

National NeTEx Profile

2. Mapping Irish PT data



Overview of Mappings
August 2020
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Using NeTEx for Irish data



- ▶ Organisations
 - OPERATORS (NOC)
- ▶ Stops
 - TRANSPORT ADMINISTRATIVE ZONES (NPTG)
 - TOPOGRAPHIC PLACES (NPTG)
 - SCHEDULED STOP POINTs / STOP AREAs / STOP PLACES /QUAYs
 - ❑ Bus, Metro (NaPTAN)
 - ❑ Rail UIC / TIPLOC
 - ACCESSIBILITY ASSESSMENT (PTIMS-UD Rating)
- ▶ Timetables
 - LINEs (VDV45, GTFS, Hafas)
 - ROUTEs (VDV452, HaFas)
 - VEHICLE JOURNEYS, (VDV45, GTFS, Hafas)
 - PASSING TIMES (VDV45, GTFS, Hafas)
 - INTERCHANGES (VDV45, GTFS, Hafas)



Operators

National Operator codes record mapping

NOC column	NeTEx	NeTEx attribute
Identifier	<i>Operator</i>	<i>#id</i>
NO Code		<i><TradingName></i>
Name		<i><Name></i>
Display (passenger information)		<i><ShortName></i>
AVM number		Not used
Company		<i><LegalName></i>
Operating branch		<i>Reference to a TYPE OF ORGANISATION</i>
Branch offices		<i><ContactPerson>, <Address></i>
VAT ID exists		Not used
Data supplier		<i><ownResponsibilitySets><ResponsibilitySetRef></i>
Last modified		<i>#changed (attribute)</i>



Operator data

- ▶ Central list of byus and coach operators with codes etc. currently a spreadsheet
- ▶ If different from GTFS code will need to add a mapping
- ▶ For each operator create a NeTEx OPERATOR
- ▶ For each operator create a NeTEx RESPONSIBILITY SET (may be delegated)



Operator example

NOC column	Value
Identifier	609
NO Code	Mc Ginley Coach Travel Ltd
Name	Mc Ginley Coach Travel
Display)	McGinley
AVM number	
Company	Mc Ginley Coach Travel Ltd
Operating branch	13 - 609
Branch offices	Mc Ginley Coach Travel Ltd - McGinly Magheroarty Gortahork Letterkenny Co Donegal
VAT ID exists	
Data supplier	MCG
Last modified	19/06/2018 12:08

OP

```

➤ <Operator version="any" id="609" changed="2018-06-19T12:08:00">
➤   <Name>Mc Ginley Coach Travel</Name>
➤   <ShortName>McGinley</ShortName>
➤   <LegalName>Mc Ginley Coach Travel Ltd</LegalName>
➤   <TradingName>Mc Ginley Coach Travel Ltd</TradingName>
➤   <typesOfOrganisation>
➤     <TypeOfOrganisationRef version="any" ref="13-609"/>
➤   </typesOfOrganisation>
➤   <ownResponsibilitySets>
➤     <ResponsibilitySetRef version="any" ref="MCG"/>
➤   </ownResponsibilitySets>
➤   <Address version="any" id="609">
➤     <AddressLine1>Magheroarty</AddressLine1>
➤     <Town>Letterkenny</Town>
➤     <Suburb>Gortahork</Suburb>
➤     <Province>Co.Donegal</Province>
➤   </Address>
➤   <PrimaryMode>coach</PrimaryMode>
➤ </Operator>

```



```

➤ <ResponsibilitySet version="any" id="MCG">
➤   <Name>McGinleyCoachTravel</Name>
➤   <roles>
➤     <ResponsibilityRoleAssignment version="any" id="">
➤       <DataRoleType>creates</DataRoleType>
➤       <ResponsibleOrganisationRef version="any" ref="60MCG9"/>
➤     </ResponsibilityRoleAssignment>
➤   </roles>
➤ </ResponsibilitySet>

