTLE STREET		1132	—	—	—	—
MULLINGAR	OPPOSITE REGIONAL HOSPITAL		1135	—	—	—	—
BALLINALACK	MULLIGANS		1149	1419	1719	1949	2219
RATHOWEN	GARDA STATION		1153	1423	1723	1953	2223
EDGEWORTHSTOWN	POUND ST WESTBOUND		1200	1430	1730	2000	2230
LONGFORD	DUBLIN ROAD - ST JOSEPHS		1212	1442	1742	2012	2242
LONGFORD	RAILSTATION	ARR.	1215	1445	1745	2015	—
LONGFORD	RAILSTATION	DEP.	1220	1450	1750	2020	—
LONGFORD	COURTHOUSE - MAIN ST		—	—	—	2245	0105
TARMONBARRY	GARDA STATION		1230	1500	1800	2030	2255
STROKESTOWN	PERCY FRENCH HOTEL		1240	1510	1810	2040	2305
TULSK	CONWAYS		1255	1525	1825	2055	2320
BALLINAGARE	NS WESTBOUND STOP		1305	1535	1835	2105	2330
FRENCHPARK	POST OFFICE		1309	1539	1839	2109	2334
BALLAGHADERREEN	HANILEYS		1319	1549	1849	2119	2344
CARRACASTLE CHURCH			—	1600	—	2130	—
CHARLESTOWN	MARKET SQUARE - GARVEYS		1335	1607	1905	2137	0000
SWINFORD	CARDS & GIFTS SHOP		1346	1618	1916	2148	0011
FOXFORD	BROWNS MONUMENT		1358	1630	1928	2200	0023
BALLINA	BUS STATION	ARR.	1415	1647	1945	2217	0040
							0250

Temporary Timetable Effective From 7th June 2020

P = Pick-up stop only.
D = Drop-off stop only.
A = Will carry passengers from Dublin Airport to Maynooth, but may not carry passengers from city centre to Maynooth.
SuX = Operates Monday to Saturday only - does not operate on Public Holidays

SuO = Operates Sundays and Public Holidays only.

During College terms only, the following extra services will operate:

Thursday & Friday only 0930 ex Ballina to Dublin Airport; Friday only 1230 ex Ballina to Dublin Airport.

Thursday & Friday only 1530 ex Dublin Airport to Ballina; Friday only 1800 ex Dublin Airport to Ballina; Friday only 1900 ex Maynooth (67A Terminus) to Longford (Rail Station).

FOR SERVICES STOPPING AT LONGFORD RAIL STATION, THERE WILL BE A SHORT COMFORT STOP. TOILET FACILITIES ARE AVAILABLE.

NO SERVICES ON CHRISTMAS DAY. ENQUIRE ABOUT ST. STEPHEN'S DAY SERVICES.

▶ Outbound, Daily

▶ Inbound Daily

ROUTE 22 BALLINA to DUBLIN

DAILY (including Public Holidays)

BALLINA	BUS STATION	DEP.	0630	0930	1230	1530	1830	1715	1815
FOXFORD	OPP BROWNS MONUMENT		0645	0945	1245	1545	1845	1730	1830
SWINFORD	O'CONNOR'S HOTEL		0657	0957	1257	1557	1857	1742	1842
CHARLESTOWN	MARKET SQUARE - MURRAYS		0708	1008	1308	1608	1908	1753	1853
CARRACastle	OPP CHURCH		—	1014	—	—	—	—	—
BALLAGHADERREEN	BMW OFFICE		0724	1026	1324	—	1624	1809	1909
FRENCHPARK	OPPOSITE POST OFFICE		0734	1036	1334	—	1634	1819	1919
BALLINAGARE	NS EASTBOUND STOP		0738	1040	1338	—	1638	1823	1923
TULSK	OPP CONWAY'S		0748	1050	1348	—	1648	1833	1933
STROKESTOWN	BRIDGE ST - ARCADIA		0803	1105	1403	—	1703	1848	1948
TARMONBARRY	EASTBOUND STOP		0813	1115	1413	—	1713	1858	1958
LONGFORD	RAIL STATION	ARR.	0825	1127	1425	—	1725	1910	2010
LONGFORD	RAIL STATION	DEP.	0830	1132	1430	—	1730	1915	2015
LONGFORD	DUBLIN ROAD - TOPAZ		0833	1135	1433	—	1733	1918	2018
EDGEWORTHSTOWN	POUND ST EASTBOUND		0845	1147	1445	—	1745	1930	2030
RATHOWEN	OPPOSITE GARDA STATION		0852	1154	1452	—	1752	1937	2037
BALLINALACK	OPPOSITE MULLIGANS		0856	1158	1456	—	1756	1941	2041
MAYNOOTH	67A TERMINUS		0945D	1247D	1545D	—	1845A	2030A	2130D
LUCAN	OPPOSITE SPA HOTEL	ARR.	0955D	1255D	1555D	—	—	2040D	2140D
LIFFEY VALLEY	OPP SHOPPING CENTRE	ARR.	1000D	1302D	1600D	—	—	2045D	2145D
DUBLIN	HEUSTON STATION	ARR.	1010D	1312D	1610D	—	—	—	2155D
DUBLIN	EDEN QUAY	ARR.	1015D	1317D	1615D	—	—	—	—
DUBLIN	NORTH WALL QUAY 3 ARENA	ARR.	1020D	1322D	1620D	—	—	—	—
DUBLIN AIRPORT	TERMINAL 2 - DEPARTURES ROAD	ARR.	1035	1337	1635	1855D	1915D	2100D	—
DUBLIN	EAST WALL RD OPP 3 ARENA	ARR.	—	—	—	1915	1935	2120	2205
DUBLIN	BUSÁRAS	ARR.	—	—	—	1915	1935	2120	—

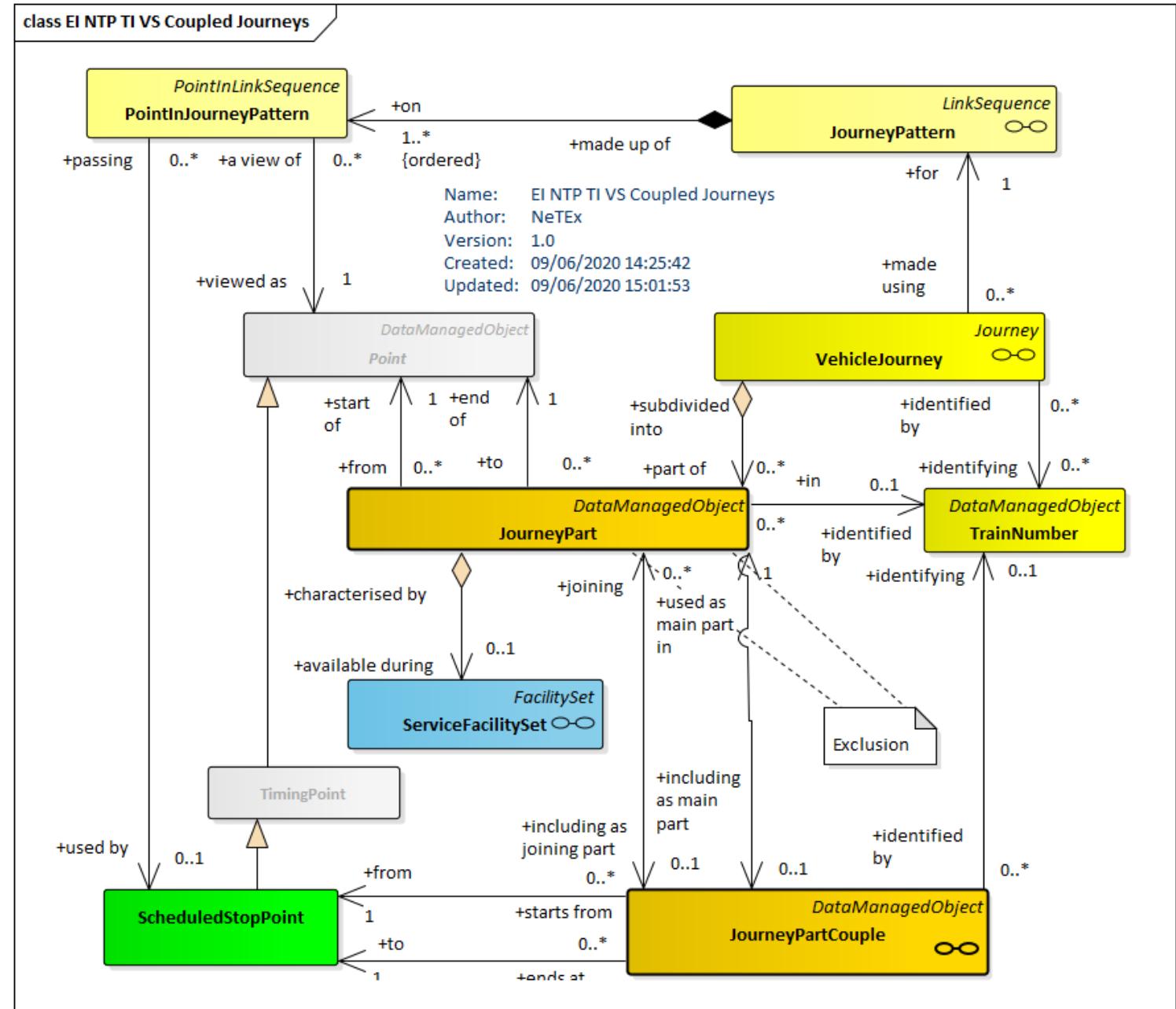
Expressway
Way Better



#2.7

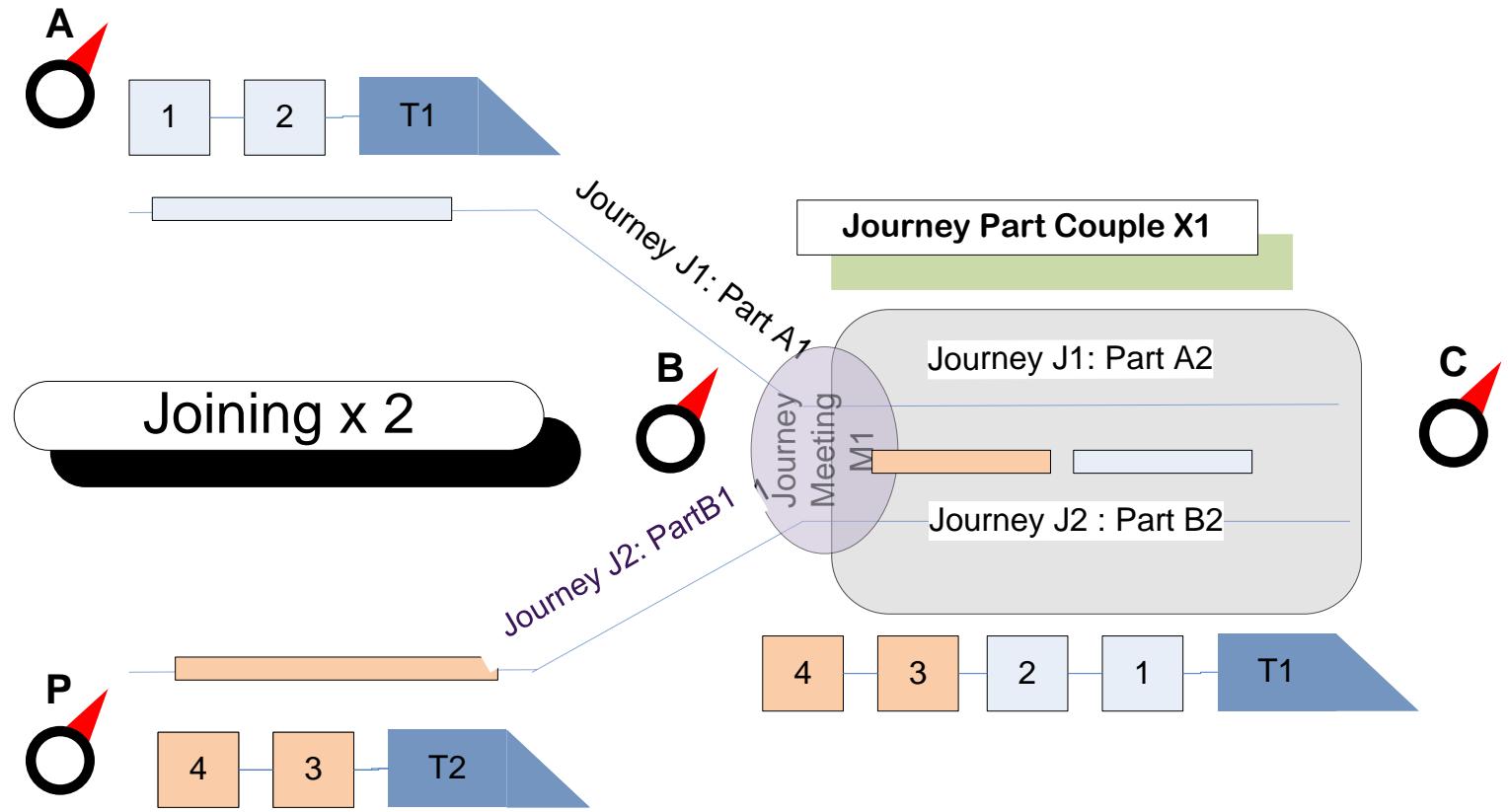
Irish NeTEx Profile

→ Journey Parts & Coupled Journeys



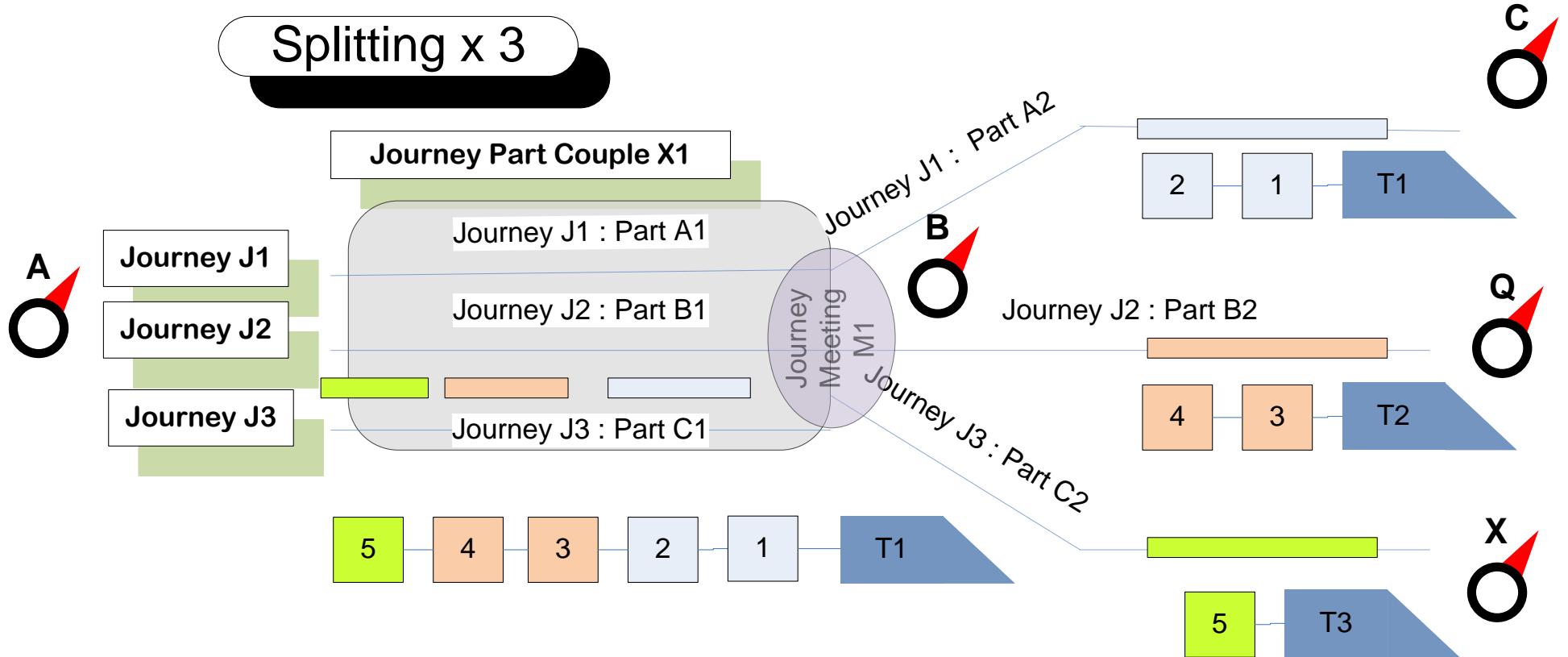
Journeys that join

- ▶ Trains may join up for part of the journey
 - JOURNEY can be broken down into JOURNEY PARTS
 - JOURNEY PART COUPLE used to associate coupled segments.
- Train Labels may be different from journey
 - TRAIN NUMBER



Journeys that Split into Two (or more) parts

- ▶ Train make up “Front four carriages for Aberdeen” can be specified

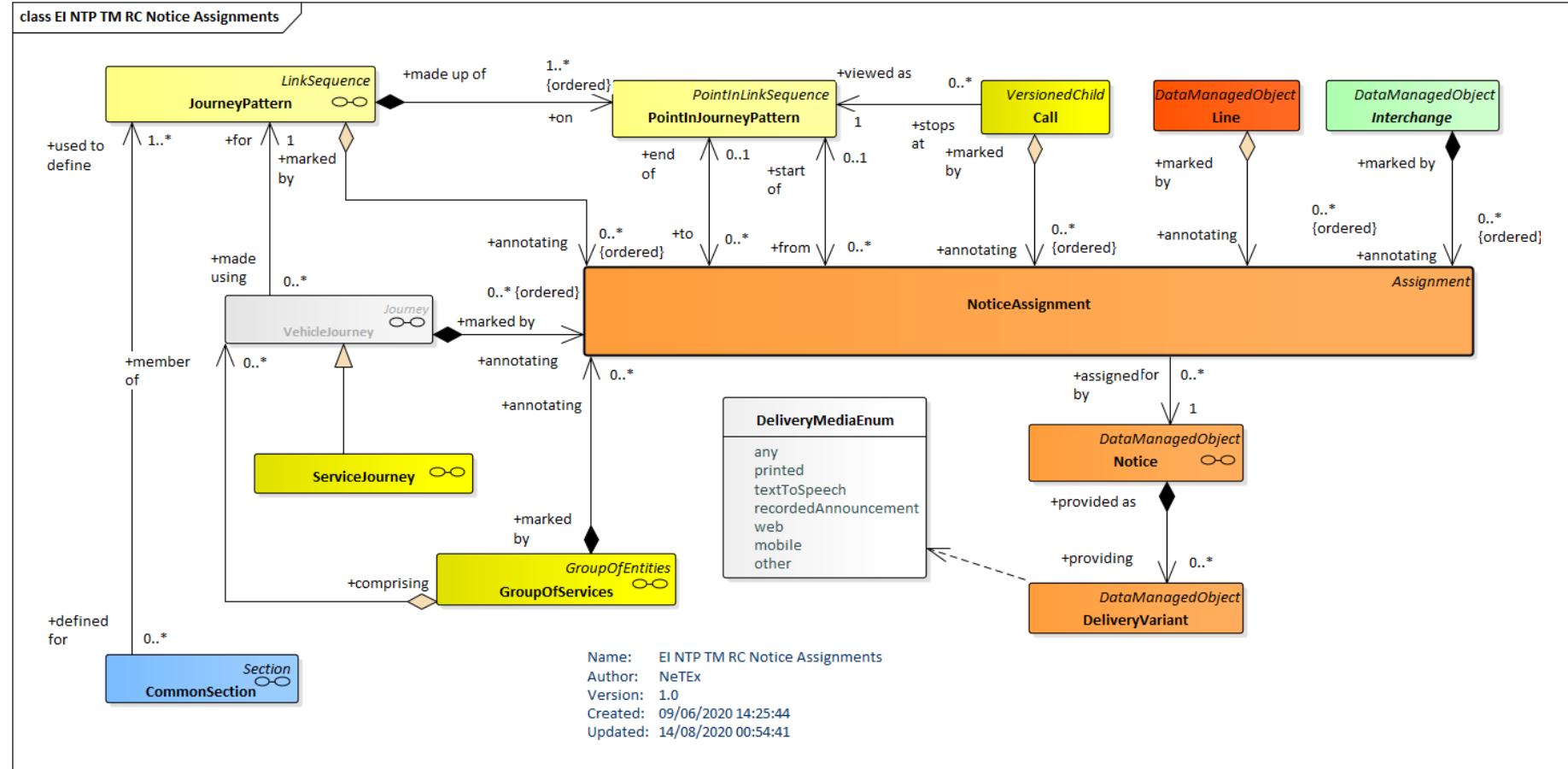




#2.8

Irish NeTEx Profile: → Notices

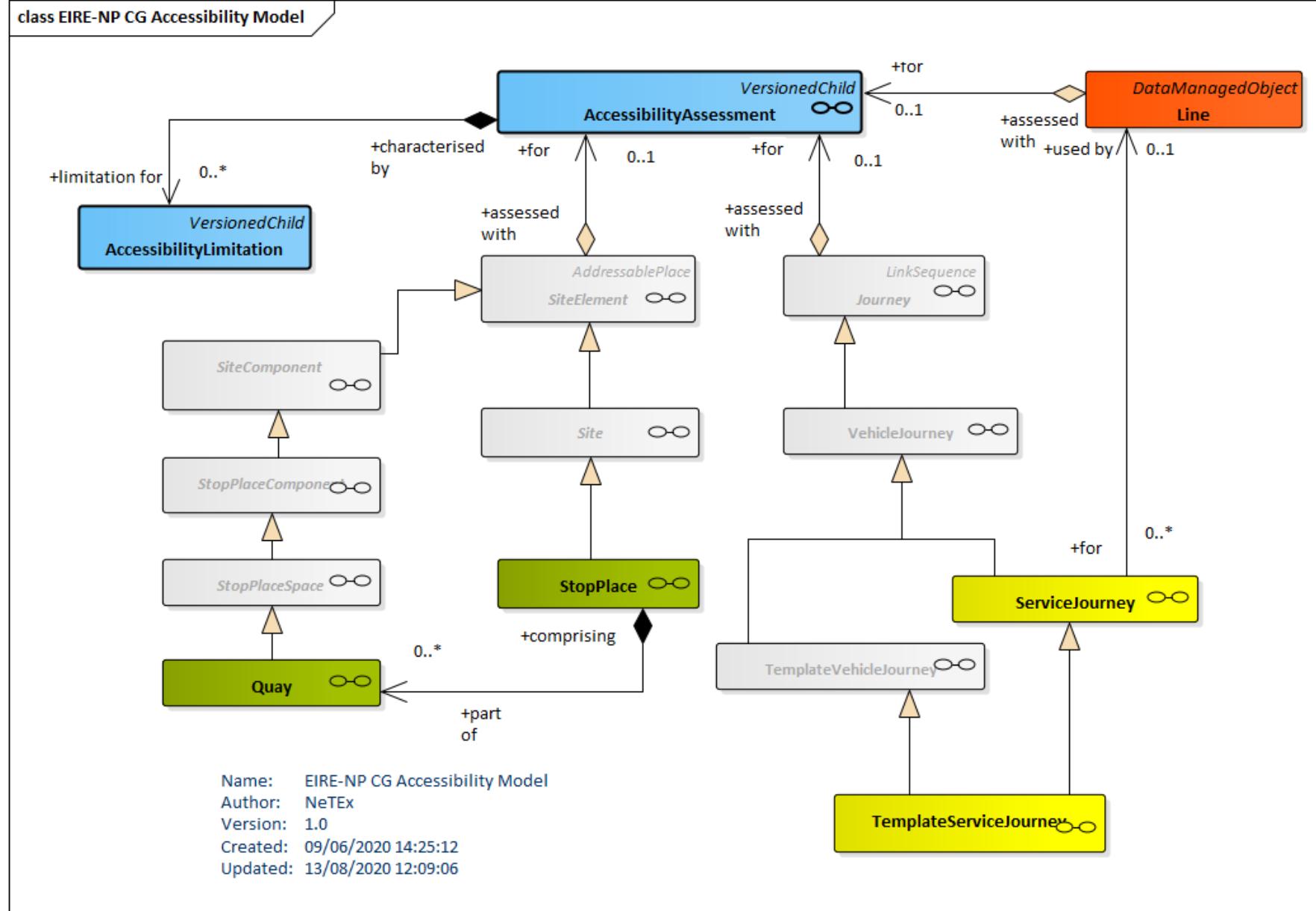
- Use to provide footnotes and annotations