```



NPTG & NaPTAN

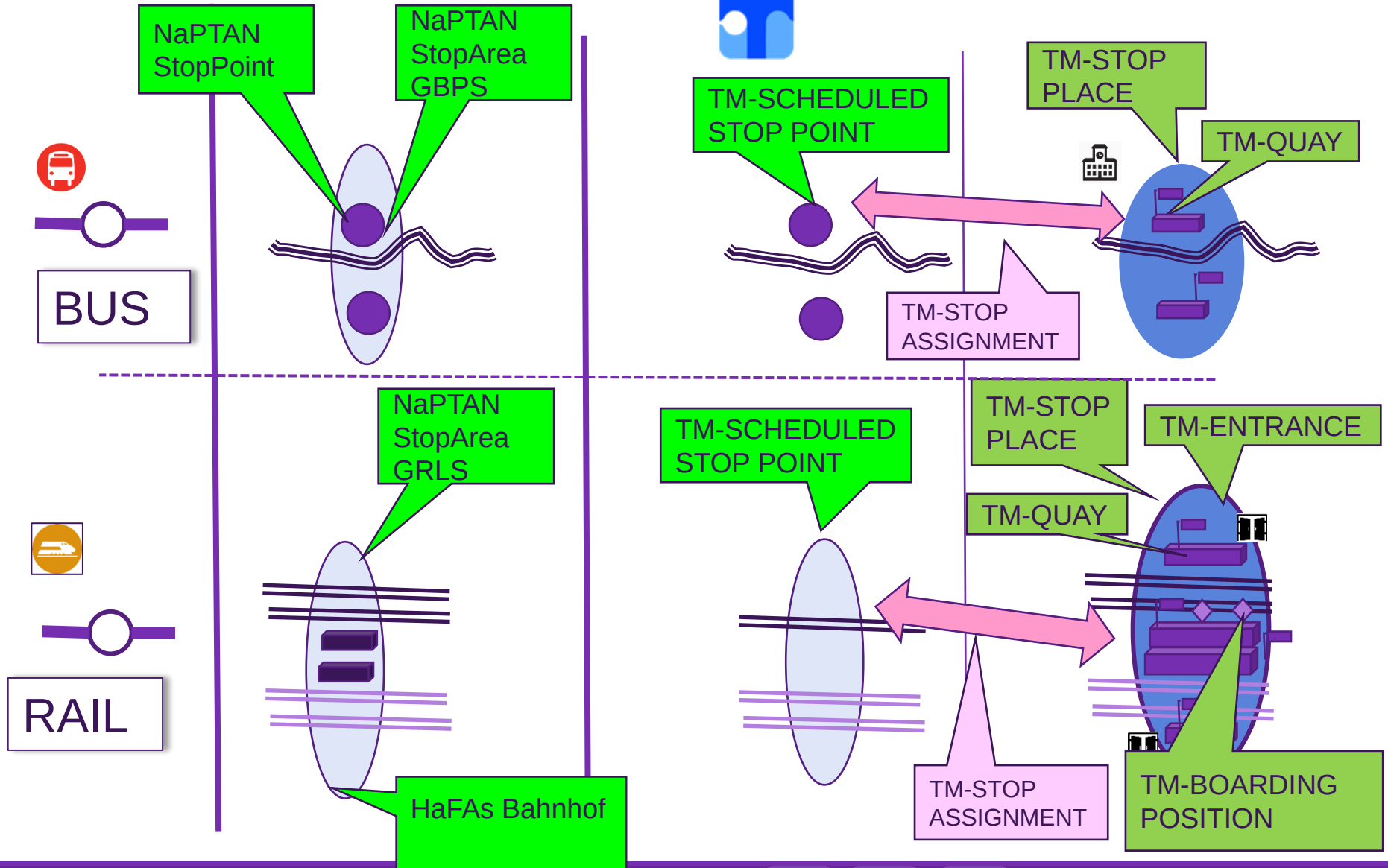
Key Equivalencies between IRISH NPTG/NaPTAN and NeTEx

Irish NPTG/ Naptan/TXC	Transmodel / NeTEx	Notes
<i>Nptg:AdminArea</i>	ADMINISTRATIVE ZONE + ORGANISATION PART	Link to any element using Responsibility
<i>Nptg:NptgLocality</i>	TOPOGRAPHICAL PLACE	
<i>Nptg:PlusBusZone</i>	FARE ZONE	Not used in Irish NPTG
<i>Naptan:StopPoint</i>	STOP PLACE + QUAY + ACCESSIBILITY	Assigned to SCHEDULED STOP POINT for TXC
<i>Naptan:StopArea</i>	STOP PLACE + (STOP PLACE ENTRANCE)	Assigned to SCHEDULED STOP POINT for TXC



Logical vs Physical Stop

- ▶ Transmodel v6.0 separates scheduled & physical stop concepts
- ▶ NaPTAN uses stop for both stop area and stop point
- ▶ For Rail, Irish NapTAN uses only StopArea for station.



NB Irish NaPTAN Bus & Rail differences

NeTEx element	Bus /Tram	Rail
STOP AREA	(NaPTAN StopArea (GBCS))	(NaPTAN StopArea)
SCHEDULED STOP POINT	NaPTAN Stop Point [BCS]	NaPTAN StopArea
STOP PLACE	NaPTAN StopArea ([BCS])	NaPTAN StopArea (GRLS)
STOP PLACE ENTRANCE	n/a	NaPTAN StopArea (GRLS)
QUAY	NaPTAN Stop Point (BCS)	(HAFAS gleise)





```
> <StopPlace id="naptStopArea:852G000052" responsibilitySetRef="nptgAdminArea:852"
created="2016-08-18T11:08:06" changed="2012008-18T11:08:06" version="1"8 >
>   <Name lang="en">Belcoo</Name>
>   <Centroid>
>     <Location>
>       <Longitude>-7.871715806</Longitude>
>       <Latitude>54.29618952</Latitude>
>       <gml:pos srsName="ITM">608351 838610</gml:pos>
>     </Location>
>   </Centroid>
>   <StopPlaceType>onstreetBus</StopPlaceType>
>   <quays>
>     <Quay id="naptStop:7000B6310001" version="11">
>       <Name lang="en">Belcoo</Name>
>       <ShortName lang="en">Belcoo</ShortName>
>       <Centroid>
>         <Location>
>           <Longitude>-7.87179252976785</Longitude>
>           <Latitude>54.296216555426</Latitude>
>           <gml:pos srsName="ITM">608346 838613</gml:pos>
>         </Location>
>       </Centroid>
>       <TransportMode>bus</TransportMode>
>       <PublicCode>631001</PublicCode>
>       <QuayType>busStop</QuayType>
>     </Quay>
>   </quays>
> </StopPlace>
```