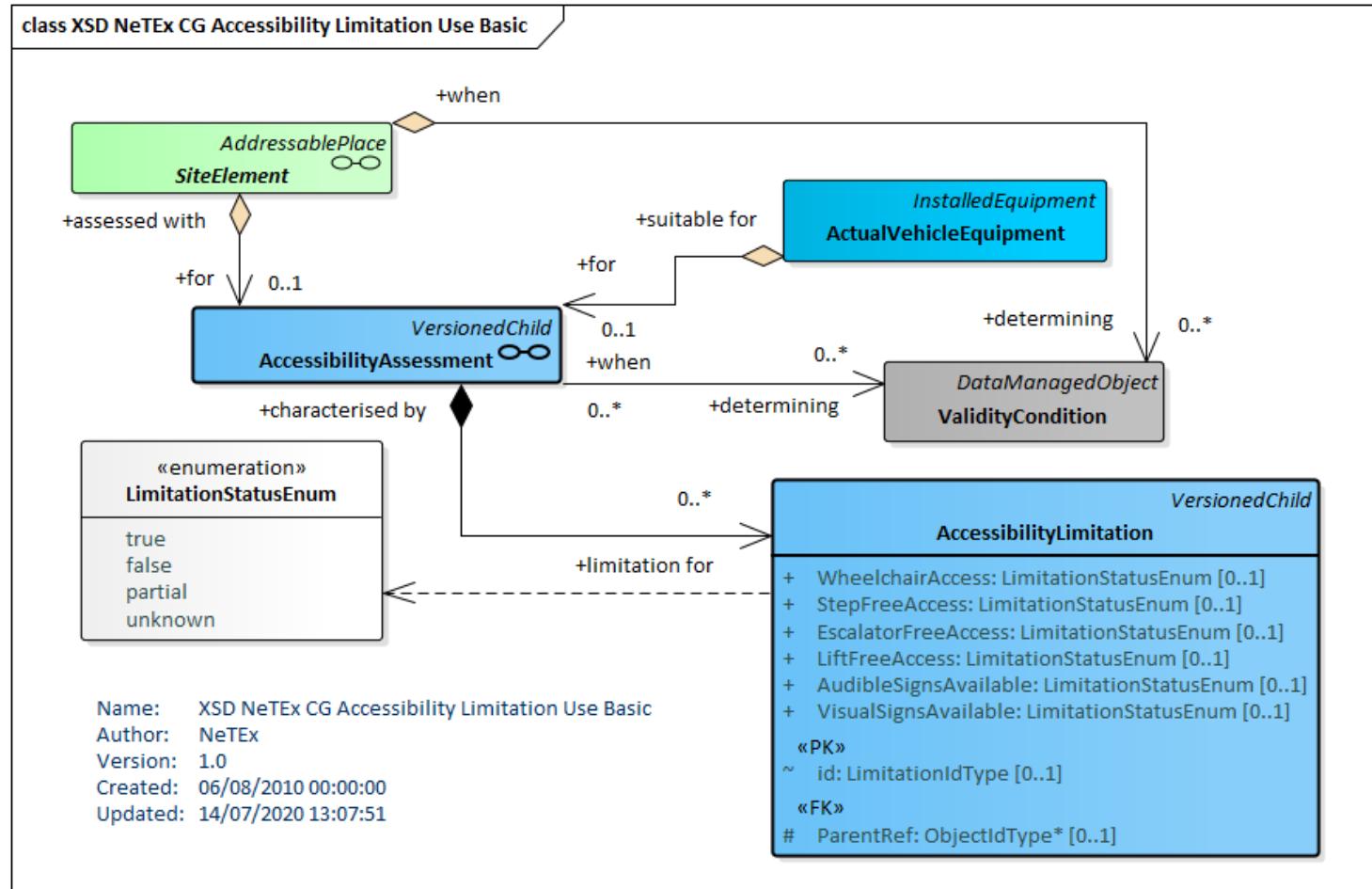
#2.10

Irish NeTEx Profile → Accessibility



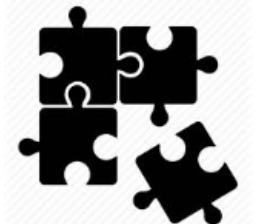
Basic Accessibility

- ▶ A/B/C unknown corresponds to **LimitationStatus** (true, partial, false, unknown)
- ▶ PTIMS UD-Rating can also be added as a keylist value



Irish NeTEx Profile

Common Profile Elements



Irish NeTEx Profile - Framework



- **Identifying data:**
 1. CODESPACEs and Identifiers
 2. VERSIONs
- **Organising Data:**
 1. VERSION FRAMEs
 2. TYPEs OF FRAME
- **Common Reusable components**
 - 1. OPERATORs
 - 2. TRANSPORT MODEs
 - 3. ALTERNATIVE NAMES
 - 4. VEHICLE TYPEs
 - 5. etc

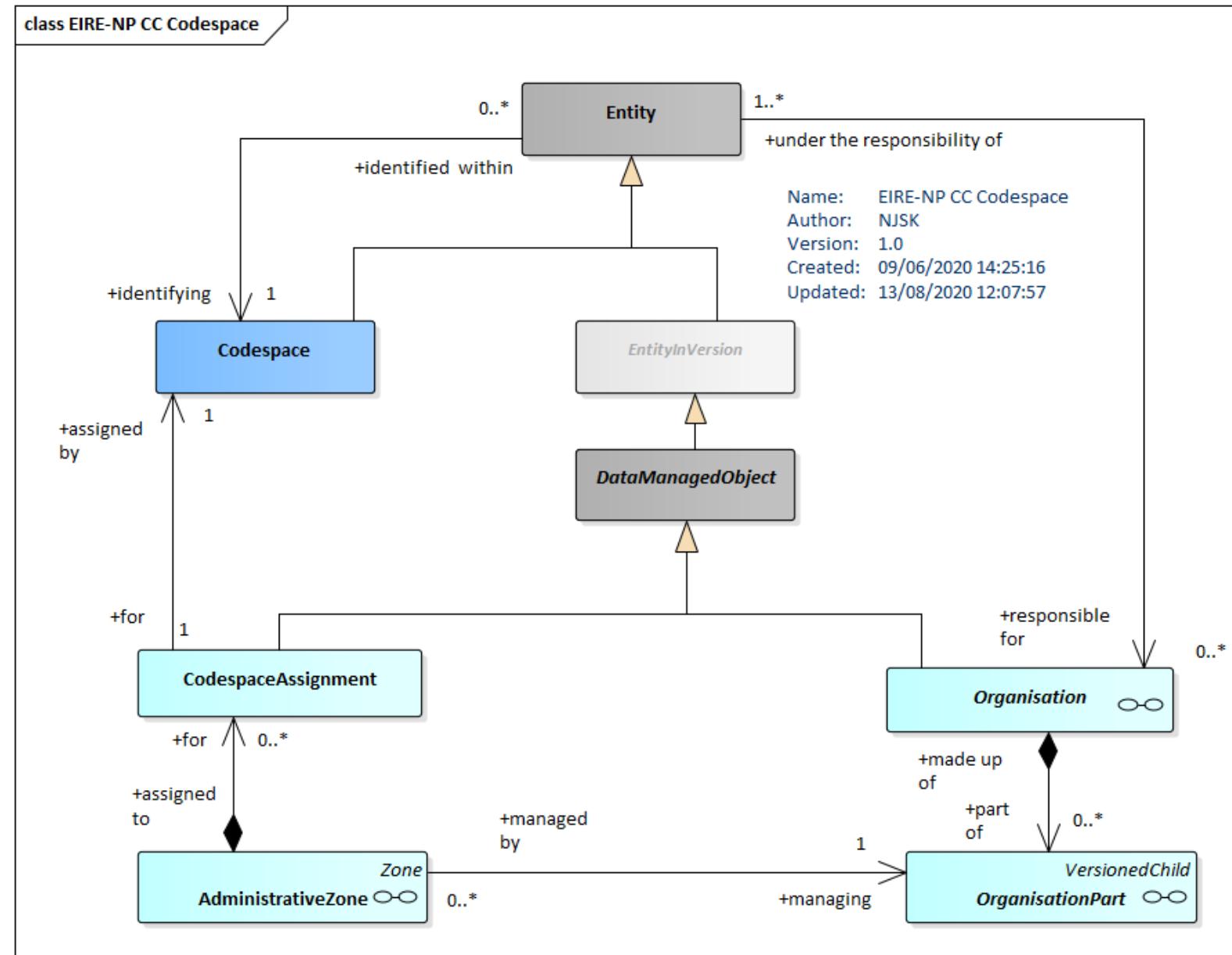


Codespaces

Irish NeTEx Profile Codespaces

ID

- ▶ All objects have a CODESPACE for their identifier.
- ▶ Like W3 name-space – but for instance data:
 - A) Uniqueness scope
 - B) Code structure/ System
- ▶ Associate with a W3C domain to give global scope
- ▶ Can assign responsibility to allocate to a region and organisation or subdivision



Codespaces & Identifiers - Example

ID

- ▶ Like W3 namespace – but for instance data.
 - A) Uniqueness scope
 - B) Code structure
- ▶ Declare in document.
- ▶ Associate with a W3C domain to give unique scope
- ▶ Can set default on frame and omit from individual elements

The diagram illustrates the declaration and usage of Codespaces in an XML document. It shows two separate declarations of Codespaces within a root <codespaces> element. The first Codespace, with id="naptStop_data", is associated with the XML namespace <xmlns>naptStop</xmlns> and the XML namespace URL <xmlnsUrl>http://www.naptan.org.uk/stops</xmlnsUrl>. Its description is "UK National Public Transport Access". The second Codespace, with id="nptgLocality_data", is associated with the XML namespace <xmlns>nptgLocality</xmlns> and the XML namespace URL <xmlnsUrl>http://nptg.org.uk/locations</xmlnsUrl>. Its description is "NPTG Locations". Below these declarations, a specific XML element is shown: <StopPlace version="1.6" id="naptanStop:260010966">. This element uses the 'id' attribute to reference the Codespace with id="naptStop_data". It also contains a <Name> element with the value "Netherly Road" and a <TopographicPlaceRef> element with version="2.2" and ref="nptgLocality:E0000004".

```

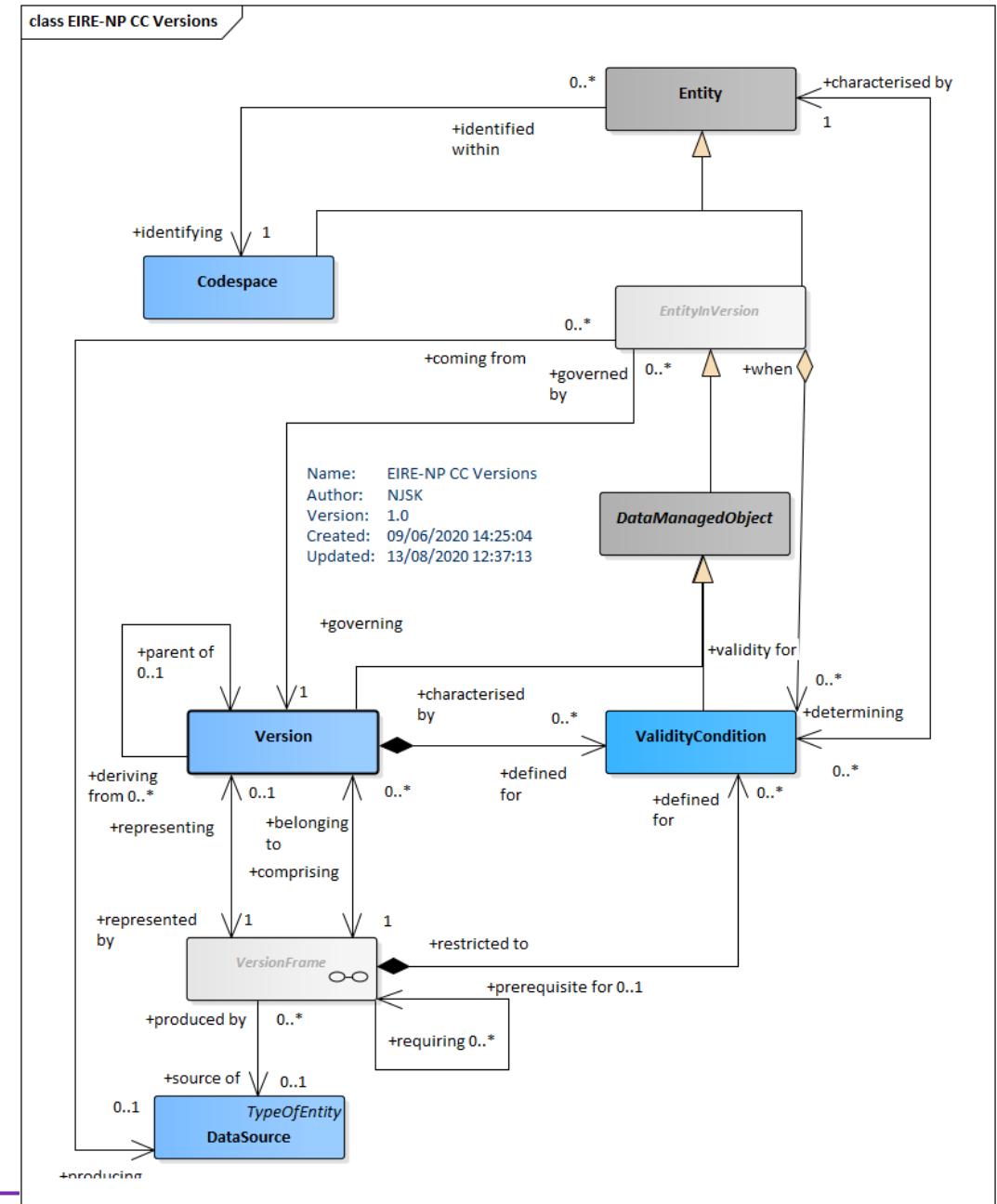
<codespaces>
    <Codespace id="naptStop_data">
        <Xmlns>naptStop</Xmlns>
        <XmlnsUrl>http://www.naptan.org.uk/stops</XmlnsUrl>
        <Description>UK National Public Transport Access</Description>
    </Codespace>
    <Codespace id="nptgLocality_data">
        <Xmlns>nptgLocality</Xmlns>
        <XmlnsUrl>http://nptg.org.uk/locations</XmlnsUrl>
        <Description>NPTG Locations</Description>
    </Codespace>
</codespaces>

<StopPlace version="1.6" id="naptanStop:260010966">
    <Name>Netherly Road</Name>
    <TopographicPlaceRef version="2.2" ref="nptgLocality:E0000004"/>
</StopPlace>

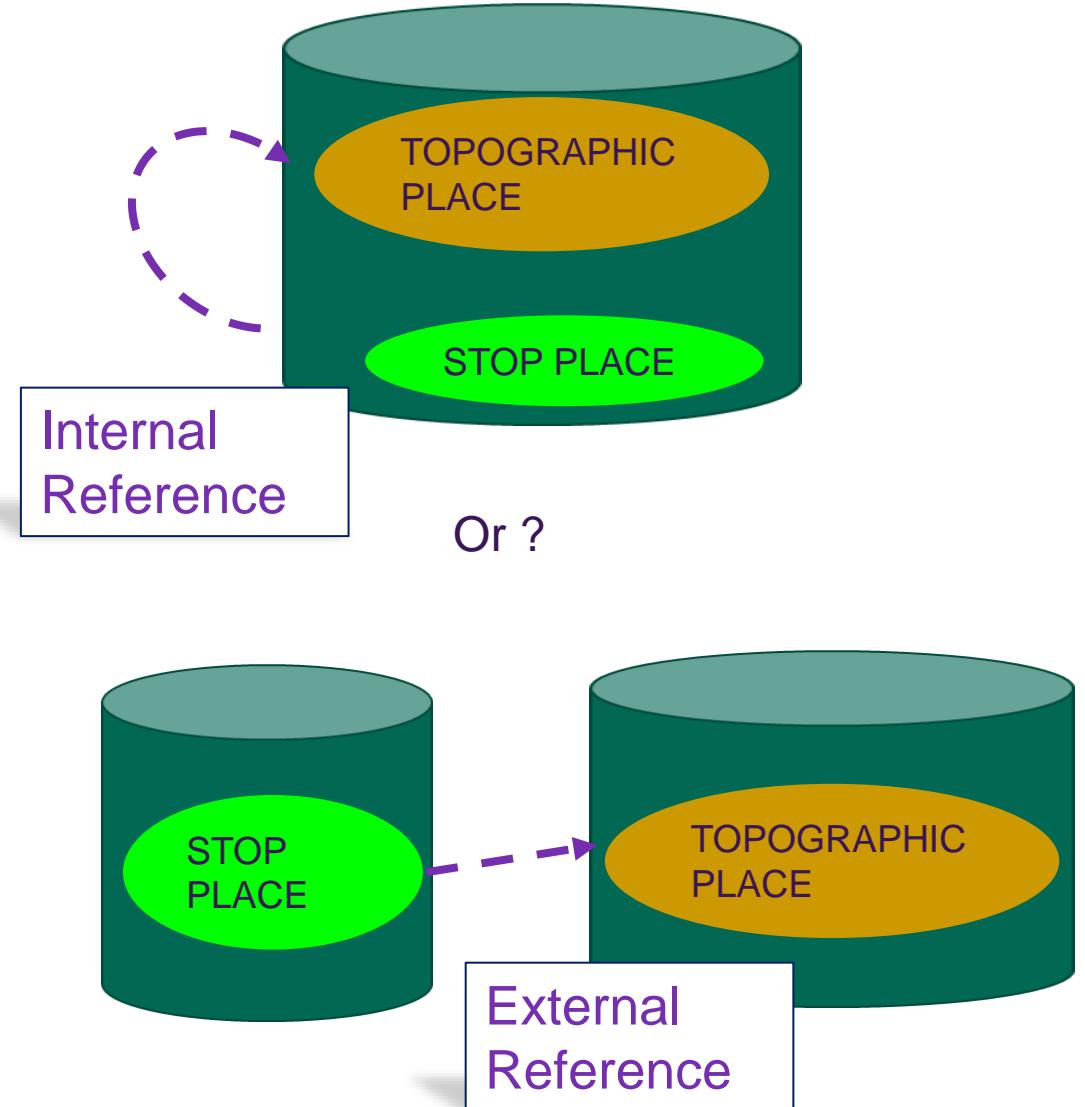
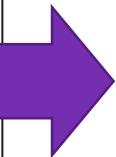
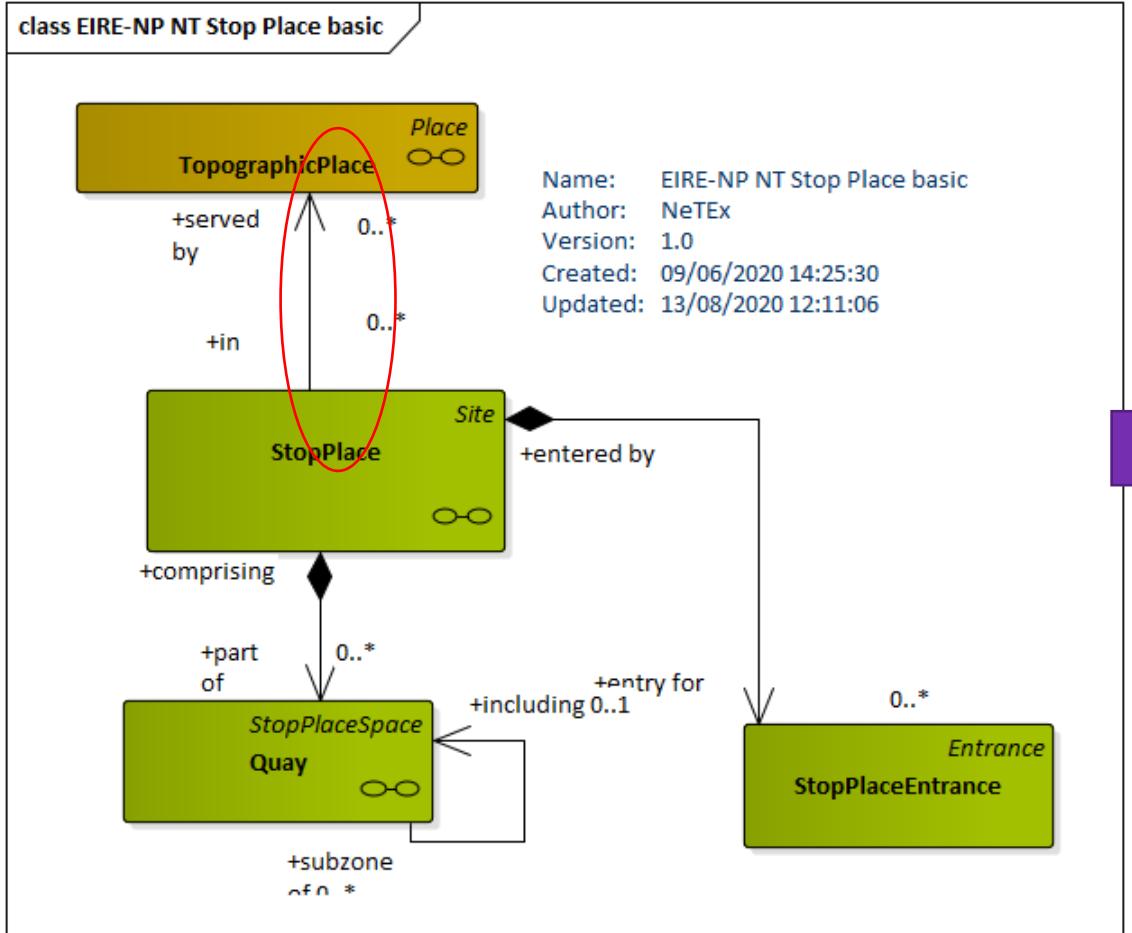
```

Irish NeTEx Profile Versions

- All entities can be versioned.
 - Fine grained or at frame level
 - EU PROFILE – Frame level only
- A NeTEx XML file contains specific versions of each entity
 - References are versioned
 - Can be dummy version “any”
- Can also have a Data SOURCE and a VALIDITY CONDITION



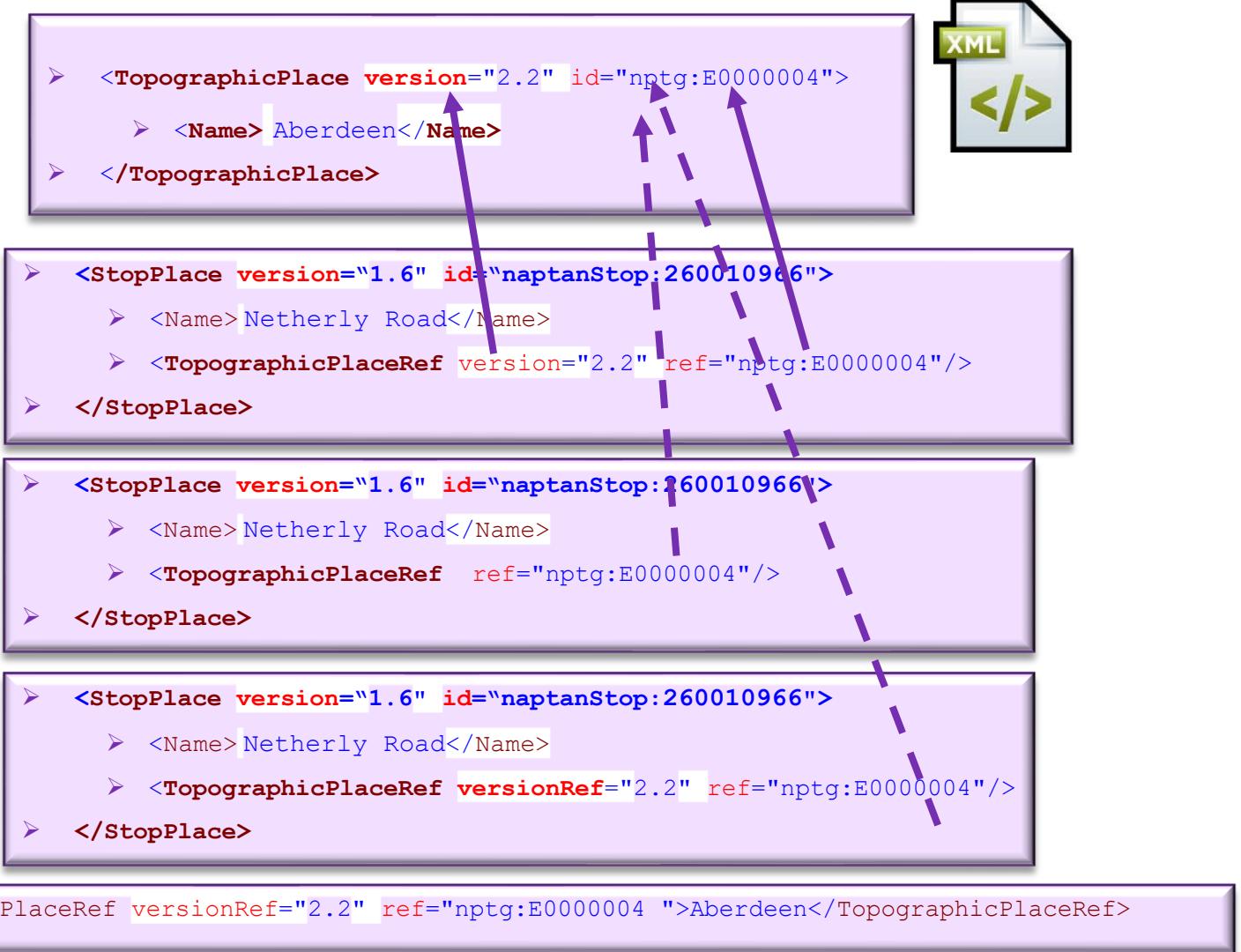
Serialising relationships as XML





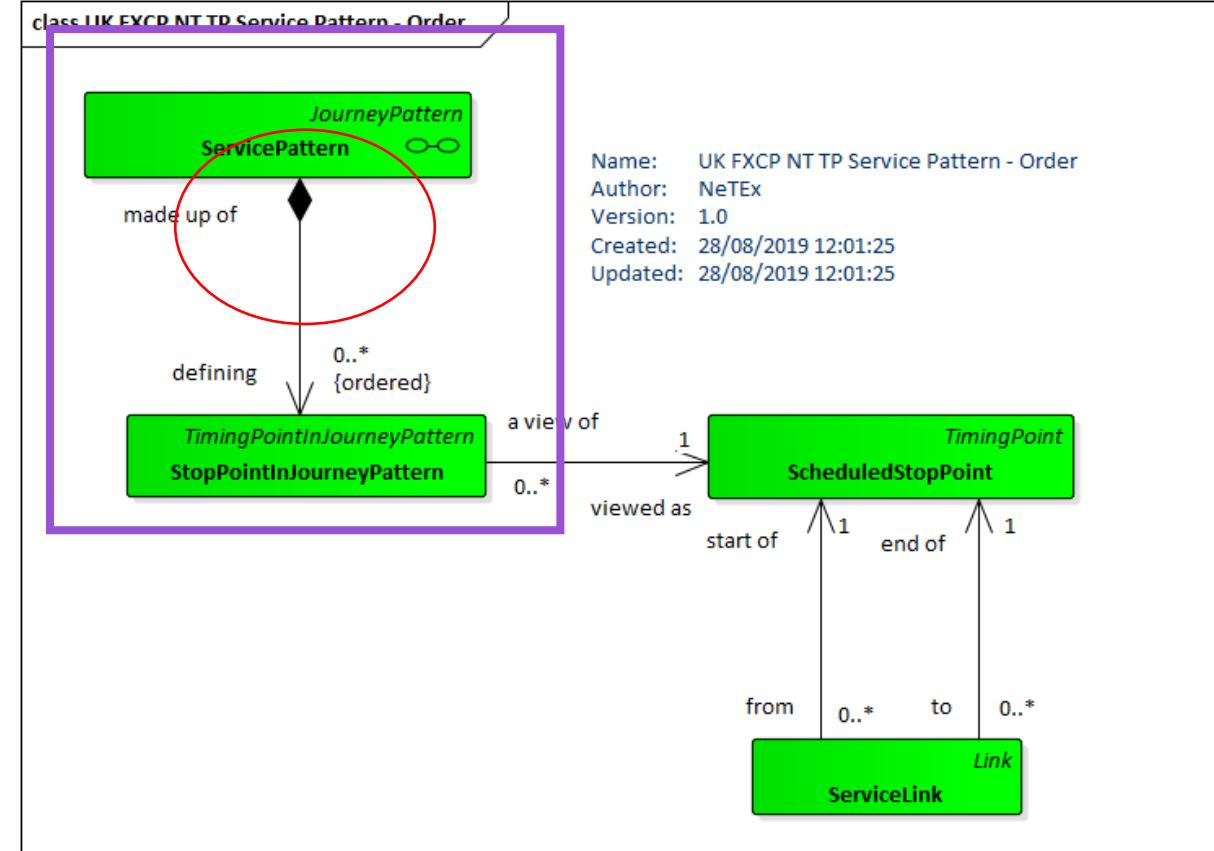
Internal versus External references

- ▶ INTERNAL REFERENCE: must be present in same document :
 - VALIDATED - XML validator will reject if not satisfied
- ▶ EXTERNAL REFERENCE: does not have to be present in same document.
 - XML Validator will ignore.
- ▶ Recommendations:
 - Use versionRef to indicate external
 - By convention, annotate external references