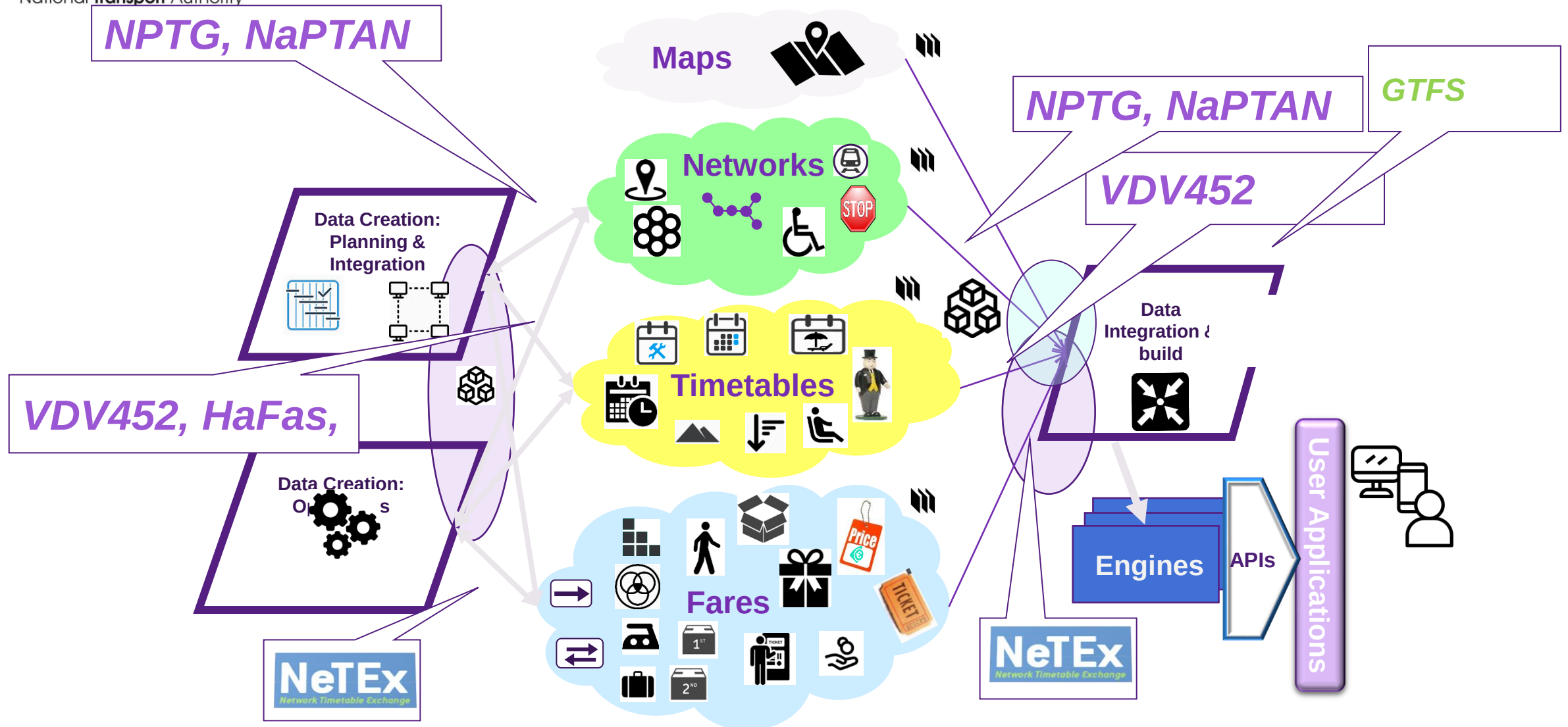
Mapping GTFS

Irish GTFS data

- GTFS data available for some operators / modes
 - Bus
 - Luas / Tram
- ▶ Systematic mapping available



Upstream / Downstream use of standards



Mapping GTFS records to NeTEx elements

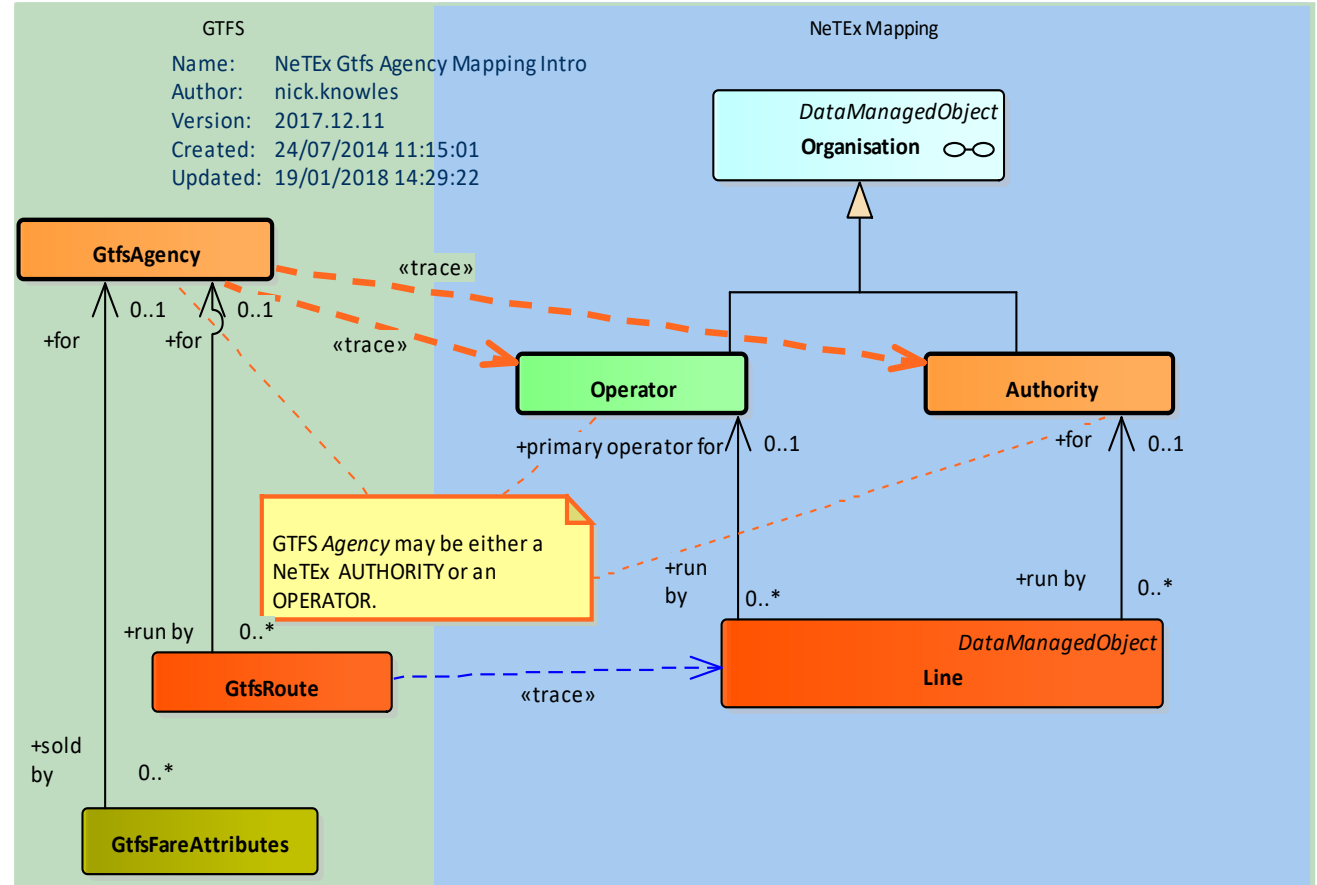
- ▶ Most elements are one-to-one with a specific NeTEx concrete element.
 - ❑ E.g. GTFS **route** → NeTEx LINE
 - NB NeTEx model uses inheritance & embedded groups, so UML diagram may show multiple elements
- ▶ Complex cases
 - ▶ GTFS **stops**
 - GTFS uses a single record for multiple concepts (Physical and logical stops)
 - NeTEx separates the concepts (STOP PLACE, QUAY, ENTRANCE, SCHEDULED STOP POINT etc)
 - ▶ GTFS **stop_times**
 - GTFS includes times and headings in record – no concept of SERVICE PATTERN or DESTINATION DISPLAY
 - NeTEx has separate POINT IN PATTERN , PASSING TIMES and DESTINATION DISPLAY
 - NB NeTEx CALL element gives an equivalent one-for one mapping
 - ▶ GTFS **transfers**
 - GTFS uses a single record for multiple concepts (physical proximity,, planned interchange)
 - NeTEx separates the concepts CONNECTION, INTERCHANGE, INTERCHANGE RULE etc)
 - ▶ GTFS **feed info**
 - GTFS uses a single record for multiple concepts (ownership, feed source, validity)
 - NeTEx separates the concepts DATA SOURCE, RESPONSIBILITY SET, VALIDITY CONDITION)