Identifiers of subcomponents

- ▶ Strong aggregation / composition
 - Id may depend on parent
 - Use order id as subkey



Ids of dependent subcomponents

Can use “order” attribute as subkey

```
▶ <ServicePattern id="mb:MB@1@Outbound@JP1" version="1.1">
  ▶   <StopPointInSequence id=" mb:MB@1@Outbound@JP1" version="1.1" order="1">
    ▶     <ScheduledStopPointRef ref=" naptStop:3420678954" version="any"/>
  ▶   </StopPointInSequence>
  ▶   <StopPointInSequence id=" mb:MB@1@Outbound@JP1" version="1.1" order="2">
    ▶     <ScheduledStopPointRef ref=" naptStop:3420678972" version="any"/>
  ▶   </StopPointInSequence>
  ▶   <StopPointInSequence id=" mb:MB@1@Outbound@JP1" version="1.1" order="3">
    ▶     <ScheduledStopPointRef ref=" naptStop:3420678851" version="any"/>
  ▶   </StopPointInSequence>
  ▶ Etc etc
  ▶
  ▶ </ServicePattern>
```



Codespaces for Irish Data Elements

Data Set	Content	NeTEx Element	Codespace	Preferred prefix
Administrative Areas	NPTG registrar data (Country, Region, District, AdministrativeArea)	ADMINISTRATIVE AREA, (+GENERAL ORGANISATION)	nptg.org.uk/admin	<i>nptgAdminArea:</i>
Locations	NPTG payload (<i>NptgLocality</i>)	TOPOGRAPHICAL AREA	nptg.org.uk/locality	<i>nptgLocality:</i>
NPTG profile data	NPTG metadata	Fixed code values for classifying localities TYPE OF ZONE etc	nptg.org.uk/nptg	<i>nptg:</i>
NaPTAN profile data	NaPTAN metadata	Fixed code values for classifying stops TYPE OF ZONE etc	naptan.org.uk/napt	<i>napt:</i>
Stops, Stop areas	NaPTAN payload (StopPoint, StopArea)	SCHEDULED STOP POINT, STOP AREA	naptan.org.uk/stops	<i>naptStop:</i>
Operators	National Operator Code (NOC)	OPERATOR	nationaltransportauthroity.ie/noc	<i>noc:</i>
Timetable data	Timetable content	SERVICE JOURNEY, LINE,	Individual operator	<i>op:</i>

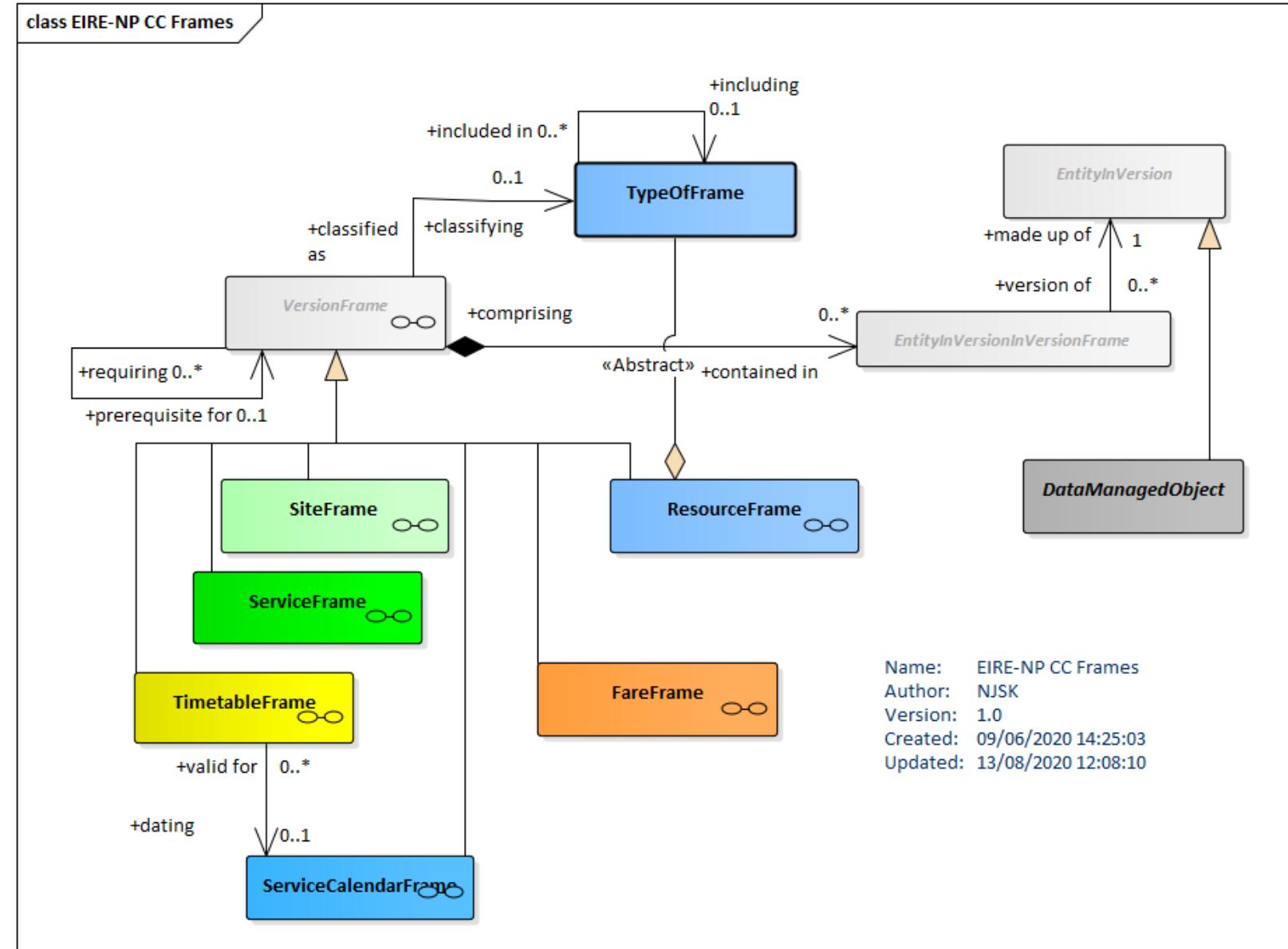
Version Frames



#1.3

Irish NeTEx Profile Specific Frames

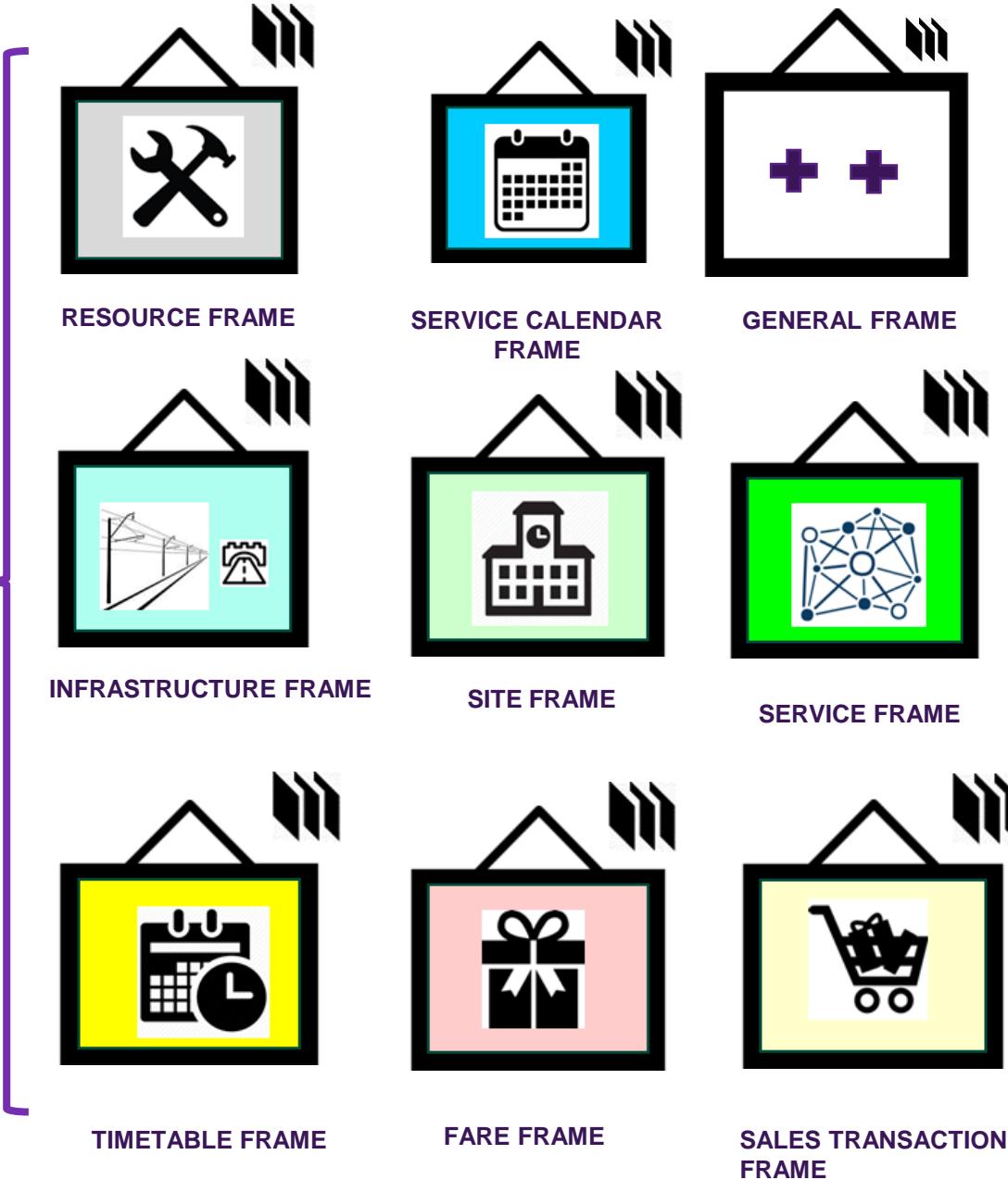
- All frames share common VERSION FRAME properties
- Each specific frame contains specific types of element, e.g. LINES, FARE PRODUCTS, etc
- The TYPE OF FRAME further restricts frame contents to a specific profile, e.g UK FXCP.
- A FRAME may state prerequisites FRAMES



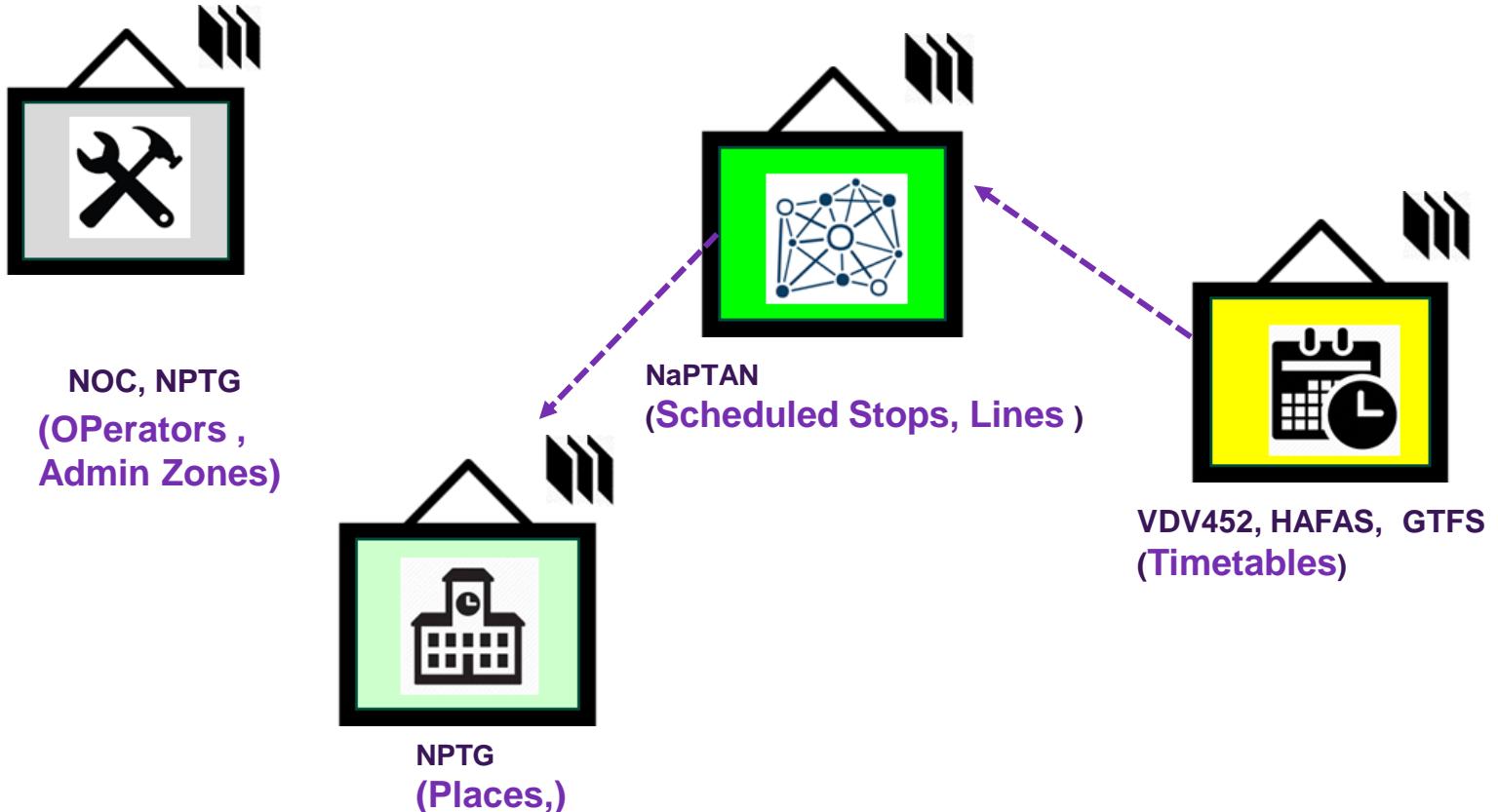


Version Frames

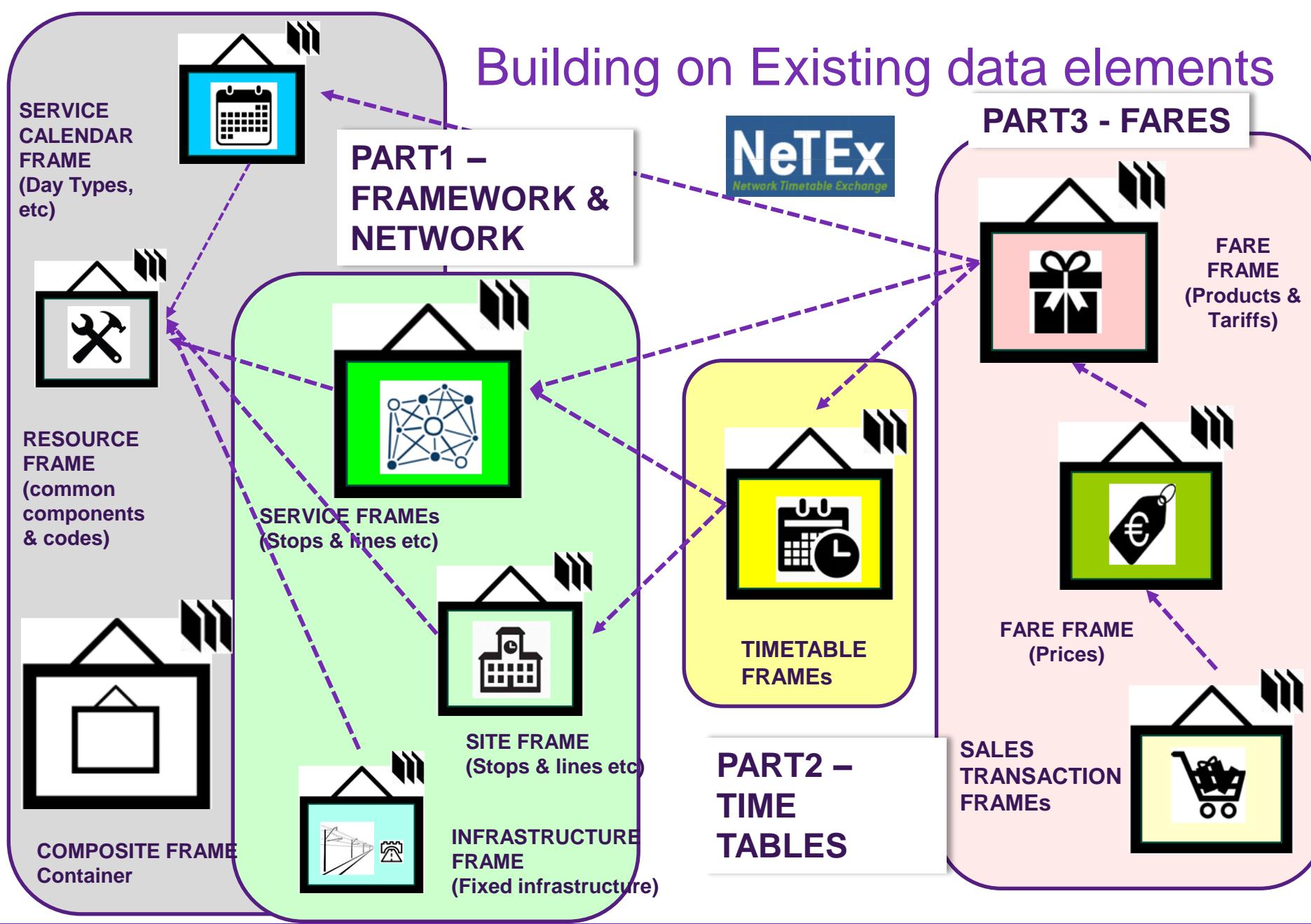
- ▶ Used to group elements
- ▶ Different types



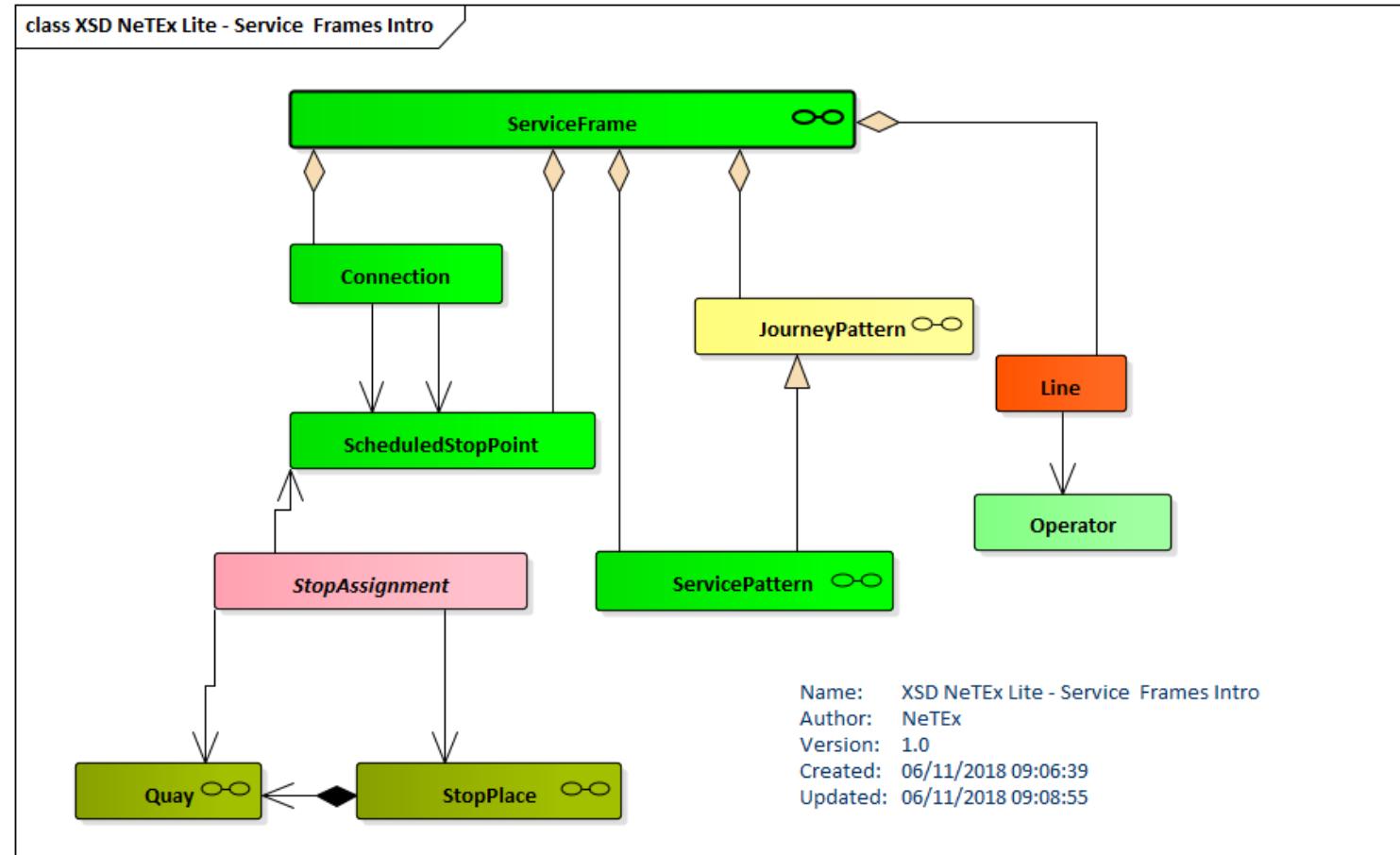
Frames for a Timetable



Building on Existing data elements

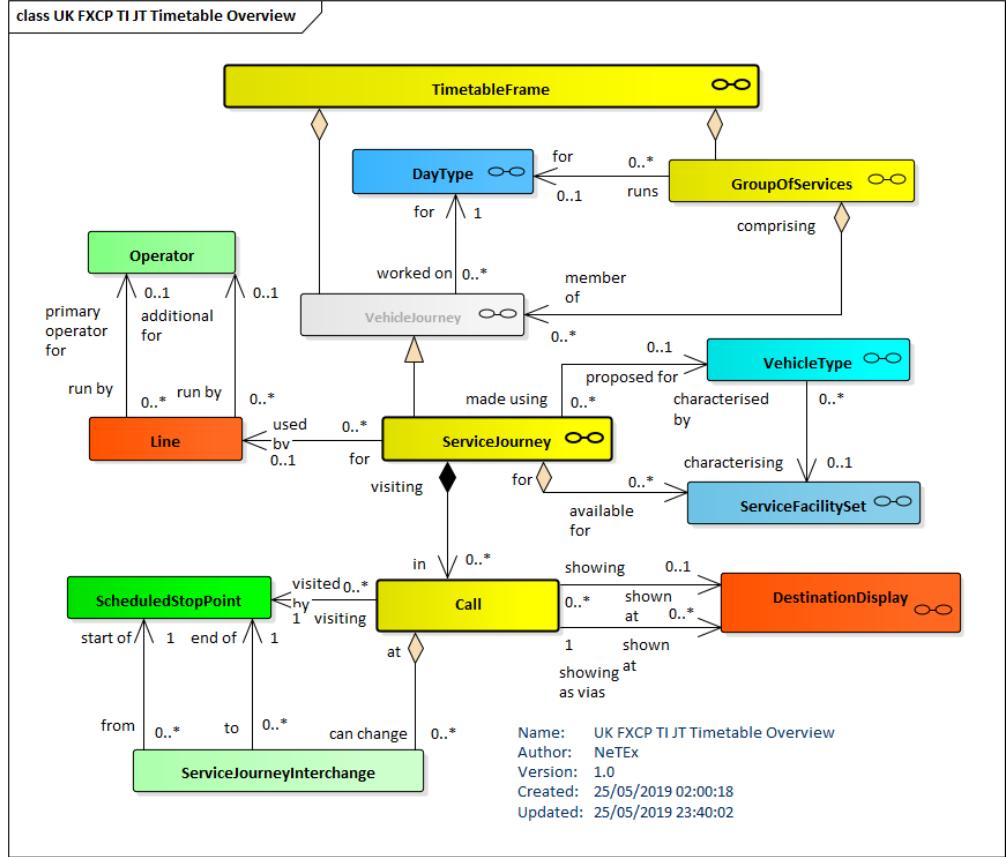


Basic SERVICE FRAME elements for exchanging stops

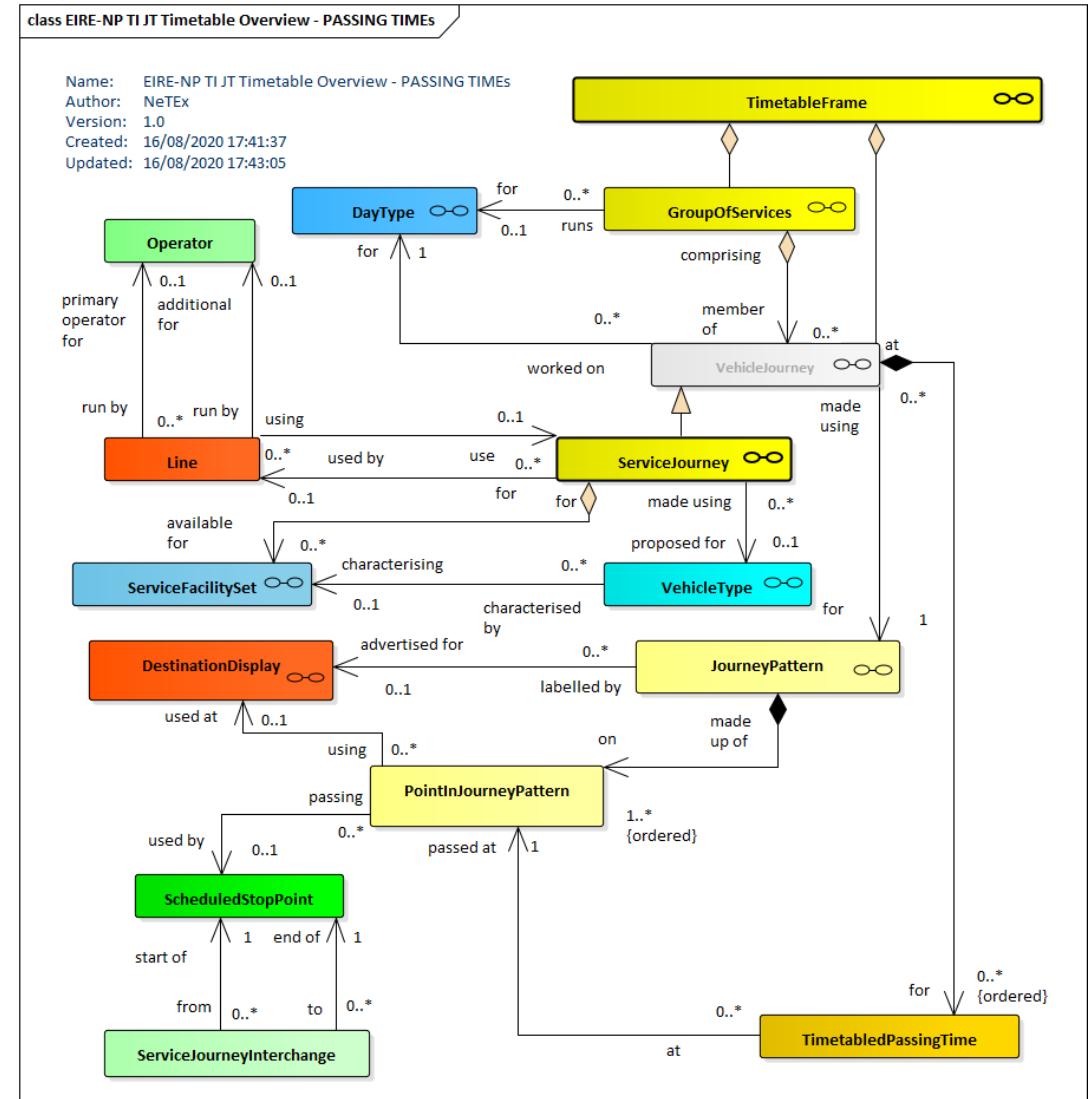


Basic Timetable Frame elements for exchanging journeys:

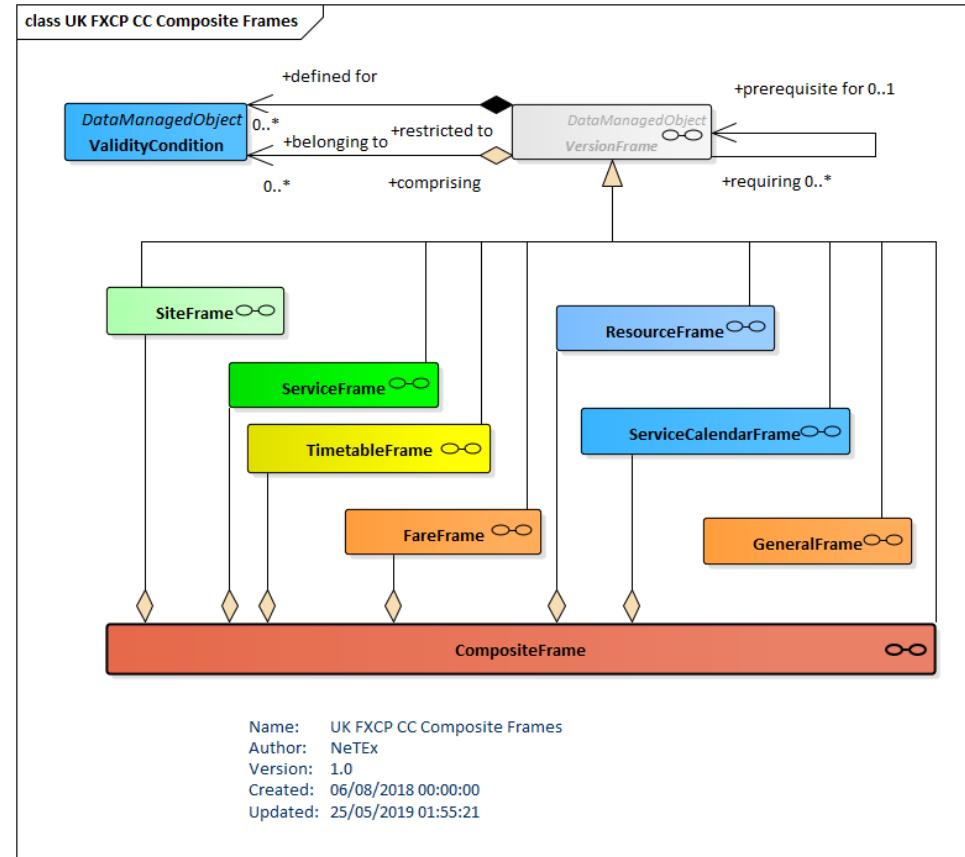
Using CALLS



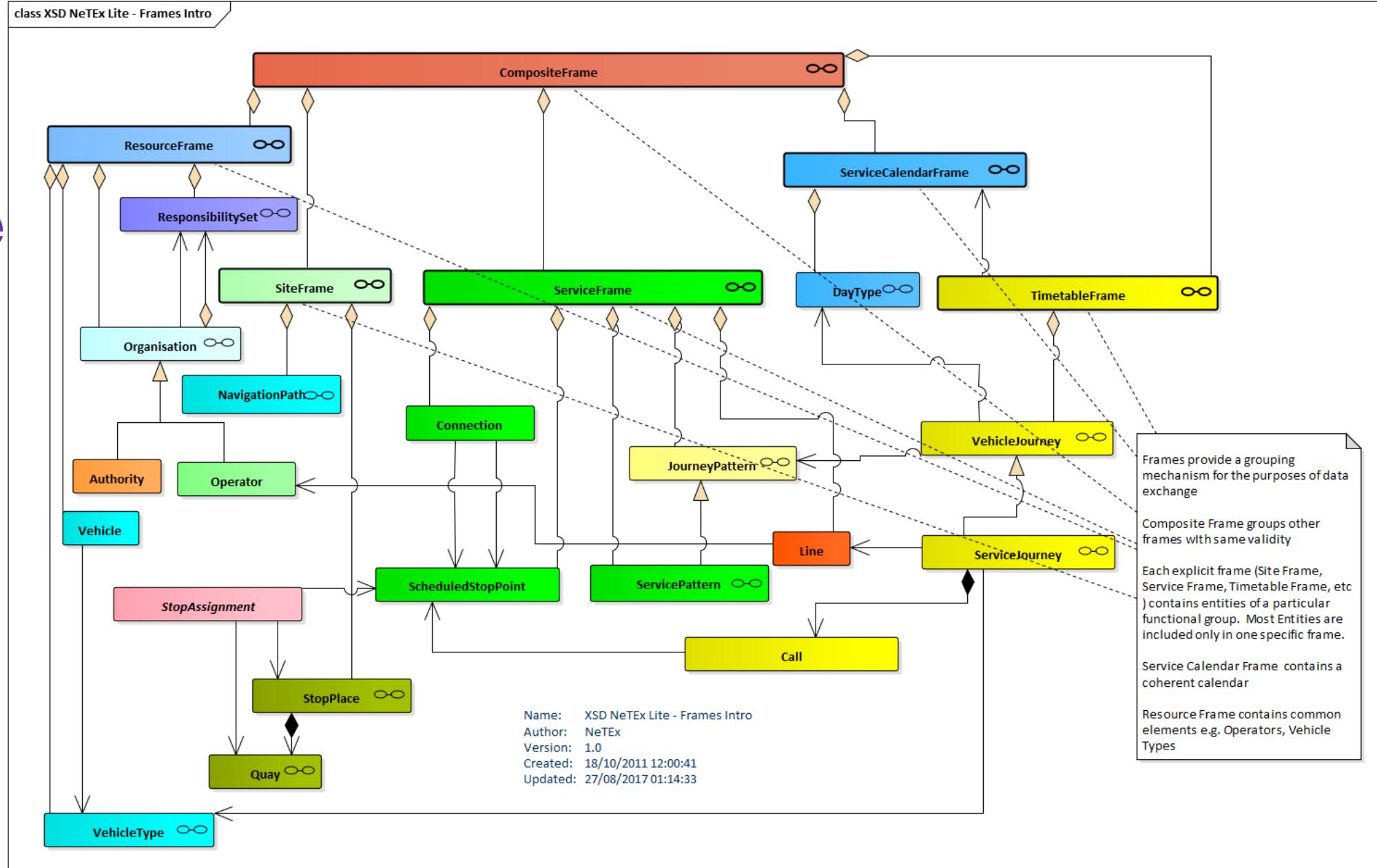
Using PASSING TIMES



Composite Frame – Grouping other frames



Composite frames for a timetable



Summary of Profile



- Common Frame work Features
- As per

Profile - Scope

- Exchange of Timetables & Stop information
- As per EPIP
- Also allow CALLS & Timing information

Profile - Local Technical Details

- Use NOC, NPTG, NAPTAN
- Use ITM (Irish Transvers Mercator) & WGS 84

Profile - Use in National Context

- Frame types as per EPIP
 - Stops: All or Network
 - Timetables: Line

Profile Management

- NTA & Stakeholders
- Keep Aligned with CEN & EC

Types of Frame

Example Frame Types – Timetable

```
> <TimetableFrame
>   id="epd:IE:LUAS:TimetableFrame-_PI_TIMETABLE:LUAS@26"
>   version="2.78" >
>   <TypeOfFrameRef ref="eix:IE:NTA>TypeOfFrame_IE_PI_TIMETABLE"
>     versionRef="1.0"/>
>     ::::etc., Specific Frame contents::::
>   </TimetableFrame>

> <ServiceCalendarFrame
>   id="epd:IE:LUAS:ServiceCalendarFrame-IE_PI_CALENDAR:LUAS"      version="1.6" >
>   <TypeOfFrameRef ref="eix:IE:NTA>TypeOfFrame_IE_PI_CALENDAR"
>     versionRef="1.0" />
>     ::::etc., Specific Frame contents::::
>   </ServiceCalendarFrame>
```



Granularity For exchanging data

Type Of Composite Frame	Stops	Timetables	Fares
<i>Stop Offer</i>	Stops for Area		Stops & Tariff Zones for Area
<i>Line_Offer</i>	Stops for Line	Timetable for Line	Fares for Line
<i>Network_Offer</i>	Stops for Network	(Timetables for Network)	Fares for Network

Example file names:

EIX-PI-01_IE_PHBS_LINE-OFFER _L01_20160302.xml

EIX-PI-01_IE_FCRK_NETWORK-FARE_FCRK-060+086+110_20230909.xml

EIX-PI-01_IE_NTA_NETWORK_OFFER_NPTG-Localities_20200705.xml

Types Of Specific Frame: Irish NeTEx Profile

Type of Frame	Description	NetEx Contents
<i>IE_PI_STOP</i>	Objects necessary for STOP PLACE and SITE descriptions	STOP PLACES, QUAYs, ENTRANCES, POINTs OF INTEREST, etc.
<i>IE_PI_NETWORK</i>	Objects necessary for NETWORK descriptions	(LINEs, ROUTEs, JOURNEY PATTERNs, etc.
<i>IE_PI_TIMETABLE</i>	Objects related to timing information	VEHICLE JOURNEYs, PASSING TIMEs, etc.
<i>IE_PI_CALENDAR</i>	objects related to calendars and types of Objects..	DAY TYPE, SERVICE CALENDAR etc
<i>IE_PI_COMMON</i>	Common and generic object types possibly used across multiple other frames	TYPE OF VALUE, OPERATOR, etc

Example Frame nesting – Timetable



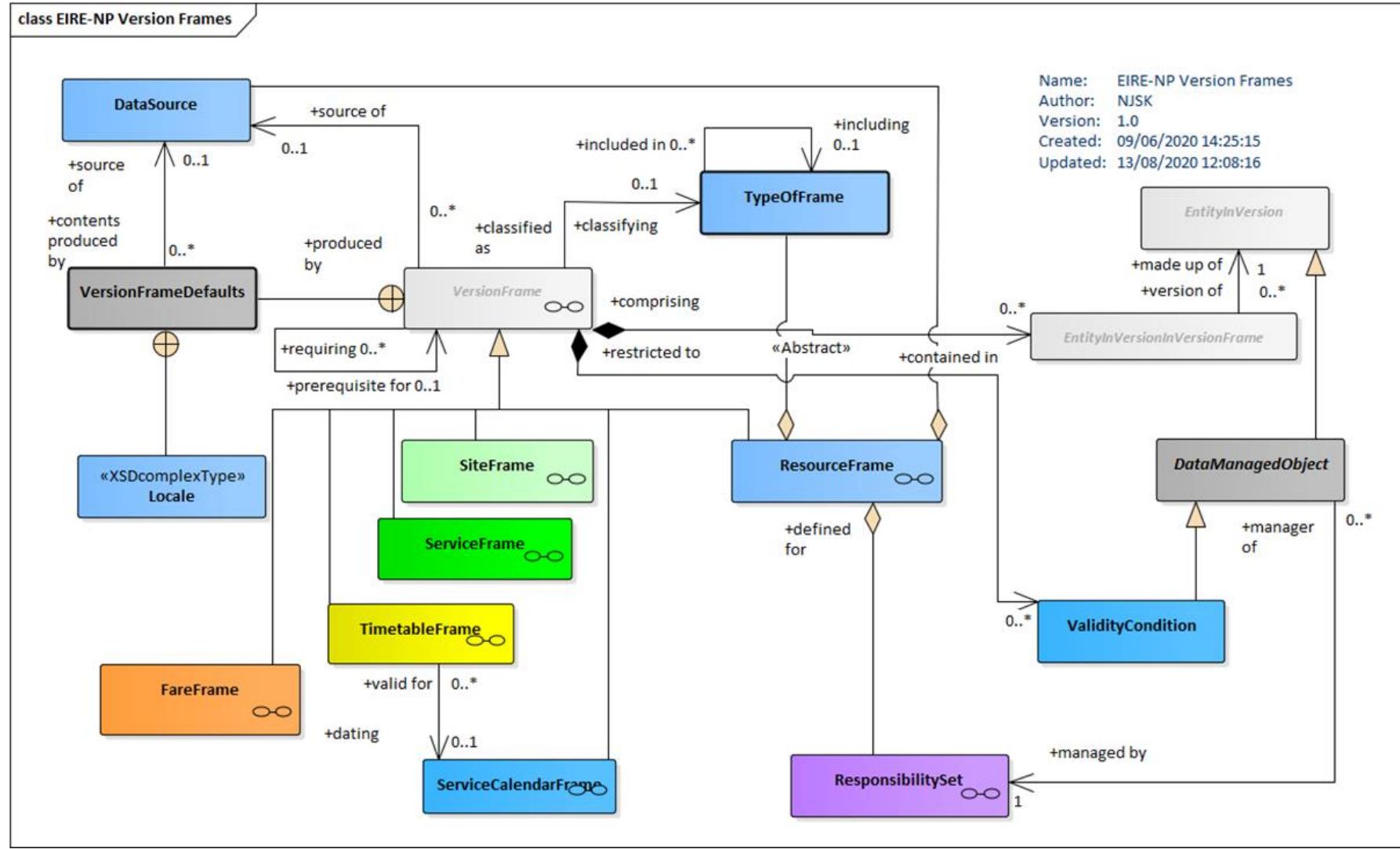
```
>   <CompositeFrame version="3.0" id="epd:IE:NTA:FYOR:CompositeFrame-IE_PI_LINE_OFFER:FYOR@26" responsibilitySetRef="frst:data">
>     <ValidBetween>
>       <FromDate>2010-12-17T09:30:47.0Z</FromDate>
>       <ToDate>2011-12-17T09:30:47.0Z</ToDate>
>     </ValidBetween>
>     <TypeOfFrameRef ref="eix:IE:NTA:IE_PI_LINE_OFFER" versionRef="eix:1.0" />
>     <frames>
>       <SiteFrame
>         name version="5.6" id="epd:IE:NTA:FYOR:SiteFrame-IE_PI_STOP:FYOR@26">
>           <TypeOfFrameRef ref="eix:IE:NTA>TypeOfFrame_IE_PI_STOP:FXCP" versionRef="1.0"/>
>           <Etc., etc., Specific Frame contents>
>         </>
>           <ServiceFrame version="2.8" id="epd:IE:NTA:FYOR:ServiceFrame-IE_PI_NETWORK:FYOR@26">
>             <TypeOfFrameRef ref="eix:IE:NTA>TypeOfFrame_IE_PI_NETWORK:FXCP" versionRef="1.0"/>
>             </ServiceFrame>
>             <TimetableFrame version="2.78" id="epd:IE:NTA:FYOR:TimetableFrame-IE_PI_TIMETABLE:FYOR@26">
>               <TypeOfFrameRef ref="IE:NTA: TypeOfFrame_IE_PI_TIMETABLE:FXCP" versionRef="1.0"/>
>               <Etc., etc., Specific Frame contents>
>             </TimetableFrame>
>             <TypeOfFrameRef ref="eix:IE:NTA>TypeOfFrame_IE_PI_CALENDAR:FXCP" versionRef="1.0" />
>             <Etc., etc., Specific Frame contents>
>           </ServiceCalendarFrame >
>           <ResourceFrame version="1.6" id="epd:IE:NTA:FYOR:ResourceFrame-IE_PI_COMMON:FYOR">
>             <TypeOfFrameRef ref="eix:IE:NTA>TypeOfFrame_IE_PI_COMMON:FXCP" versionRef="1.0" />
>             <Etc., etc., Specific Frame contents>
>           <Etc., etc., Specific Frame Fixed
>         <contents>
>           </ResourceFrame>
>         </frames>
>       </CompositeFrame>
```

Other Frame Level properties



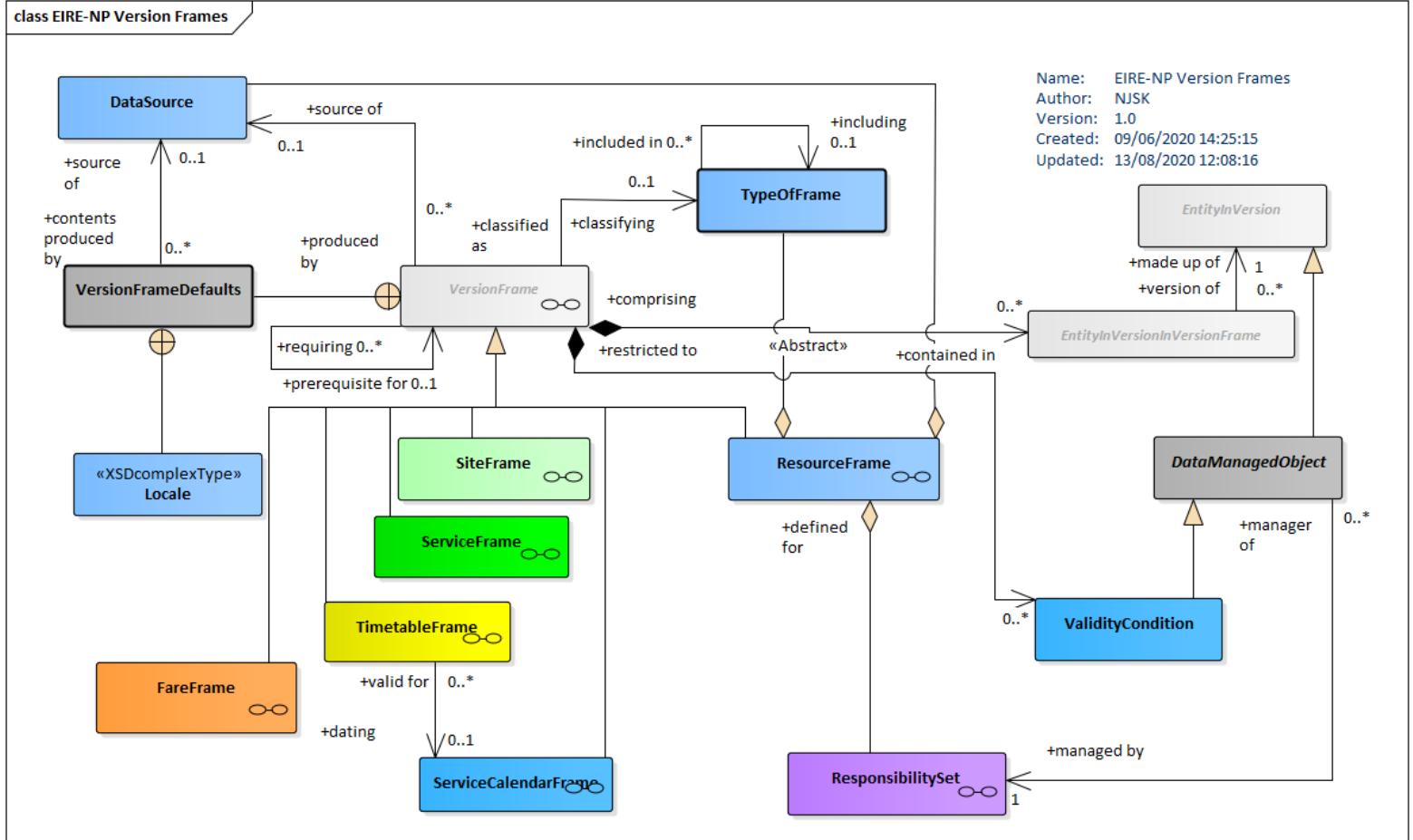
#1.4

- VALIDITY CONDITION
- DATA SOURCE
- Frame Defaults
- RESPONSIBILITY SET



Other Frame Level properties

- VALIDITY CONDITION
- DATA SOURCE
- Frame Defaults
- RESPONSIBILITY SET



VALIDITY CONDITION

CODESPACES used in frame

Example Frame properties



```
> <CompositeFrame version="3.0" id="epd:IE:CDA:FCOR:CompositeFrame-  
IE_PI_LINE_OFFER:YCR@26" responsibilitySetRef="frst:data">  
>   <ValidBetween>  
>     <FromDate>2010-12-17T09:30:47.0Z</FromDate>  
>   </ValidBetween>  
>   <codespaces>  
>     <Codespace id="fDefaultResponsibilitySetRefst_data">  
>       <Xmlns>frst</Xmlns>  
>       <XmlnsUrl>https://www.firstgroup.com/cork</XmlnsUrl>  
>     </Codespace>  
>     <Codespace id="eix_metadata">  
>       <Xmlns>eixc</Xmlns>  
>       <XmlnsUrl>http://netex.ie/</XmlnsUrl>  
>     </Codespace>  
>   </codespaces>  
>   <FrameDefaults>  
>     <DefaultCodespaceRe`ref="frst_data"/>  
>     < version="any" ref="frst:data"/>  
>   </FrameDefaults>  
>   <frames>  
>     <TypeOfFrameRef ref="eix:IE:NTA>TypeOfFrame_IE_PI_STOP:FXCP"  
versionRef="1.0"/>  
>   :::::::
```

Recommended convention for NeTEx Profile XML FILE NAMEs (As for EPIP)

[prefix] - [fxcp-version] _ [country-code] _ [provider-code] _ [profile-type] _ [doc-topic] _[creation-date]

Where:

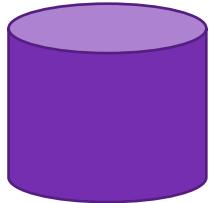
- [prefix] A fixed prefix agreed upon by the exchange partners, here ‘EIX-PI’
- [fxcp-version] Major version number of the EIX; currently ‘01’
- [country-code] Country ISO code.
- [provider-code] Producer code (use ‘NAP’ if coming from a national access point). Variable length. Normally this will be the same as the provider code on the composite frame within the NeTEx document.
- [profile-type] FXCP Offer Profile type (LINE, NETWORK or STOP).
- [doc-topic] Topic according to profile subtype (as for the frame topic).
 - For ‘IE_PI_NETWORK_OFFER’, short name or code of network;
 - For ‘IE_PI_LINE_OFFER’: LINE number or name if no number is available
 - For ‘IE_PI_STOP_OFFER’, name or code of LINE, NPTG ADMINISTRATIVE ZONE or TOPOGRAPHIC PLACE for which the stops are included.
- [creation-date] Date of creation of the XML document (YYYYMMDD). If multiple versions need to be distinguished within the same day a time-HHMM can be appended.