GTFS Example Mapping Agency Intro

Network

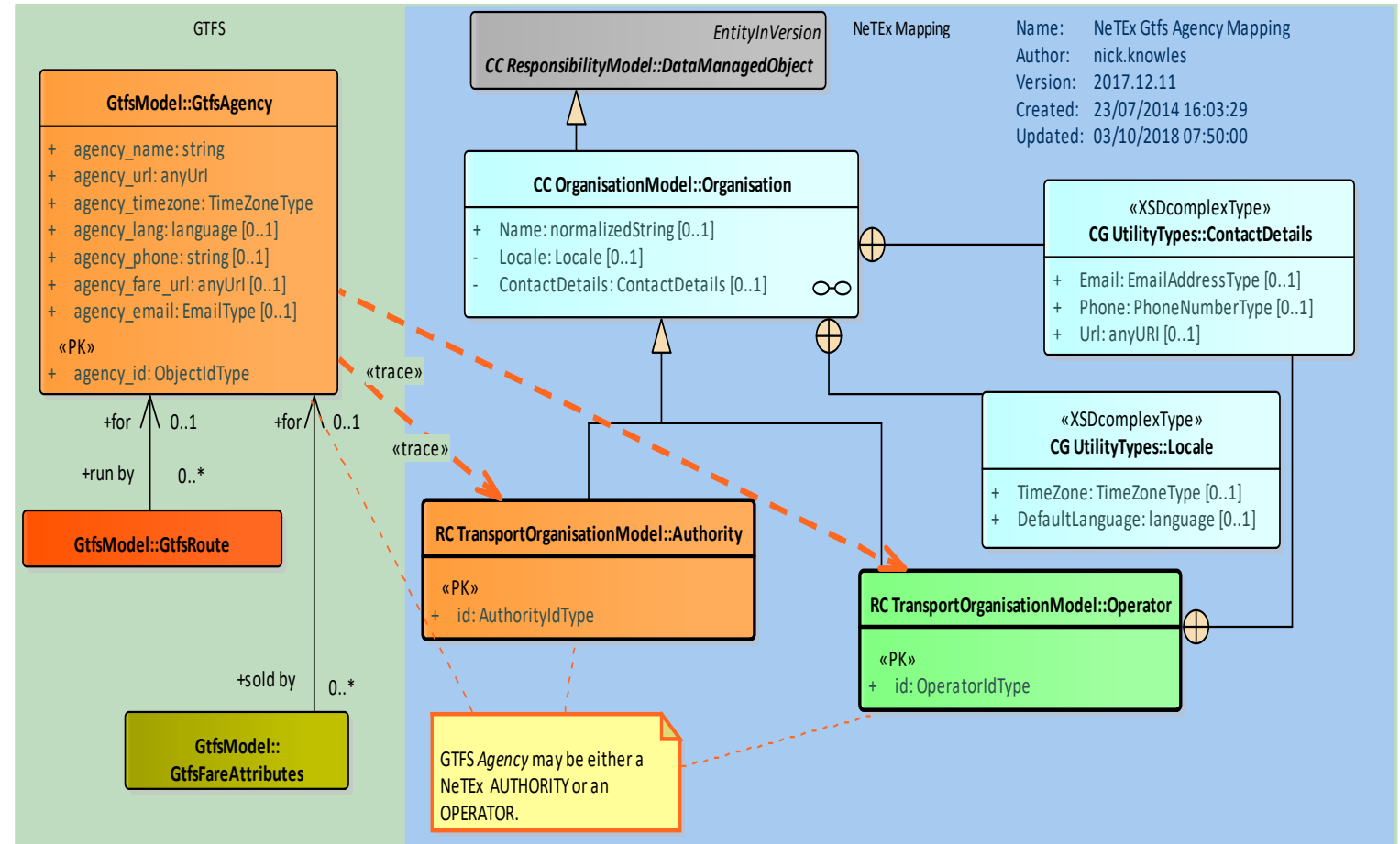
- **Agency** ➔ (OPERATOR or authority)



GTFS Example Mapping - Agency Details

Network

► **Agency** ➔ (OPERATOR or Authority)



Gtfs Agency Attribute mapping

GTFS record	GTFS Attribute	NeTEx element	NeTEx attribute	Type	Alt Text
agency	agency_id	Operator	id	OperatorIdType	
	agency_name		Name	MultilingualString	Y
	TimeZone		Timezone	xsd:string	
	agency_language		DefaultLanguage	xsd:lang	
	agency_phone		ContactDetails.Phone	PhoneNumber	Y
	email		ContactDetails. Email	Email	Y
	agency_url		ContactDetails. Url	xsd:anyURI	Y
	agency_fare_url		Keylist.gtfs_fare_url	xsd:string	