Example file names:

EIX-PI-01_IE_NTA_STOP_NaPTAN-AdminArea-110_20160302.xml
EIX-PI-01_IE_NTA_STOP_NaPTAN-AdminArea-060+086+110_20230909.xml
EIX-PI-01_IE_NTA_STOP_NpTG-IE_20150705.xml
EIX-PI-01_IE_METR_LINE_METR-1_20200812.xml
EIX-PI-01_IE_FCOR_LINE_FCOR-48_20200704.xml
EIX-PI-01_IE_LUAS_NETWORK_LUASI-ALL_20190202.xml

Meta data for discovery / indexing

- ▶ A NeTEx XML document contains a **<PublicationDelivery>** element as its root
- ▶ A **PublicationDelivery** comprises:]
 - ▶ Timestamp, etc for delivery
 - ▶ A record of the request parameters, as **Topics**
 - ▶ One or more COMPOSITE FRAME instances containing the actual result data
 - ▶ The **Topics** explain the content and correspond to the components of the NeTEx XML document name



Frame Topics Example

Request Topocs

- Meta data for contents
- Correspond to file name parts

FX-PI-01 IE PHBS LINE METR-L1 20200812.xml



```
<PublicationDelivery version="ntx:1.1" xsi:schemaLocation="http://www.netex.org.uk/netex NeTEx_publication.xsd ..... ">
  <PublicationTimestamp>2020-08-12T09:30:47.0Z</PublicationTimestamp>
  <ParticipantRef>myisis:SYS001</ParticipantRef>
  <PublicationRequest version="1.0">
    <RequestTimestamp>2001-12-17T09:30:47.0Z</RequestTimestamp>
    <topics>
      <NetworkFrameTopic>
        <Current/>
        <NetworkFilterByValue>
          <objectReferences>
            <TypeOfFrameRef ref="eix:IE_PI_LINE_OFFER" versionRef="1.0" />
            <OperatorRef version="1.0" ref="noc:PHBS"/>
            <LineRef ref="op:L1"/>
          </objectReferences>
        <places>
          <CountryRef ref="ie"/>
        </places>
        </NetworkFilterByValue>
      </NetworkFrameTopic>
    </topics>
    </PublicationRequest>
    <dataObjects>
      <CompositeFrame version="3.0" id="epd:IE:PHBS:CompositeFrame-IE_PI_LINE_OFFER:PHBS@L1" responsibilitySetRef="phbs:data">
        <ValidBetween>
          <FromDate>2020-08-01T00:00:23.0Z</FromDate>
          <ToDate>2021-01-01T00:02:30.0Z</ToDate>
        </ValidBetween>
        <TypeOfFrameRef ref="eix:IE:PHBS:IE_PI_LINE_OFFER" versionRef="eix:1.0" />
      </CompositeFrame>
    </dataObjects>
  </PublicationDelivery>
```



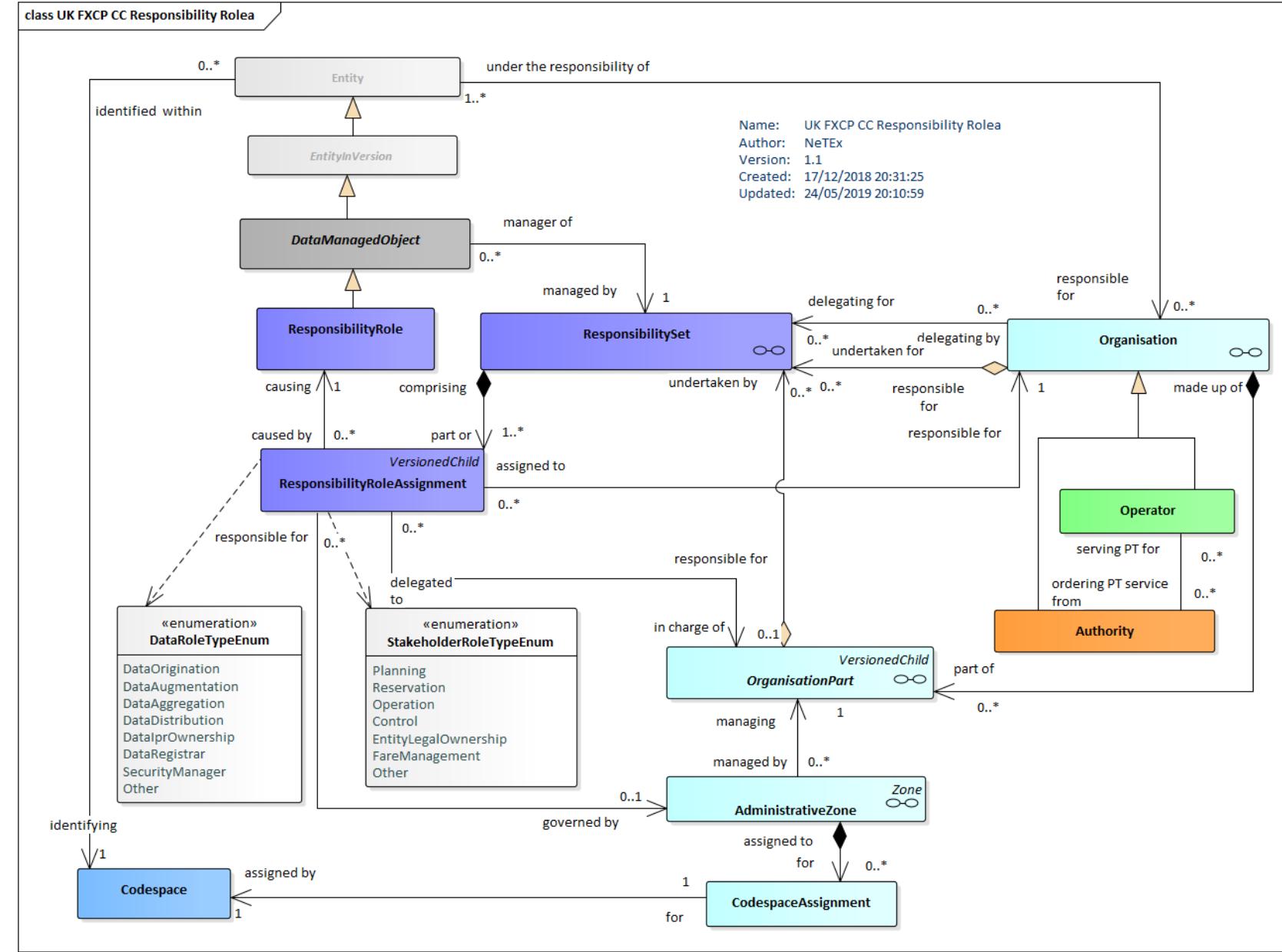
ORGANISATION, OPERATORS



#1.5

- Irish NeTEx Profile
Organisations,

Operators, Authorities ResponsibilitySets



Common Components – e.g. Operator XML Code Snippet



- ▶ Declared once
- ▶ Referenced elsewhere

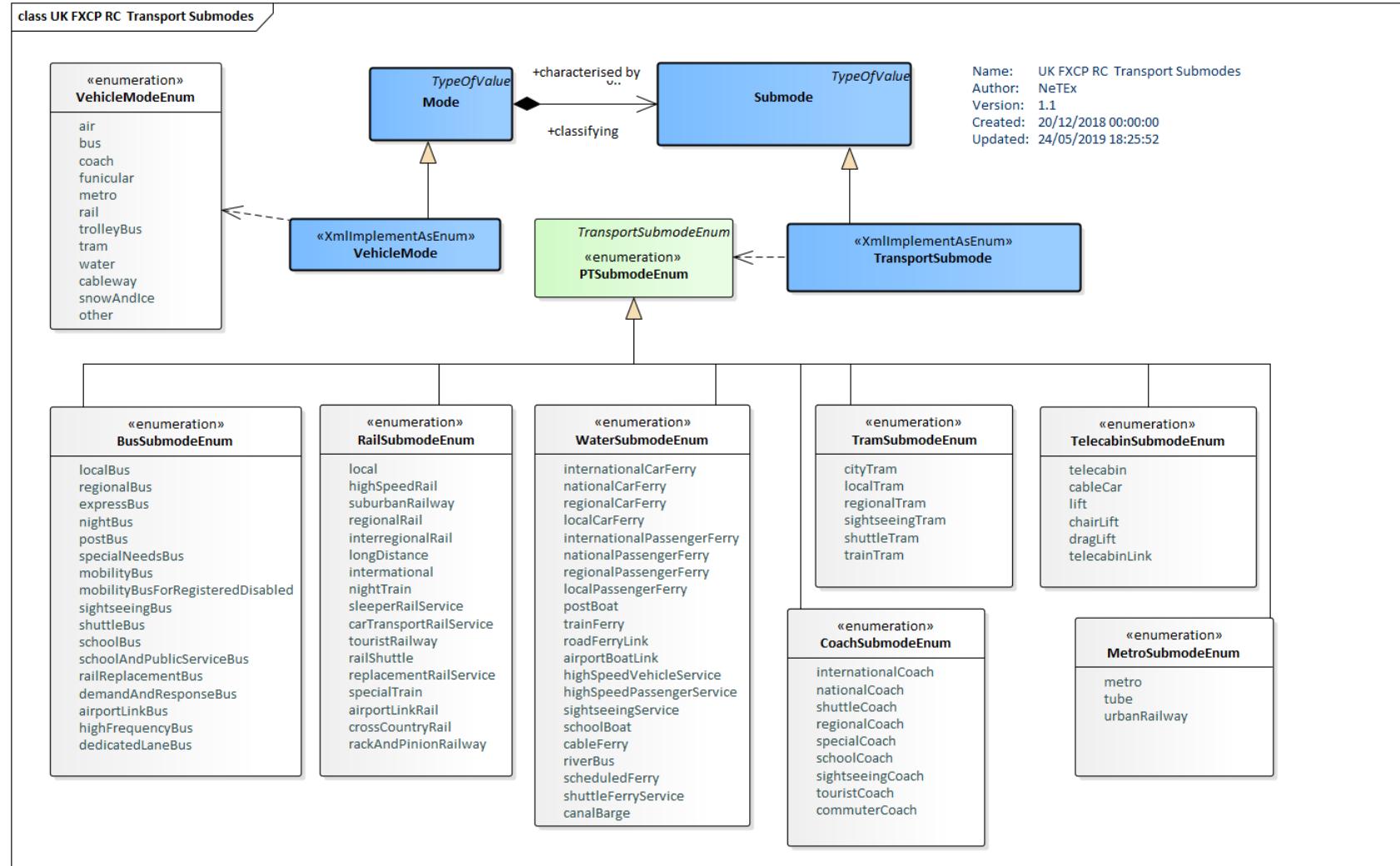
```
>
> <Line id="B2" version="1">
>   <OperatorRef ref="uic: 868" version="01" />
>   .....
>
```

```
>   <ResourceFrame id="era: Tariff" version="01" ">
>     .....
>     <organisations>
>       <Operator version="any" id="868" changed="2018-08-20T10:23:00">
>         <Name>Kealy's Coach Hire</Name>
>         <ShortName>Kealy's</ShortName>
>         <LegalName>Kealy's Coaches Ltd</LegalName>
>         <TradingName>Kealy's Coaches Ltd</TradingName>
>         <typesOfOrganisation>
>           <TypeOfOrganisationRef version="any" ref="70-PTSR"/>
>         </typesOfOrganisation>
>         <Address version="any" id="868">
>           <AddressLine1>Lislehane</AddressLine1>
>           <Town>Mallow</Town>
>           <Suburb>Cullen</Suburb>
>           <Province>Co.Cork</Province>
>         </Address>
>         <PrimaryMode>coach</PrimaryMode>
>       </Operator>
>     </organisations>
```

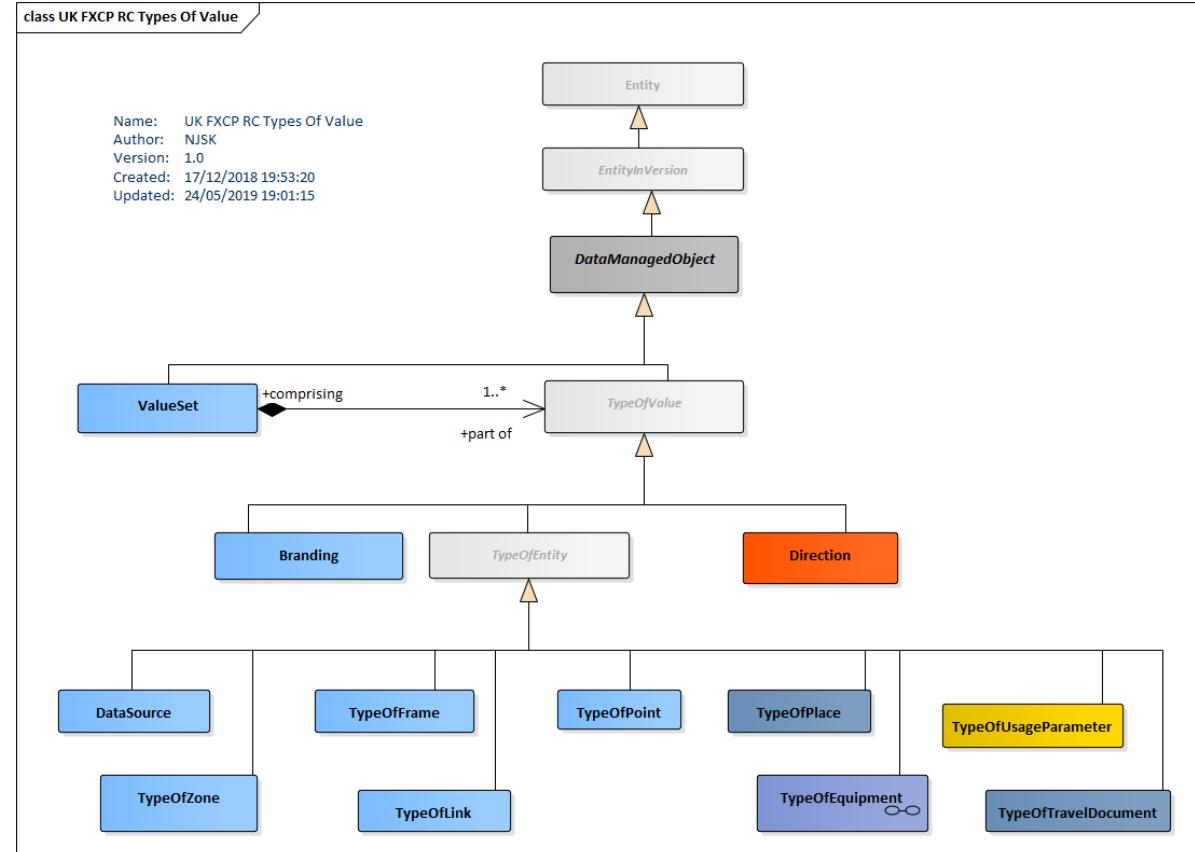


NOTICEs, Translations. Extensions

Vehicle Modes



Some types Types of Value





Annex Sites & Accessibility

Why Model SITEs & STOP PLACEs?

– The use cases



► Accessibility

- Which stops are suitable for access with specific mobility requirements ?
- How to traverse any interchange with specific mobility requirements ?

► Guidance

- How to traverse a complex interchange

► Micro journey planning

- Which path to take into or through a complex interchange
 - Step by step instructions, including signage, lift equipment , etc
- How long exactly to allow for interchange between different modes, at different times of day
 - Queueing, security checks, baggage handling etc
 - Joined up accessibility data from stops to points of interest – parks, museums, offices etc

► Facilities & AMenities

- ATM, Toilets, Portage, etc etc
- Parking etc

Physical Stop Information – Dublin Connolly

- ▶ NeTEx can be used to exchange detailed information about a stop in a precise structured format

<https://www.irishrail.ie/travel-information/find-a-station?key=dublin+connolly>

Dublin Connolly

Live Departure Times

Type in your station:
 Go

Find Station Information

Type in your station:
 Go

[View Station List A-Z](#)



[View Larger Map](#)



[Open Street View](#)

General Information +

Parking & Transport Links +

Accessibility & Station Access +

Physical Stop Information – Dublin Connolly

General Information		-	
Location	5 minutes walk from city centre.		
Station Address	Dublin Connolly Amiens Street Dublin 1		
Contact Number	<p>Station: +353 (0)1 703 2358 or +353 (0)1 703 2359</p> <p>Alternatively you can contact our Call Centre on (01) 836 6222 (between 07:00hrs -19:00hrs, Monday to Friday and 08:00hrs - 18:00hrs Saturday, Sunday and Bank Holidays)</p> <p>Calling from outside Republic of Ireland +353 (0)1 836 6222</p>		
Credit Cards Facilities	Yes		
ATM	Yes, Located in the waiting area in the concourse		
Opening Hours	<p>Opening Hours:</p> <p>Monday to Saturday: 05:15hrs-00:30hrs</p> <p>Sunday: 07:00hrs-00:30hrs</p> <p>Booking Office Hours:</p> <p>Monday to Saturday: 06:30hrs-19:00hrs</p> <p>Sunday: 08:30hrs-19:00hrs</p>		
Toilets	Yes		
			<p>Wi-Fi & Internet Access</p> <p>Yes, for more info go to Wi-Fi and Power On-board Trains WIFI is also available in Madigans Bar. Please ask a member of staff for more information.</p> <p>Refreshments</p> <p>AMT Coffee (Coffee Kiosk & Snacks) Bean and Gone (Coffee Shop & Deli) DART Newsagents (at bottom of ramp to platform 6 and 7) Easons (Newsagents) Madigans Bar (Pub & Restaurant) Pharmacy Express OBriens (Coffee Shop & Deli) Starbucks (Coffee Shop) Vending Machines</p> <p>Phone Charging</p> <p>No</p> <p>Ticket Vending Machine(s)</p> <p>Yes</p> <p>Smart Card Enabled</p> <p>Yes</p> <p>Routes Serviced</p> <ul style="list-style-type: none"> • Dublin Connolly - Belfast Central • Dublin Connolly - Rosslare • Dublin Connolly - Sligo • Dublin - Dundalk commuter • Dublin - Maynooth, Longford and M3 Parkway • Grand Canal Dock and Dublin Heuston - Portlaoise • DART and Dublin Commuter

Physical Stop Information – Dublin Connolly

Parking & Transport Links

Car Park Details	<ul style="list-style-type: none"> Customers please be advised that payment for car parking will be cash only from 1st March for machines at the station. Customers wishing to pay by card can do so by using the APCOA app or at apcoaconnect.ie Due to building works, space in Connolly car park will also be significantly reduced for the foreseeable future Weekly and monthly tickets will not be sold from 16th March 2020. <p>Access to car park travelling along North Quays, turn left at Jury's Hotel onto Mayor Street. Straight ahead through next junction to the end of the street leading onto Sheriff Street and entrance is straight ahead on the left hand bend.</p> <p>Operator = APCOA Operating Hours: 24hrs Disabled Parking: Yes Price: See Car Parking Charges</p>
	<p>Taxi (services and rank)</p> <p>Search: Eir PhonebookOnline Wheelchair Accessible Taxis: TFI Wheelchair Accessible Vehicle (WAV) Register Car Hire: GoCar Available</p>
	<p>Bus Services</p> <p>View services here on Dublinbus.ie</p>
	<p>Bikes</p> <p>Unsheltered bike parking available. Alternatively, bikelocker.ie offer 20 bicycle lockers to rent, for further information see bikelocker.ie or email rent@bikelocker.ie</p> <p>Number of bike spaces: 120</p>

Accessibility & Station Access

Ticket Office Access	<p>Escalator, lift or stairs from Amiens Street and from LUAS stop. Level access from car park. Via main concourse.</p>
Platform Access	<p>Level access to platforms 1, 2, 3 and 4 from ticket office. Ramp or stairs to platform 5. Lift or stairs to platforms 6 and 7. Via main ticket barrier</p> <p>Please mind the gap</p>
Accessible toilet	Yes
Wheelchair Availability	Yes
Ramp for Train Access	<p>Access for disabled or customers seeking assistance must be arranged prior to travel. For contact information please see our DART, Maynooth and Northern Commuter Accessibility Policy</p>
Ticket Office Loop System	Yes

Station info (STOP PLACE properties)

Amenities: FACILITIES, EQUIPMENT

```

<StopPlace version="any" id="uic:6000036">
  <validityConditions>
    <::: opening hours as day type
  </validityConditions>
  <Name lang="en">Dublin Connolly</Name>
  <Centroid>
    <Location>
      <gml:pos srsName="ITM">716531 734874</gml:pos>
    </Location>
  </Centroid>
  <PostalAddress version="any" id="6000036@address">
    <Street>Amiens Street</Street>
    <PostCode>Dublin 1</PostCode>
  </PostalAddress>
  <facilities>
    <SiteFacilitySet version="any" id="6000036@facilities">
      <AccessibilityInfoFacilityList>audioForHearingImpaired
        visualDisplays</AccessibilityInfoFacilityList>
      <AssistanceFacilityList>wheelchairUse</AssistanceFacilityList>
      <AccessibilityToolList>wheelchair</AccessibilityToolList>
      <CateringFacilityList>bar coffeeShop foodVendingMachine snacks
        restaurant</CateringFacilityList>
      <MobilityFacilityList>suitableForWheelchairs</MobilityFacilityList>
      <PassengerCommsFacilityList>publicWifi telephone</PassengerCommsFacilityList>
      <RetailFacilityList>hygieneHealthBeauty</RetailFacilityList>
      <SafetyFacilityList>mobileCoverage staffed</SafetyFacilityList>
      <SanitaryFacilityList>toilet wheelChairAccessToilet</SanitaryFacilityList>
      <TicketingFacilityList>ticketMachines ticketOffice</TicketingFacilityList>
      <TicketingServiceFacilityList>purchase refund renewal exchange
        reservations</TicketingServiceFacilityList>
      <HireFacilityList>carHire taxi</HireFacilityList>
      <MoneyFacilityList>cashMachine</MoneyFacilityList>
      <ParkingFacilityList>carPark motorcyclePark cyclePark</ParkingFacilityList>
      <Staffing>fullTime</Staffing>
    </SiteFacilitySet>
  </facilities>
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    <OperatorRef version="any" ref="uicShortOperator:IR"/>
    <ContactDetails>
      <Phone>+35317032358</Phone>
    </ContactDetails>
  </OperatingOrganisationView>

```

```

    <levels>
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        <Name>Concourse level</Name>
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      </Level>
      <Level version="any" id="6000036@down1">
        <Name>Platform 6 and 7 level</Name>
        <AllAreasWheelchairAccessible>true</AllAreasWheelchairAccessible>
      </Level>
    </levels>

    <placeEquipments>
      <PassengerInformationEquipment version="any" id="6000036@pie">
        <PassengerInformationFacilityList>passengerInformationDisplay
          </PassengerInformationFacilityList>
        <AccessibilityInfoFacilityList>audioInformation
          visualDisplays</AccessibilityInfoFacilityList>
      </PassengerInformationEquipment>

      <AccessVehicleEquipment version="any" id="6000036@access_vehicle">
        <SuitableFor>wheelchair</SuitableFor>
        <AssistanceNeeded>rampRequired</AssistanceNeeded>
      </AccessVehicleEquipment>

      <CycleStorageEquipment version="any" id="6000036@cycle_storage@open">
        <NumberOfSpaces>120</NumberOfSpaces>
        <CycleStorageType>racks</CycleStorageType>
        <Covered>false</Covered>
      </CycleStorageEquipment>

      <CycleStorageEquipment version="any" id="6000036@cycle_storage@lockers">
        <infoLinks>
          <InfoLink typeOfInfoLink="info">http://www.bikelocker.ie</InfoLink>
        </infoLinks>
        <NumberOfSpaces>20</NumberOfSpaces>
        <CycleStorageType>other</CycleStorageType>
        <Covered>true</Covered>
      </CycleStorageEquipment>
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```

Station info (STOP PLACE properties) Platforms (QUAYS) Concourses, Ticketing Office etc

```

>      <PublicCode>CNLLY</PublicCode>
>      <StopPlaceType>railStation</StopPlaceType>
>      <mainTerminusForPlaces>
>          <TopographicPlaceRef versionRef="external"
>              ref="E0822013">Dublin</TopographicPlaceRef>
>      </mainTerminusForPlaces>
>      <quays>
>          <Quay version="any" id="6000036@1">
>              <Name>Platform 1</Name>
>              <LevelRef version="any" ref="6000036@concourse_level"/>
>              <Label>1</Label>
>              <QuayType>railPlatform</QuayType>
>          </Quay>
>          ::::: etc All Platforms

>          <Quay version="any" id="6000036@6">
>              <Name>Platform 6</Name>
>              <LevelRef version="any" ref="6000036@down1"/>
>              <Label>6</Label>
>              <QuayType>railPlatform</QuayType>
>              <ParentQuayRef version="any" ref="6000036@6And7"/>
>          </Quay>
>          <Quay version="any" id="6000036@7">
>              <Name>Platform 7</Name>
>              <Label>7</Label>
>              <QuayType>railPlatform</QuayType>
>              <ParentQuayRef version="any" ref="6000036@6And7"/>
>          </Quay>
>          <Quay version="any" id="6000036@taxi">
>              <Name>Station Taxi Rank</Name>
>              <QuayType>taxiStand</QuayType>
>          </Quay>
>      </quays>

```

```

>          <accessSpaces>
>              <AccessSpace version="any" id="6000036@concourse">
>                  <Name>Main Concourse</Name>
>                  <equipmentPlaces>
>                      <EquipmentPlace version="any" id="6000036@concourse@waiting">
>                          <Name>Waiting ARea</Name>
>                          <placeEquipments>
>                              <MoneyService version="any" id="6000036@concourse@waiting">
>                                  <Description>Located in the waiting area in the concourse</Description>
>                                  <ServiceList>cashMachine</ServiceList>
>                              </MoneyService>
>                          </placeEquipments>
>                      </EquipmentPlace>
>                  </equipmentPlaces>
>              </AccessSpace>
>              <AccessSpace version="any" id="6000036@ticket_office">
>                  <validityConditions>
>                      ::::: etc Validity condition for opening hours
>                  </validityConditions>
>                  <Name>Booking Office</Name>
>                  <localServices>
>                      <TicketingService version="any" id="6000036@ticket_office">
>                          <TicketingServiceList>purchase refund reservations renewal
>                          exchange</TicketingServiceList>
>                          <TicketCounterService>true</TicketCounterService>
>                          <PaymentMethods>cashAndCard</PaymentMethods>
>                      </TicketingService>
>                  </localServices>
>                  </AccessSpace>
>              </accessSpaces>

```

Station info (STOP PLACE properties) VALIDITY CONDITION

```

➤   <StopPlace version="any" id="uic:6000036">
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➤       <AvailabilityCondition version="any" id="uic:6000036">
➤         <dayTypes>
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➤               </PropertyOfDay>
➤             </properties>
➤             <timebands>
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➤                 <EndTime>00:30:00</EndTime>
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➤               </Timeband>
➤             </timebands>
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➤             <Name>Sunday 08:30hrs:19:00hrs</Name>
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➤             </timebands>
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➤         </dayTypes>
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```

```

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➤             <properties>
➤               <PropertyOfDay>
➤                 <DaysOfWeek>Sunday</DaysOfWeek>
➤               </PropertyOfDay>
➤             </properties>
➤             <timebands>
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➤                 <EndTime>19:00:00</EndTime>
➤               </Timeband>
➤             </timebands>
➤           </DayType>
➤         </dayTypes>
➤       </AvailabilityCondition>
➤     </validityConditions>
➤   <Name>Booking Office</Name>

```

Station info (STOP PLACE properties) Accessibility & Guidance (NAVIGATION PATHs), Parking

```

>     <accesses>
>       <Access version="any" id="6000036@city_centre">
>         <Name>Five minutes from city centre</Name>
>         <WalkTransferDuration>
>           <DefaultDuration>PT5M</DefaultDuration>
>         </WalkTransferDuration>
>         <BothWays>true</BothWays>
>         <From>
>           <PlaceRef versionRef="external" ref="E0822013"/>
>         </From>
>         <To>
>           <PlaceRef version="any" ref="uic:6000036"/>
>         </To>
>       </Access>
>     </accesses>
>     <navigationPaths>
>       <NavigationPath version="any" id="hall+1">
>         <Name>Ticket Office Concourse to Platform 1</Name>
>         <Description>Level access to platform 1 via main ticket barrier</Description>
>         <From>
>           <PlaceRef xsi:type="AccessSpaceRefStructure" version="any"
>             ref="6000036@concourse"/>
>         </From>
>         <To>
>           <PlaceRef xsi:type="QuayRefStructure" version="any" ref="6000036@1"/>
>         </To>
>         <AccessibilityAssessment version="any" id="hall+1">
>           <MobilityImpairedAccess>true</MobilityImpairedAccess>
>           <limitations>
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>               <WheelchairAccess>true</WheelchairAccess>
>               <StepFreeAccess>true</StepFreeAccess>
>               <LiftFreeAccess>true</LiftFreeAccess>
>             </AccessibilityLimitation>
>           </limitations>
>         </AccessibilityAssessment>
>         <AccessFeatureList>barrier</AccessFeatureList>
>       </NavigationPath>
>       ::::::ETC for all Navigation paths:::
>     </navigationPaths>

```

```

>     <parkings>
>       <Parking id="6000036@parking" version="any">
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>           <AvailabilityCondition version="any" id="6000036@parking">
>             <dayTypes>
>               <DayType version="any" id="6000036@parking@Everyday">
>                 <Name>Everyday 24H</Name>
>               </DayType>
>             </dayTypes>
>           </AvailabilityCondition>
>         </validityConditions>
>         <Name>Parking for Connolly Station</Name>
>         <Url>https://www.irishrail.ie/travel-information/station-car-parking</Url>
>         <OtherOrganisationRef versionRef="External" ref="APCOA"/>
>         <ParkingType>trainStationParking</ParkingType>
>         <ParkingLayout>multistorey</ParkingLayout>
>         <TotalCapacity>460</TotalCapacity>
>         <ParkingPaymentProcess>payAtMachineOnFootPriorToExit
>           payByMobileDevice</ParkingPaymentProcess>
>         <PaymentMethods>cash</PaymentMethods>
>         <vehicleEntrances>
>           <ParkingEntranceForVehicles id="6000036@parking@Sheriff_st" version="any">
>             <Description>Access to car park travelling along North Quays, turn left at Jury's Hotel onto Mayor Street. Straight ahead through next junction to the end of the street leading onto Sheriff Street and entrance is straight ahead on the left hand bend.</Description>
>             <PostalAddress id="6000036@parking@Sheriff_st" version="any">
>               <Street>Sheriff Street</Street>
>             </PostalAddress>
>           </ParkingEntranceForVehicles>
>         </vehicleEntrances>
>       </Parking>
>     </parkings>

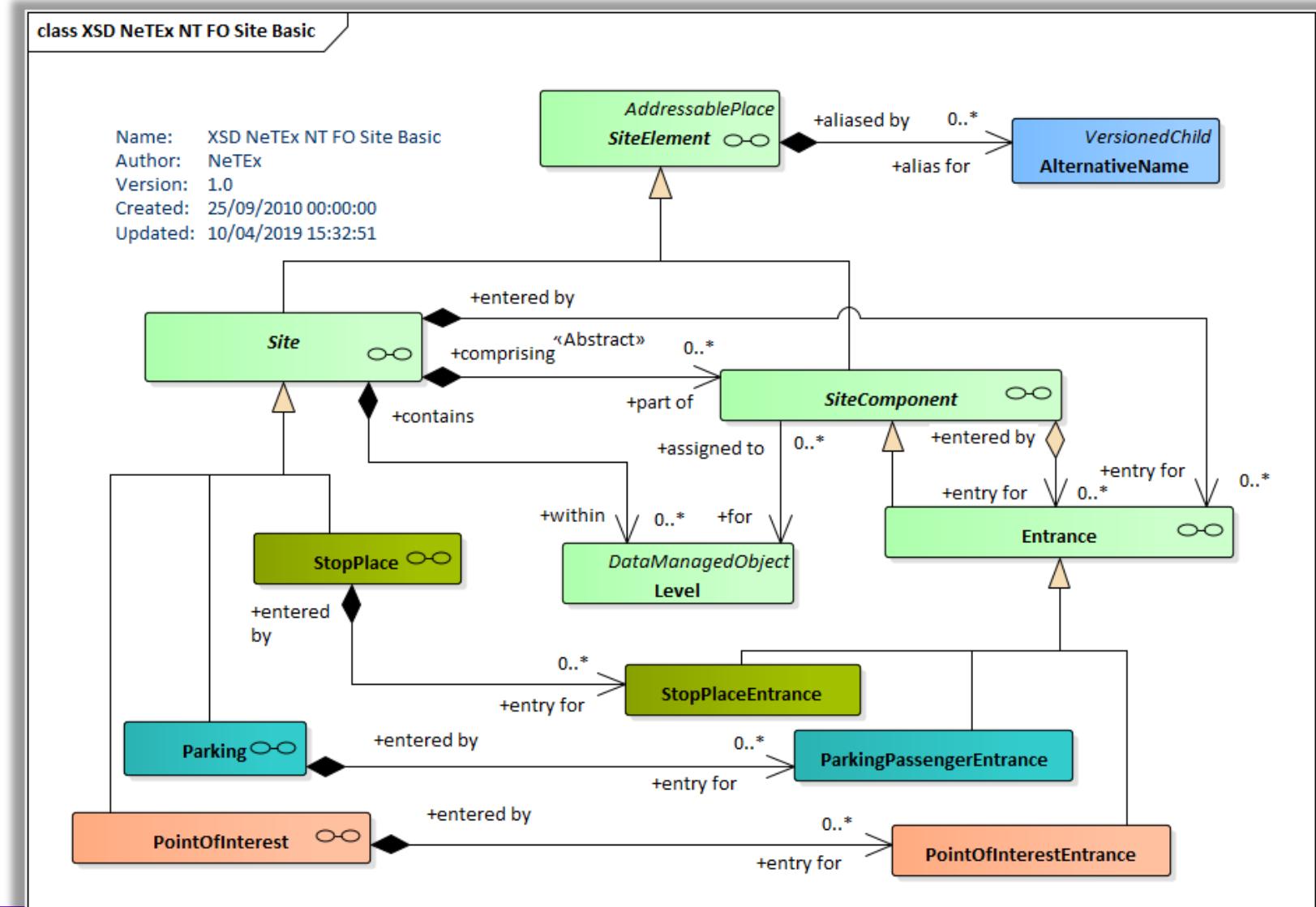
```

Physical Stop Information – Dublin Connolly

General Information		-	
Location	5 minutes walk from city centre.		
Station Address	Dublin Connolly Amiens Street Dublin 1		
Contact Number	<p>Station: +353 (0)1 703 2358 or +353 (0)1 703 2359</p> <p>Alternatively you can contact our Call Centre on (01) 836 6222 (between 07:00hrs -19:00hrs, Monday to Friday and 08:00hrs - 18:00hrs Saturday, Sunday and Bank Holidays)</p> <p>Calling from outside Republic of Ireland +353 (0)1 836 6222</p>		
Credit Cards Facilities	Yes		
ATM	Yes, Located in the waiting area in the concourse		
Opening Hours	<p>Opening Hours:</p> <p>Monday to Saturday: 05:15hrs-00:30hrs</p> <p>Sunday: 07:00hrs-00:30hrs</p> <p>Booking Office Hours:</p> <p>Monday to Saturday: 06:30hrs-19:00hrs</p> <p>Sunday: 08:30hrs-19:00hrs</p>		
Toilets	Yes		
			<p>Wi-Fi & Internet Access</p> <p>Yes, for more info go to Wi-Fi and Power On-board Trains WIFI is also available in Madigans Bar. Please ask a member of staff for more information.</p> <p>Refreshments</p> <p>AMT Coffee (Coffee Kiosk & Snacks) Bean and Gone (Coffee Shop & Deli) DART Newsagents (at bottom of ramp to platform 6 and 7) Easons (Newsagents) Madigans Bar (Pub & Restaurant) Pharmacy Express OBriens (Coffee Shop & Deli) Starbucks (Coffee Shop) Vending Machines</p> <p>Phone Charging</p> <p>No</p> <p>Ticket Vending Machine(s)</p> <p>Yes</p> <p>Smart Card Enabled</p> <p>Yes</p> <p>Routes Serviced</p> <ul style="list-style-type: none"> • Dublin Connolly - Belfast Central • Dublin Connolly - Rosslare • Dublin Connolly - Sligo • Dublin - Dundalk commuter • Dublin - Maynooth, Longford and M3 Parkway • Grand Canal Dock and Dublin Heuston - Portlaoise • DART and Dublin Commuter

NeTEx SITE MODEL

- ▶ **Different types of SITES**
 - STOP PLACE
 - POINT OF INTEREST
 - PARKING
- **Common features**
 - ENTRANCES
 - LEVELs
 - SPATIAL LOCATION
 - POSTAL ADDRESS



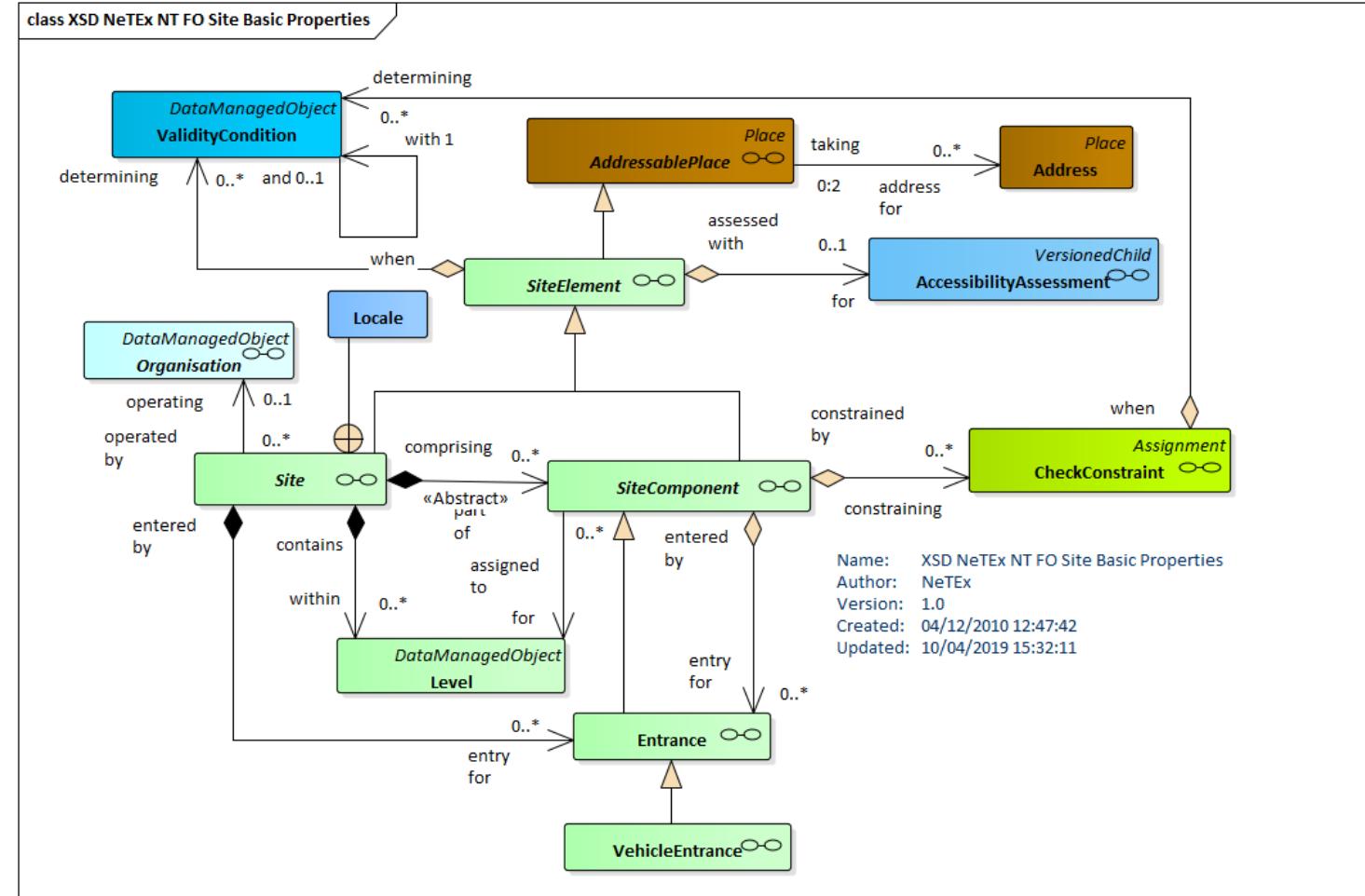
SITE MODEL

- Common features

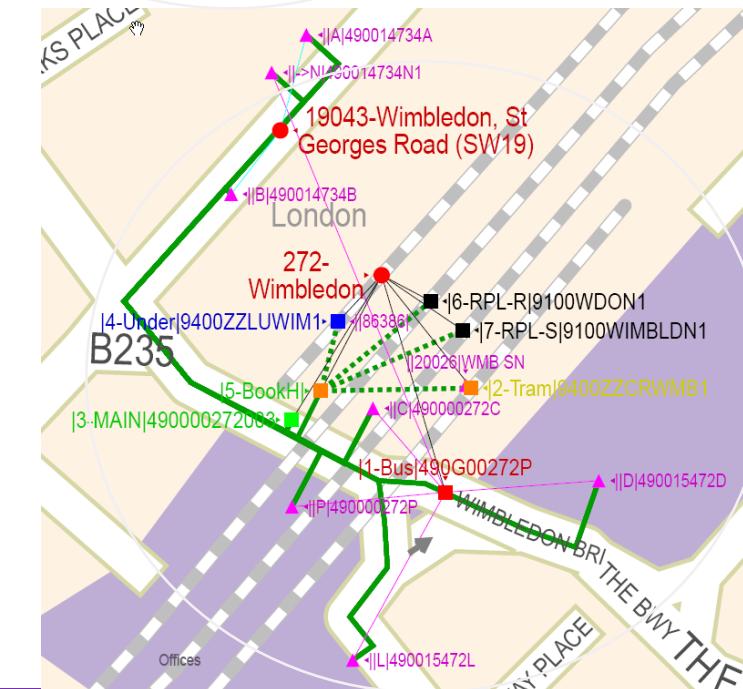
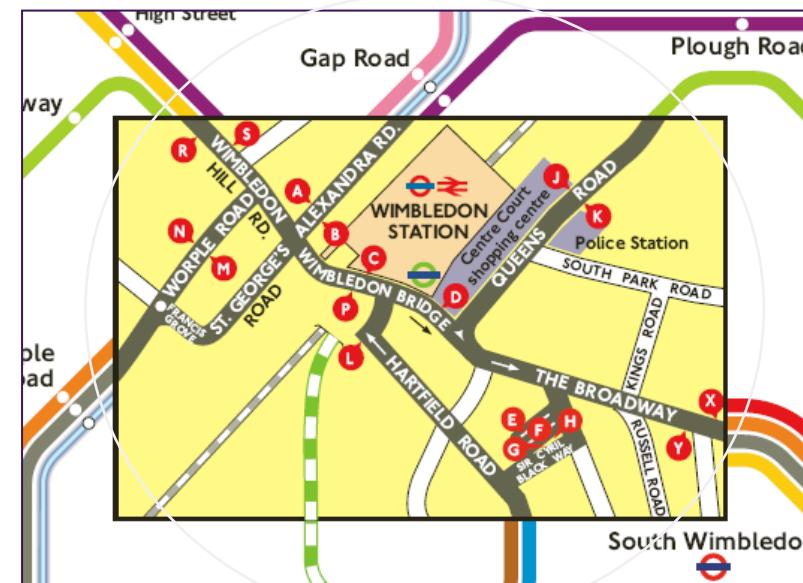
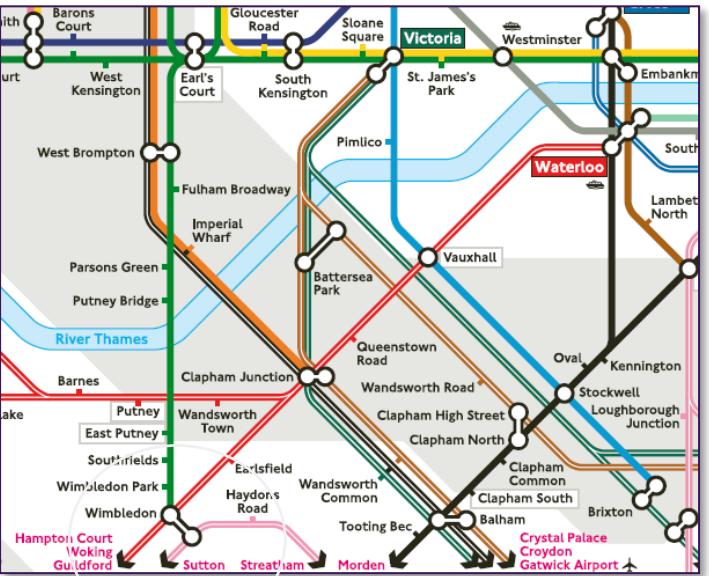
- ENTRANCES
- LEVELs
- SPATIAL LOCATION

- Additional features

- POSTAL ADDRESS
- FACILITIES
- LOCALE (Timezone, language)
- EQUIPMENT
- ACCESSIBILITY
- NAVIGATION PATHS
- CHECK CONSTRAINTs
(Expected Bottlenecks & Delays)



Complex Site Example

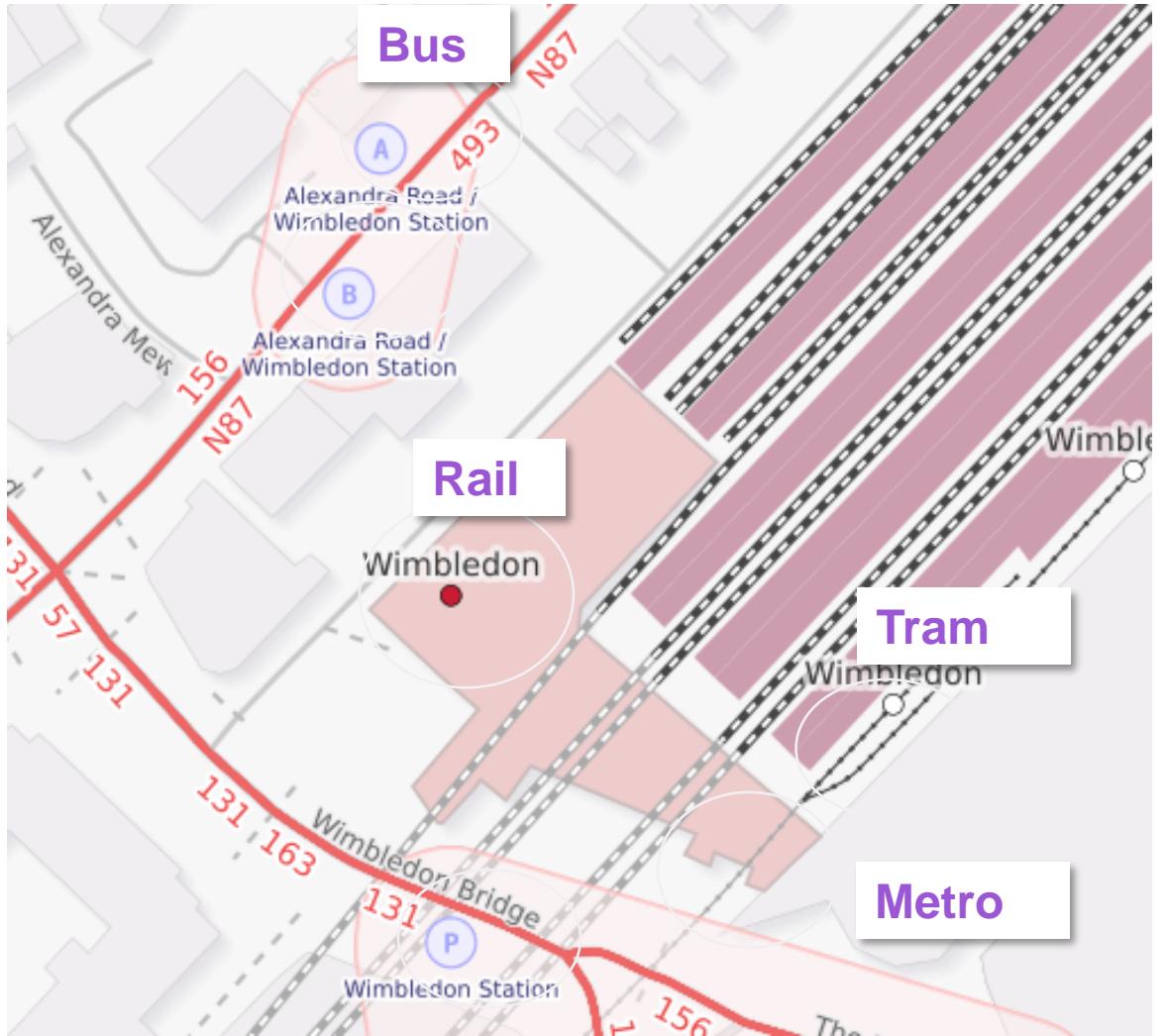
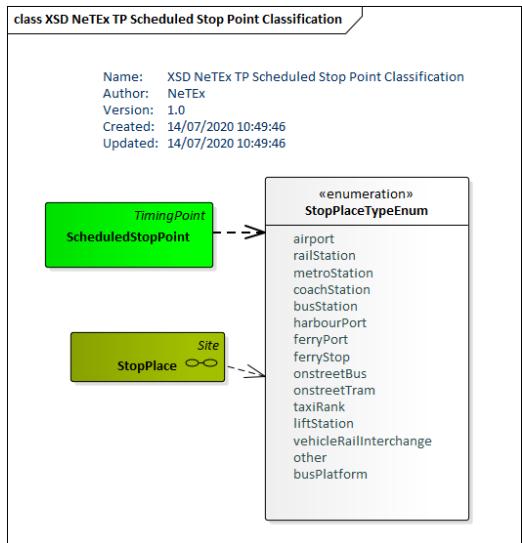


► Wimbledon Station

- Rail - Multiplatform
- Metro
- Tram
- Bus

Timetable view

► As SCHEDULED STOP POINTS



Access

► Entrances, Lifts, Stairs

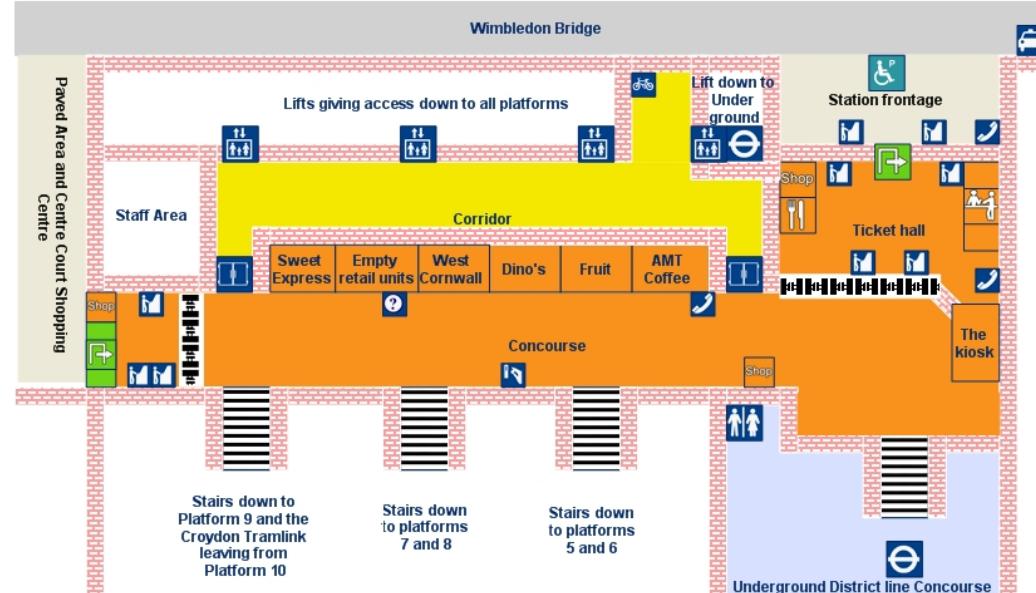


Lift

- The lift car dimensions are sufficient for a wheelchair user and their companion.
- The lift has audible announcements.
- There is an emergency alarm button in easy reach for all users.



This is a map of Wimbledon Station, containing clickable icons that you can navigate by using your mouse or the tab key allowing you to access information about the objects in this station.



- Platforms 7 and 8 Stairs
- Number of Steps: 13,13
- The steps have handrails.



Ticket Gates

- Accessible ticket gates are not automatic but staff will check tickets by hand.



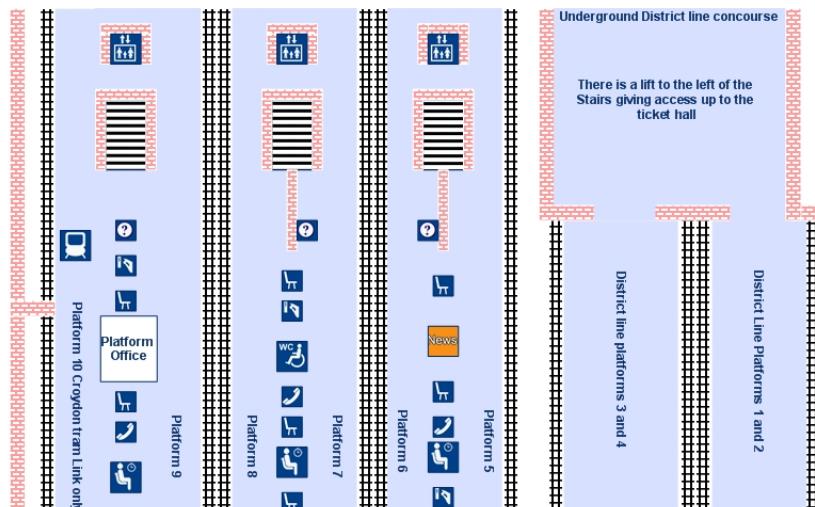
There are unisex accessible toilet facilities available.

The main entrance doors of the toilet are not automatic.

The entrance door to the toilet opens in.

- The toilets are kept locked.
- The toilets require a RADAR Key.
- There is an assistance alarm provided.
- There is a large cubicle available.
- There are no baby change facilities available.

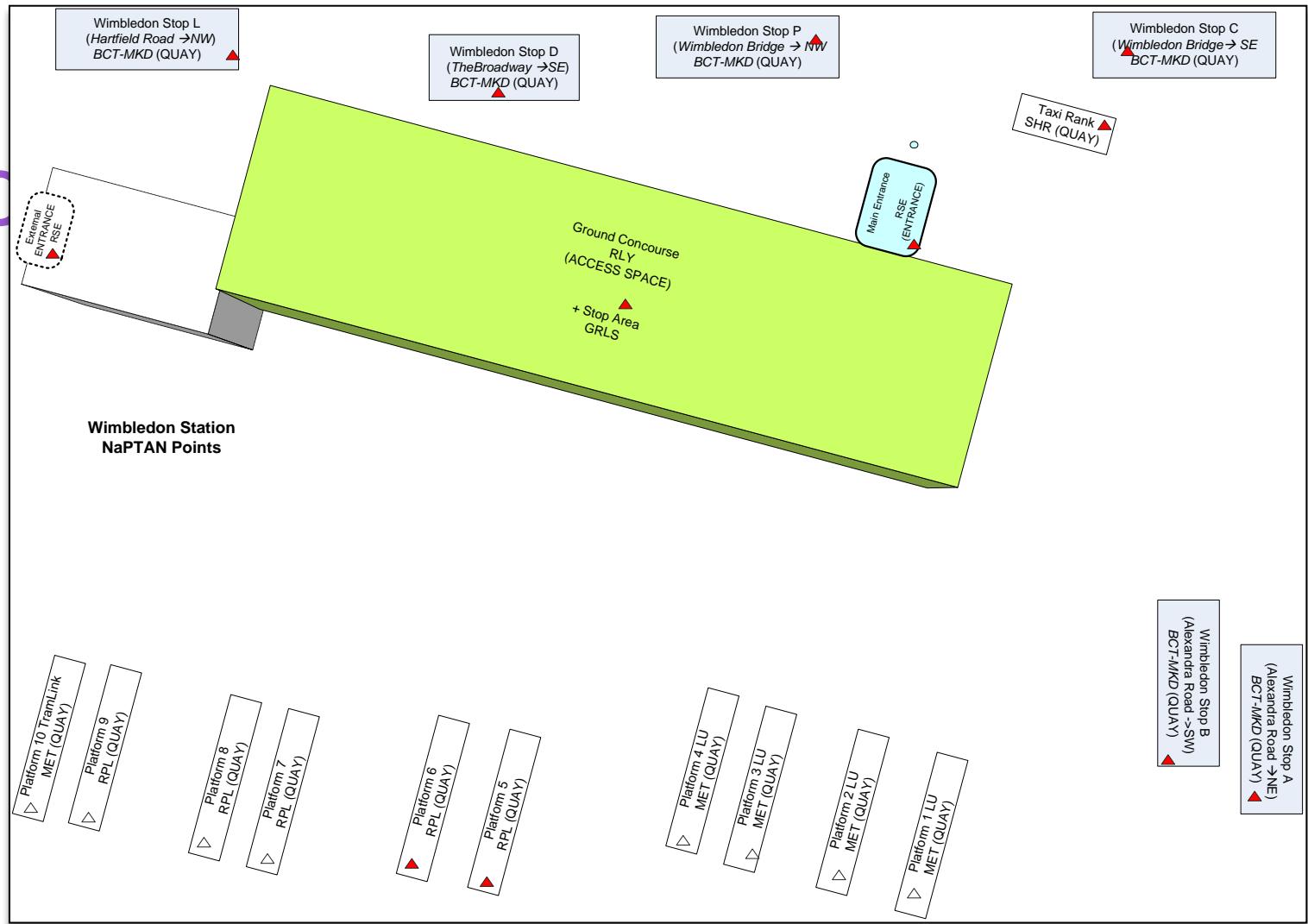
This is a map of Wimbledon Station, containing clickable icons that you can navigate by using your mouse or the tab key allowing you to access information about the objects in this station.



There is a lift to the left of the Stairs giving access up to the ticket hall

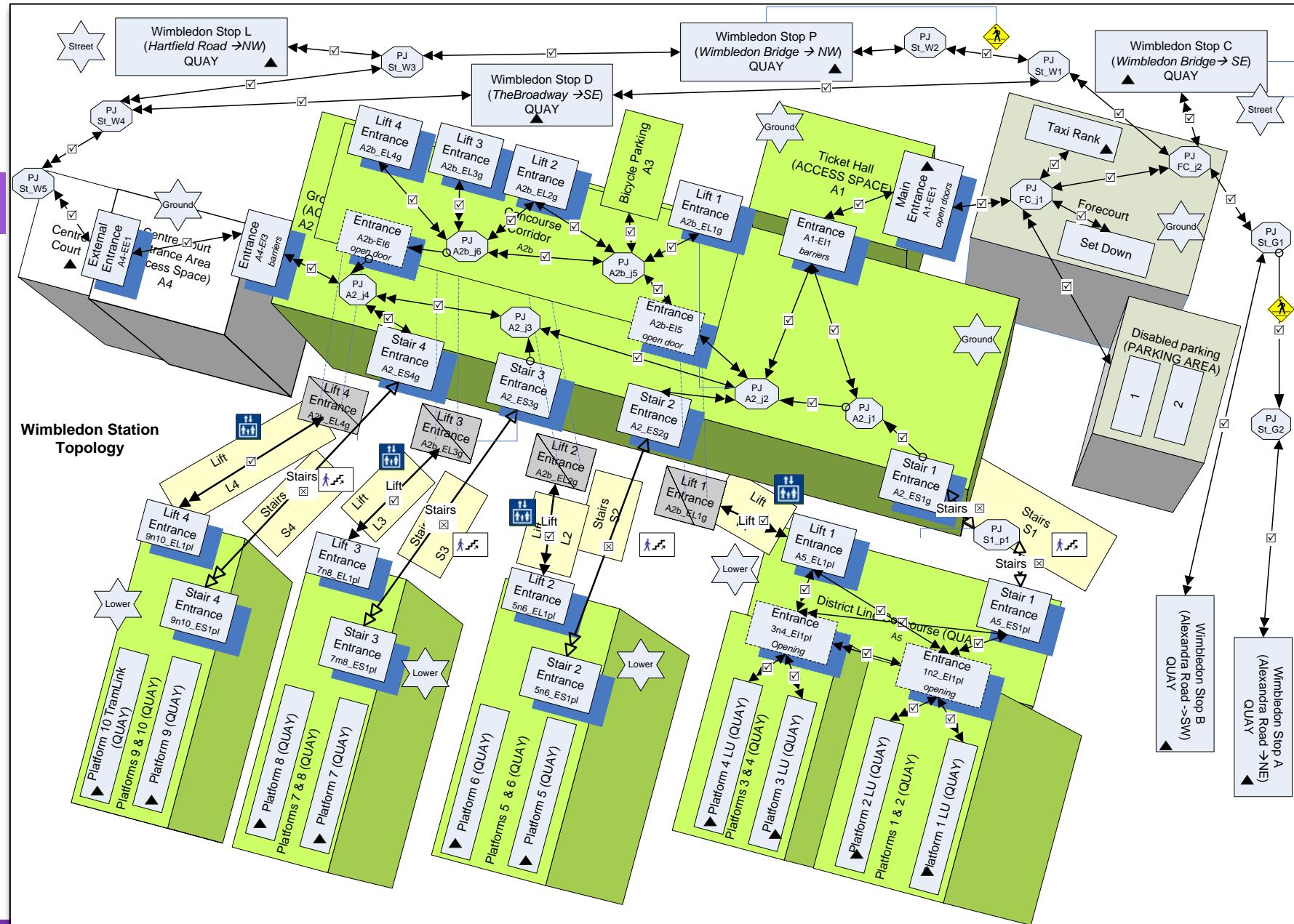
Minimum Physical Description

- ▶ For Assignment
 - ▶ STOP PLACE
 - ▶ QUAYs (Platforms)
- ▶ For Navigation
 - ▶ ENTRANCES



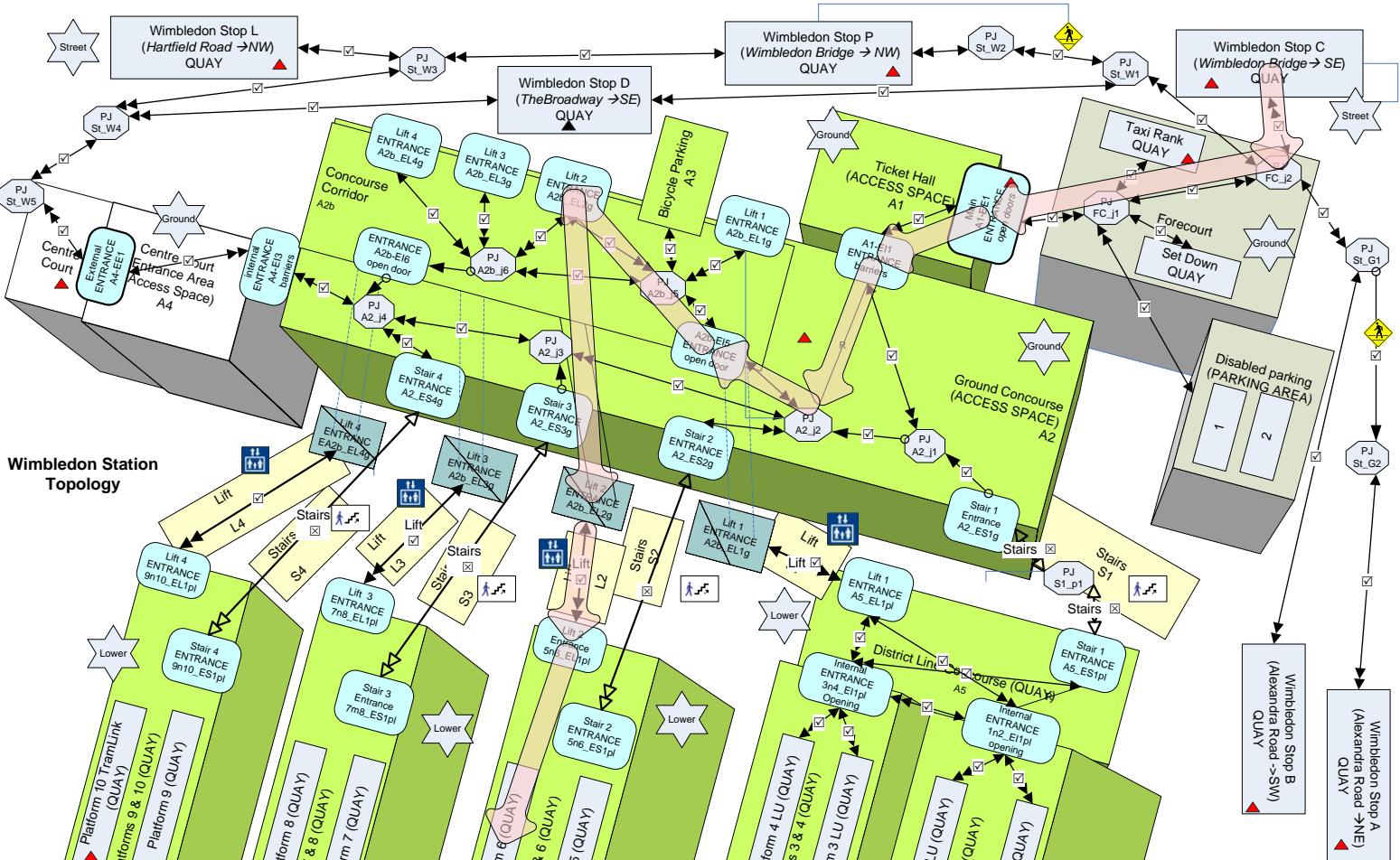
Full physical description

- ▶ PATH LINKS
- ▶ EQUIPMENT
- ▶ CHECK CONSTRAINTS



Navigation / Guidance

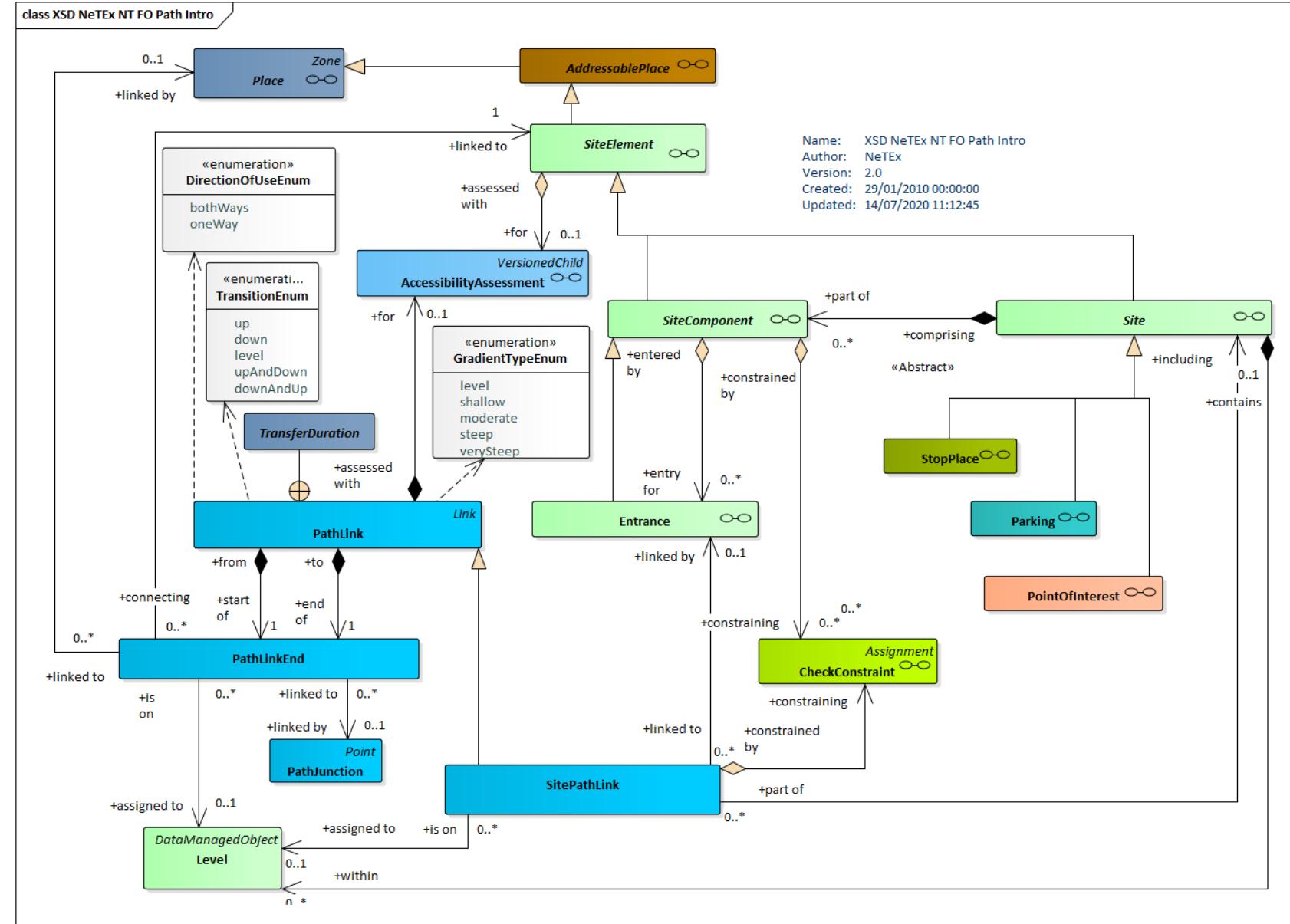
- ▶ NAVIGATION PATH
- ▶ May be declared statically or computed dynamically to meet specific requirements



Wimbledon Station Topology

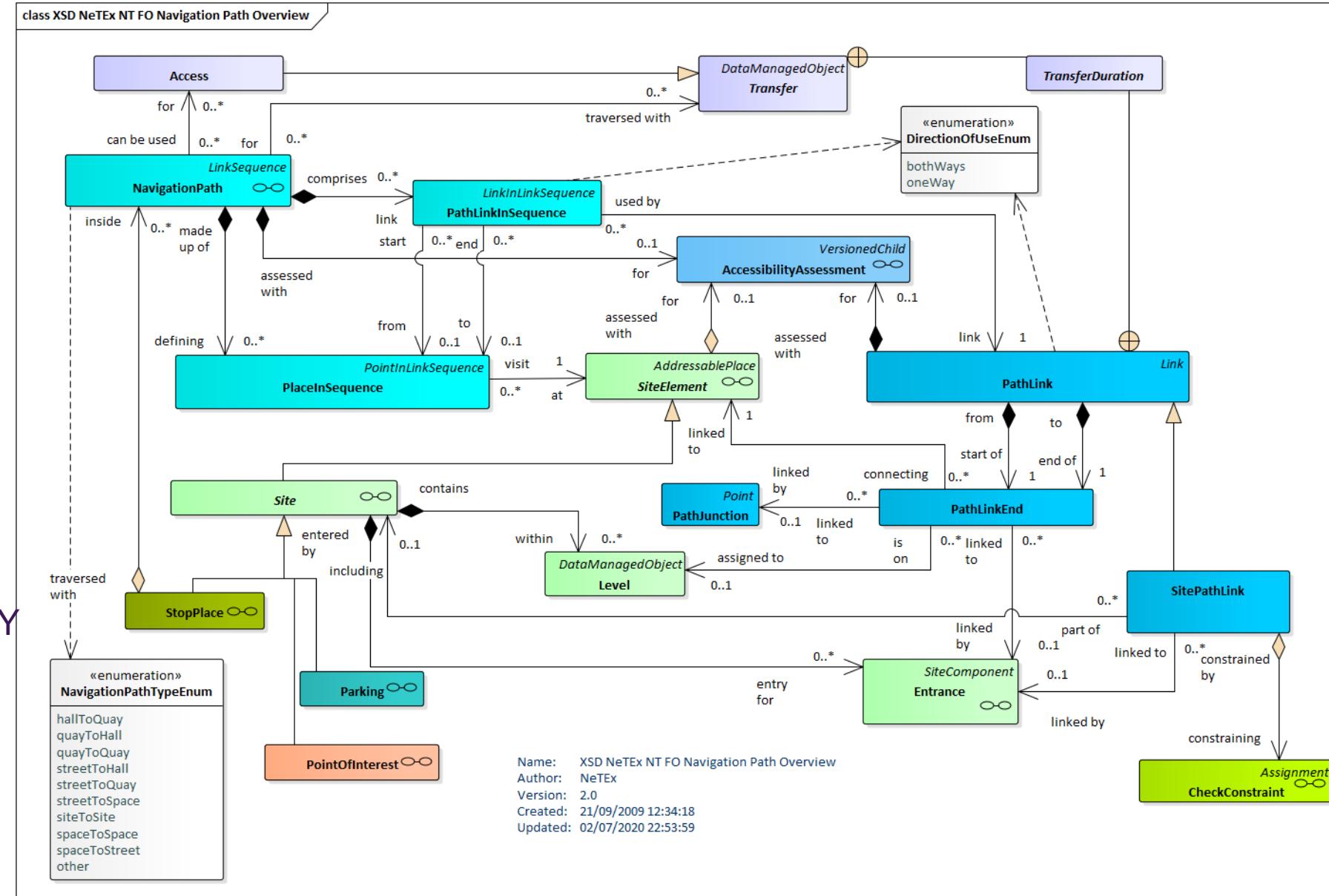
Site – PATH LINKS

- ▶ Step by step transitions
 - ENTRANCE
 - ACCESS SPACE
 - QUAY, etc
- Attributed for
 - Guidance
 - SIGN EQUIPMENT etc
 - Accessibility
 - ACCESSIBILITY ASSESSMENT
 - Bottlenecks/Delays
 - CHECK CONSTRAINT



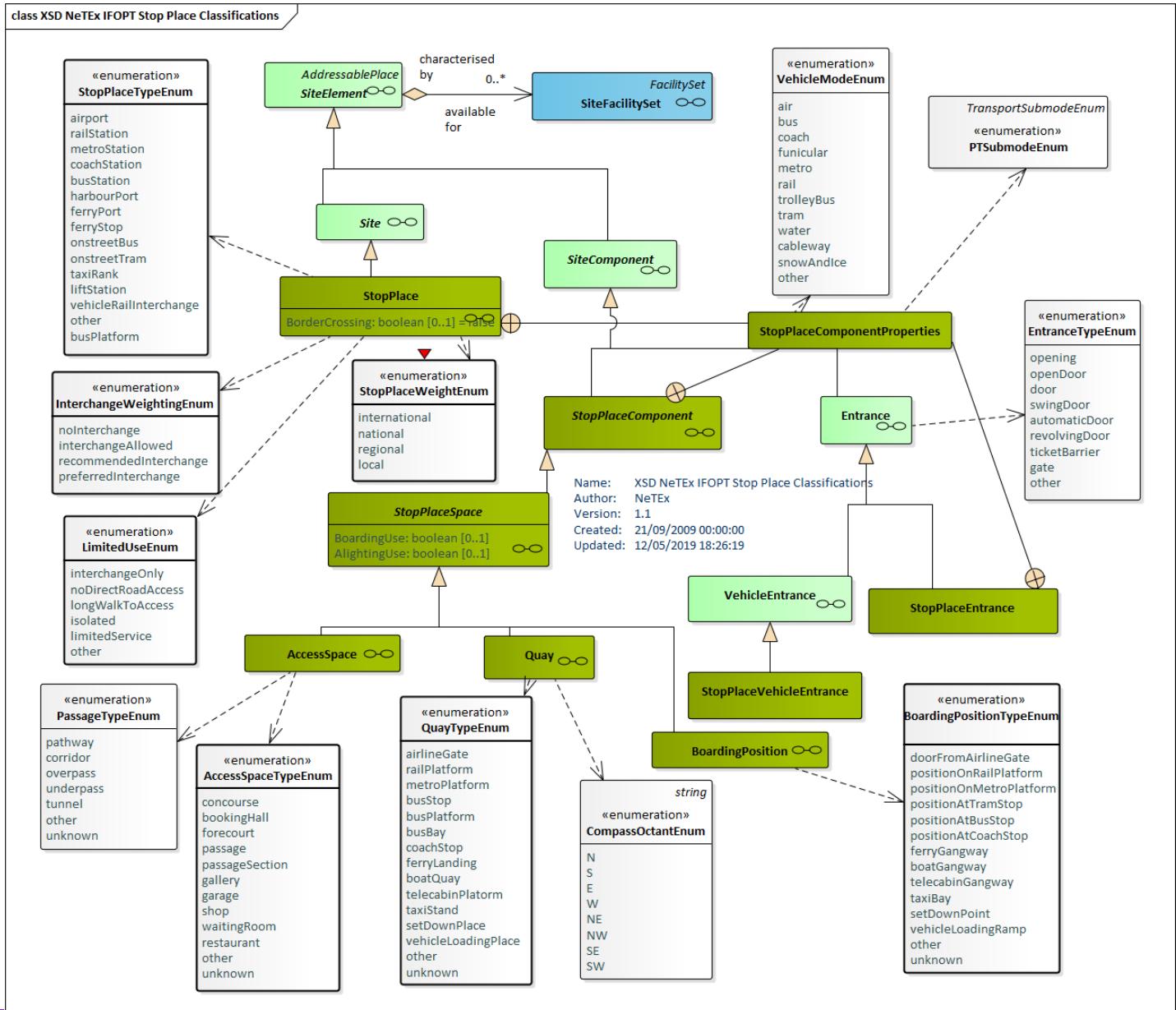
Site – NAVIGATION PATH

- ▶ Sequence of PATH LINKs between nodes,
e.g.
 - ENTRANCE to QUAY
 - HALL to QUAY
 - Can be attributed for
 - ACCESSIBILITY



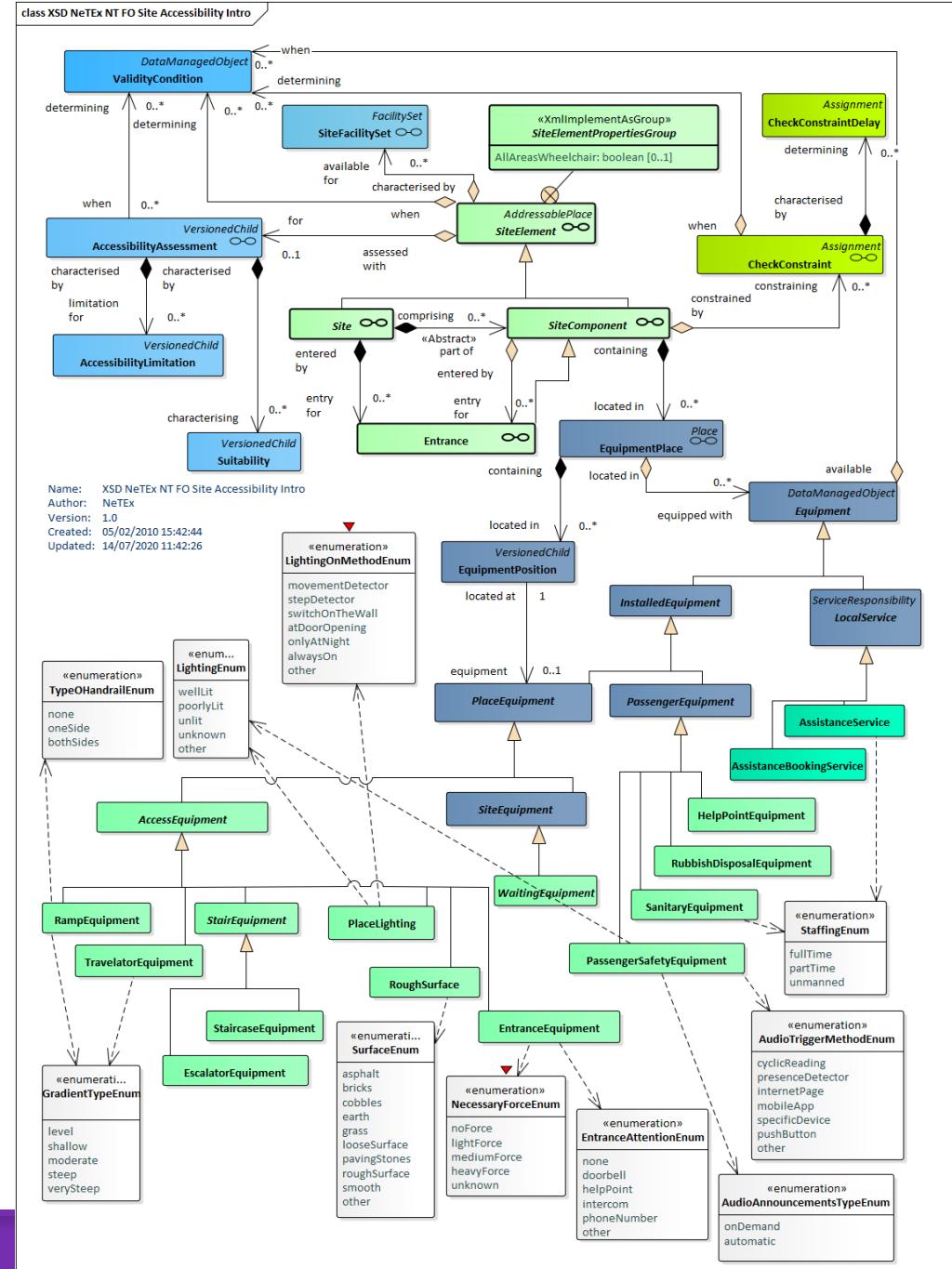
STOP PLACE Nodes

- ▶ Standardized classifications



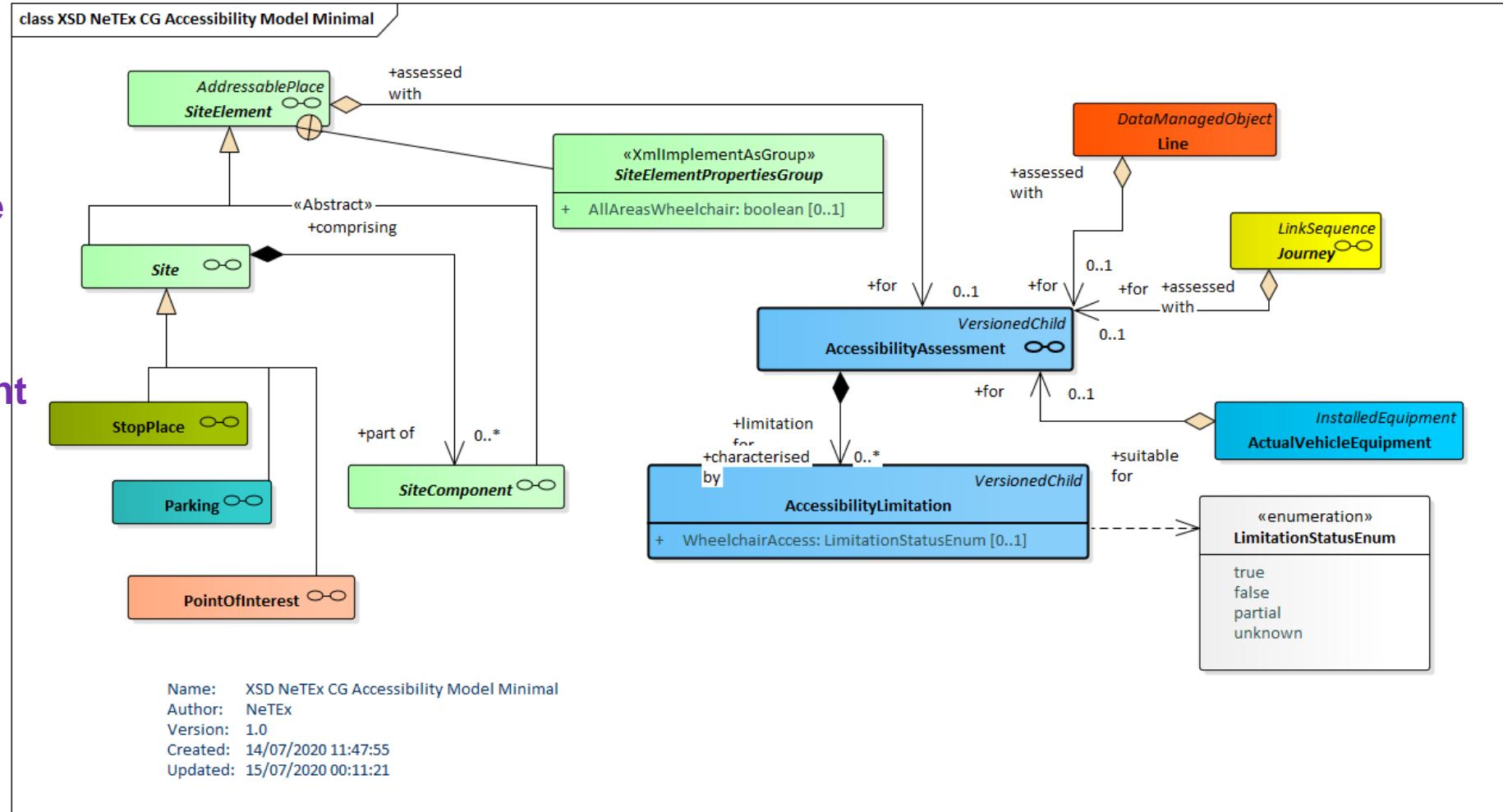
SITE ACCESSIBILITY

- ▶ Nodes and links can be assigned
 - **ACCESSIBILITY ASSESSMENT**
 - Overall assessment
 - Limitations for different needs
 - **EQUIPMENT relating to Guidance & Accessibility**
 - Lifts, Stairs, Ramps
 - Surfaces
 - Toilets
 - Assistance Services
 - Signage
 - etc



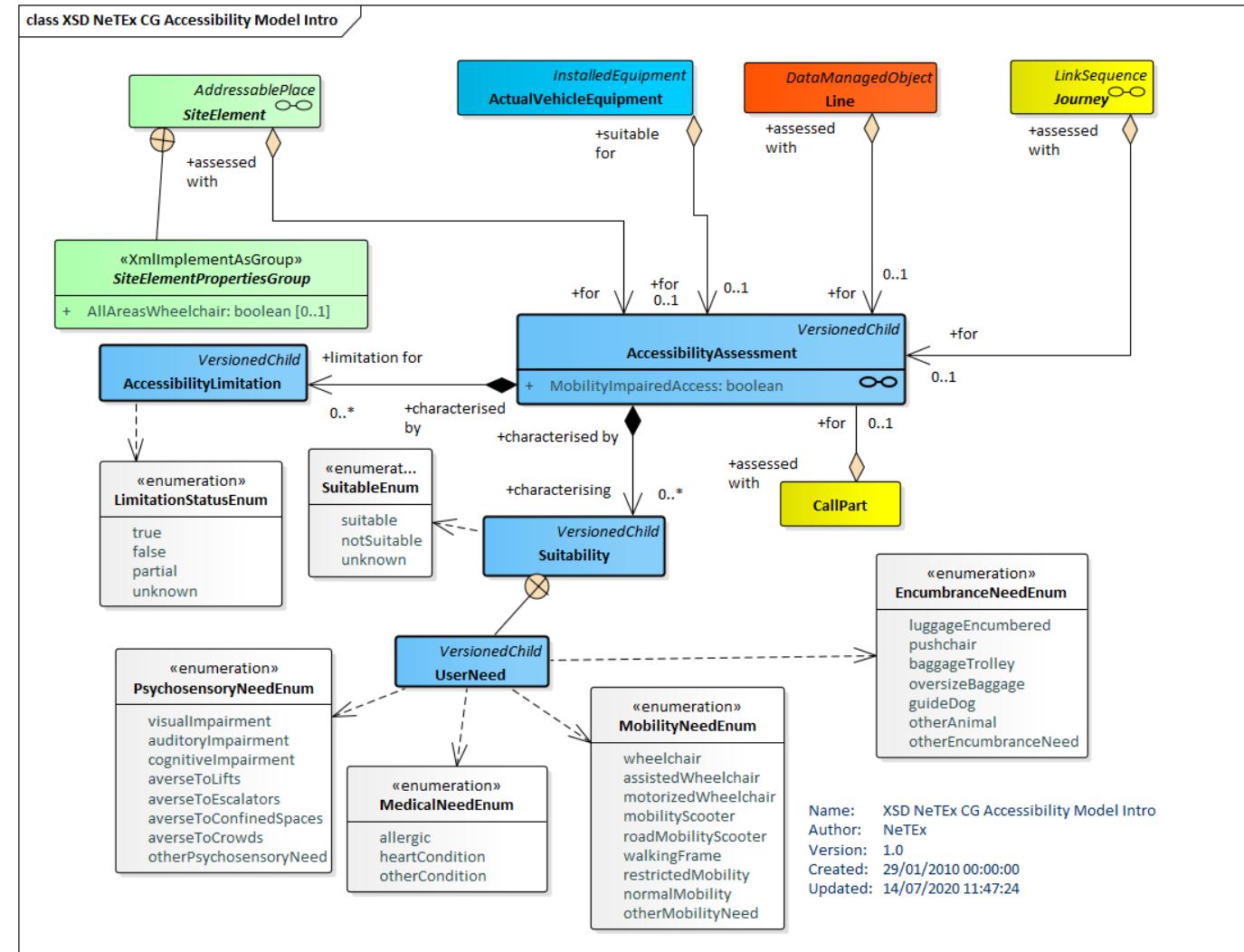
Minimum ACCESSIBILITY

- ▶ Often only basic attribution is available
- ▶ Site Nodes and links can be assigned
 - ▶ Overall assessment
 - **ACCESSIBILITY ASSESSMENT**
 - Detailed Limitations for different needs



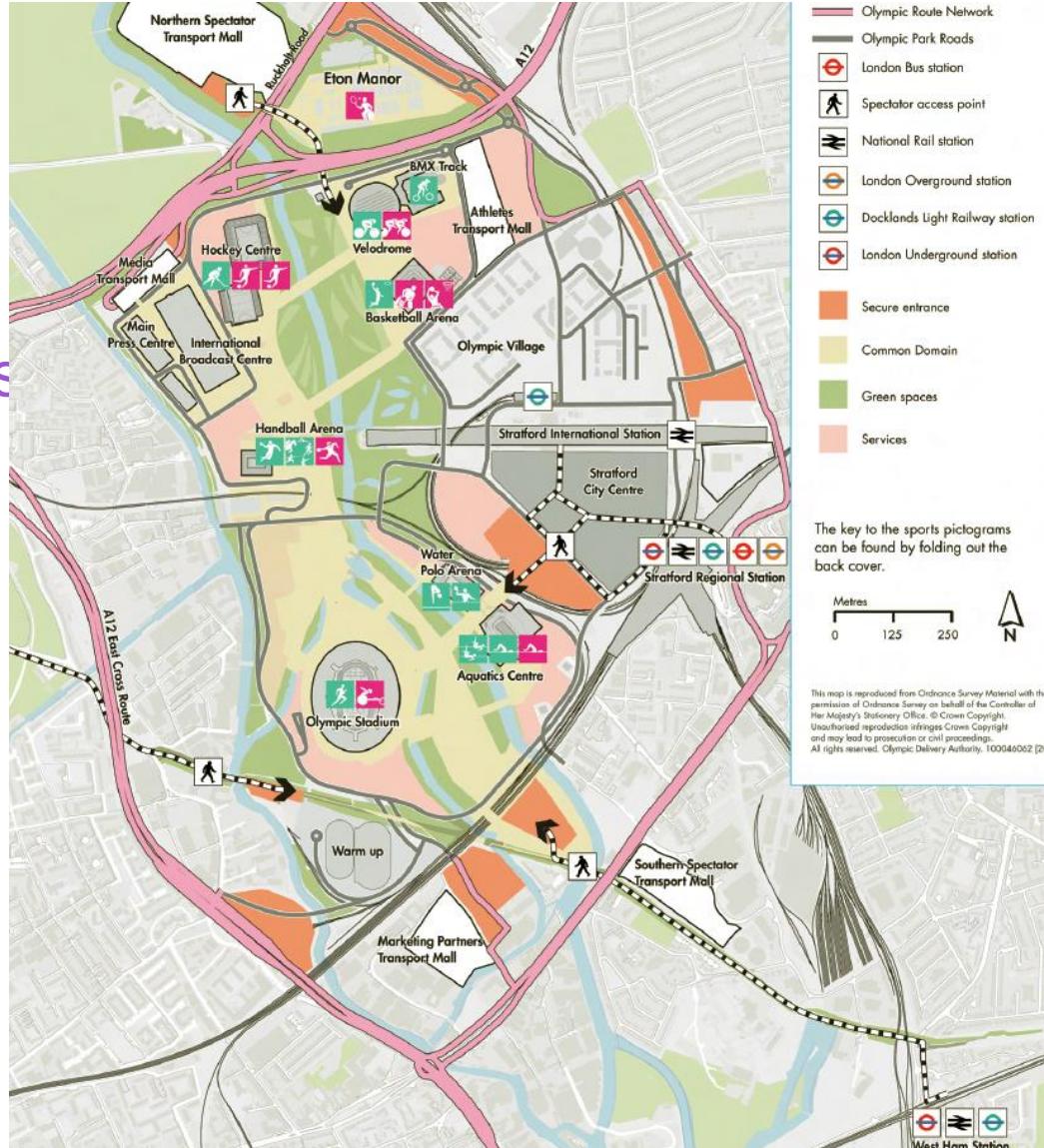
ACCESSIBILITY Model

- ▶ Uniform model for SITES, VEHICLES, LINEs, JOURNEYs, CALLs etc
 - ACCESSIBILITY ASSESSMENT
 - Overall wheelchair assessment
 - Limitations for different needs
 - Can be populated to different degrees
 - Basic
 - Detailed
 - Can be used in queries
 - “Find me step free access routes”



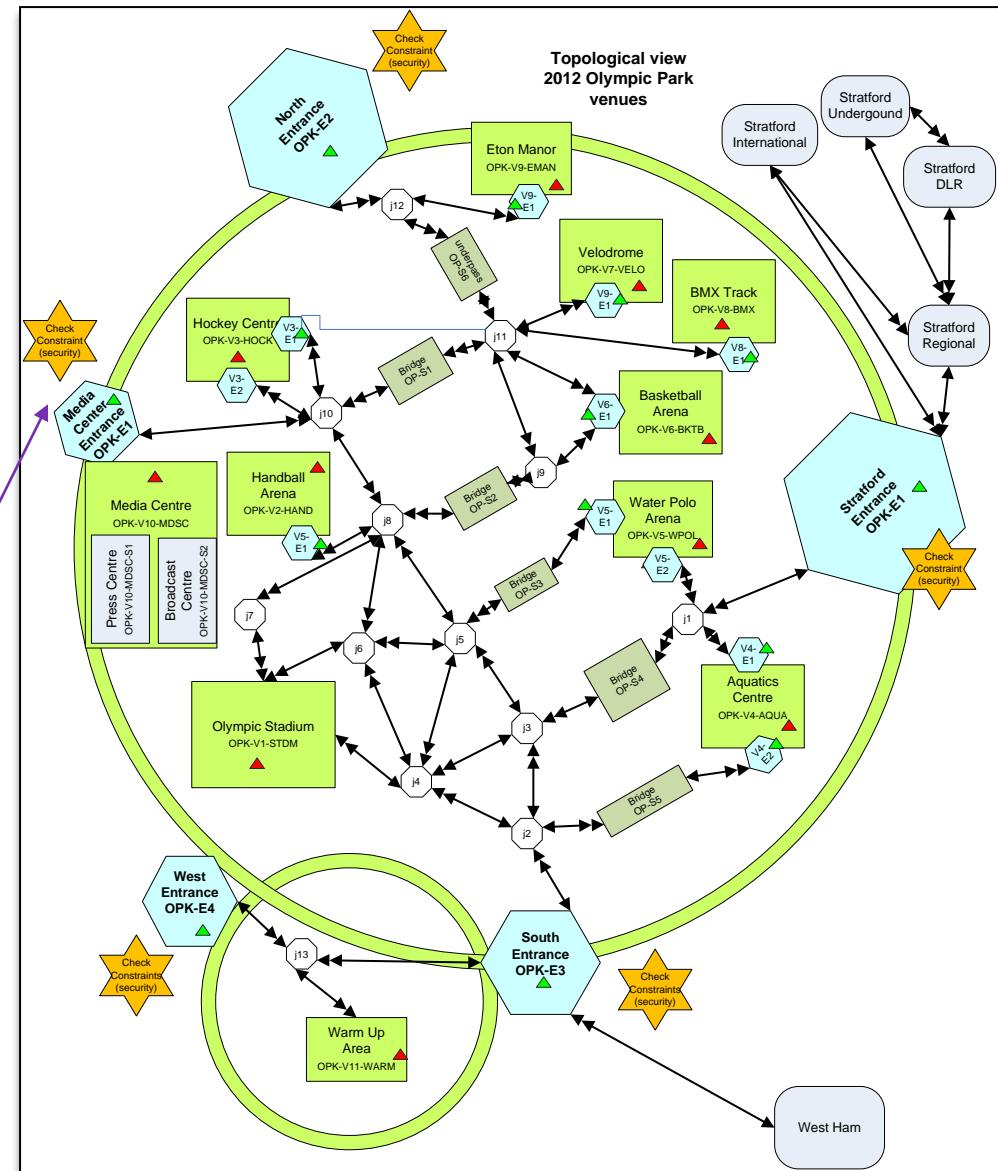
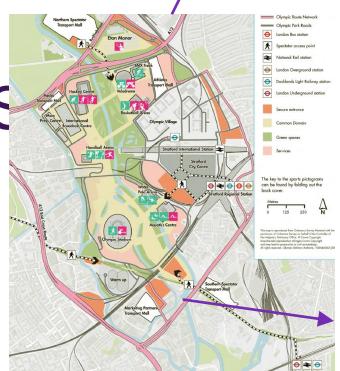
SITEs -Points of Interest

- ▶ Site Model can be used to describe any site
 - Entrances
 - Equipment
 - Paths
 - Accessibility
- ▶ E.g. 2011 Olympic Park



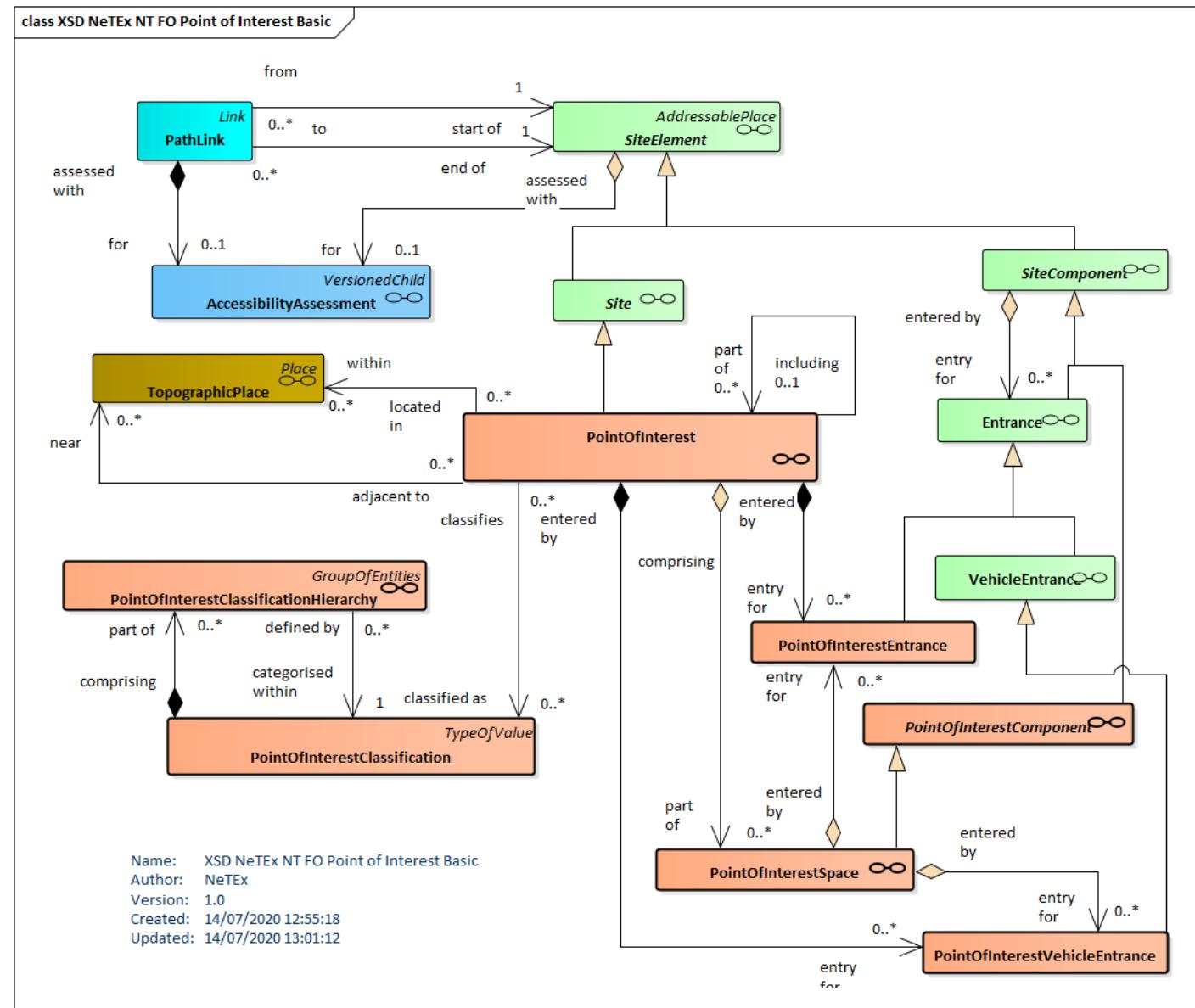
POI example 2011 Olympic site in NeTEx

- ▶ Public Transport Gateways
 - Stations STOP PLACE
 - Bus Stops STOP PLACE
- ▶ Site
 - Park (1) POINT OF INTEREST
 - Venues POINTs OF INTEREST
 - ENTRANCES
- ▶ Path
 - ▶ PATH LINKS, NAVIGATION PATHS
- ▶ Expected delays for security etc
 - ▶ CHECK CONSTRAINTS



POINT OF INTEREST Model

- ▶ Similar to SITE
 - ENTRANCES
 - (Pedestrian, Vehicle)
 - SPACES
 - PATHS, LEVELS, ACCESSIBILITY etc
- ▶ Also has Classification



Thank You

Further information
<http://netex.ie>

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