Example mapping of a GTFS Agency

agency_id,agency_name,agency_url,agency_timezone,agency_lang,agency_phone,agency_fare_url
10000,Transport For Ireland,http://transportforireland.ie,Irish Standard Time,en,1-800-300-604,http://transportforireland.ie/fares



```
<Operator version="any" id="10000">
  <keyList>
    <KeyValue typeOfKey="gtfs">
      <Key>gtfs_agency_fare_url</Key>
      <Value>http:// transportforireland.ie/fares</Value>
    </KeyValue>
  </keyList>
  <Name>Demo Transit Authority</Name>
  <Locale>
    <TimeZone>Irish Standard Time</TimeZone>
    <DefaultLanguage>en</DefaultLanguage>
  </Locale>
  <ContactDetails>
    <Phone> 1800 300 604</Phone>
    <Url>http://www.transportforireland.ie</Url>
  </ContactDetails>
</Operator>
```

GTFS record / NeTEx correspondences

GTFS record	Transmodel / NeTEx	Notes
agency	OPERATOR or AUTHORITY	
stops	SCHEDULED STOP POINT, STOP PLACE + QUAY	Complex mapping
transfer	CONNECTION SERVICEJOURNEY INTERCHANGE, INTERCHANGE RULE	Complex mapping
routes	LINE	
trips	SERVICE JOURNEY + DESTINATION DISPLAY	
stop_times	STOP POINT IN PATTERN + PASSING TIMES + DESTINATION DISPLAY &/ or CALL	Complex mapping
frequency	HEADWAY JOURNEY GROUP, RHYTHMICAL JOURNEY GROUP with TEMPLATE SERVICE JOURNEY	
calendar	DAY TYPE, DAY TYPE ASSIGNMENT	
calendar_dates	DAY TYPE ASSIGNMENT and OPERATING DAY	
shapes.txt	ROUTE LINK, LINK PROJECTION, LineString	
translations	ALTERNATIVE TEXT, ALTERNATIVE NAME	
feedinfo.txt	DATA SOURCE, VALIDITY CONDITION, RESPONSIBILITY SET BRANDING	Complex mapping

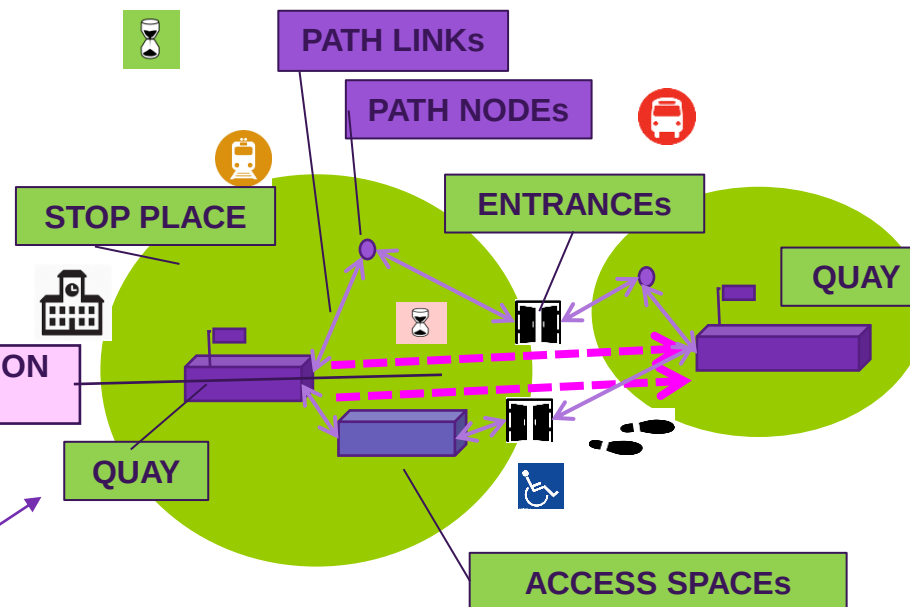


GTFS records not currently used in Irish data

GTFS record	NeTEX equivalent
attributions	RESPONSIBILITY SET + RESPONSIBILITY ROLE + ORGANISATION
levels	LEVEL
pathways	PATH LINK
fare_attributes	FARE PRICE
fare_rules	FARE PRODUCT, SALES OFFER PACKAGE, USAGE PARAMETER



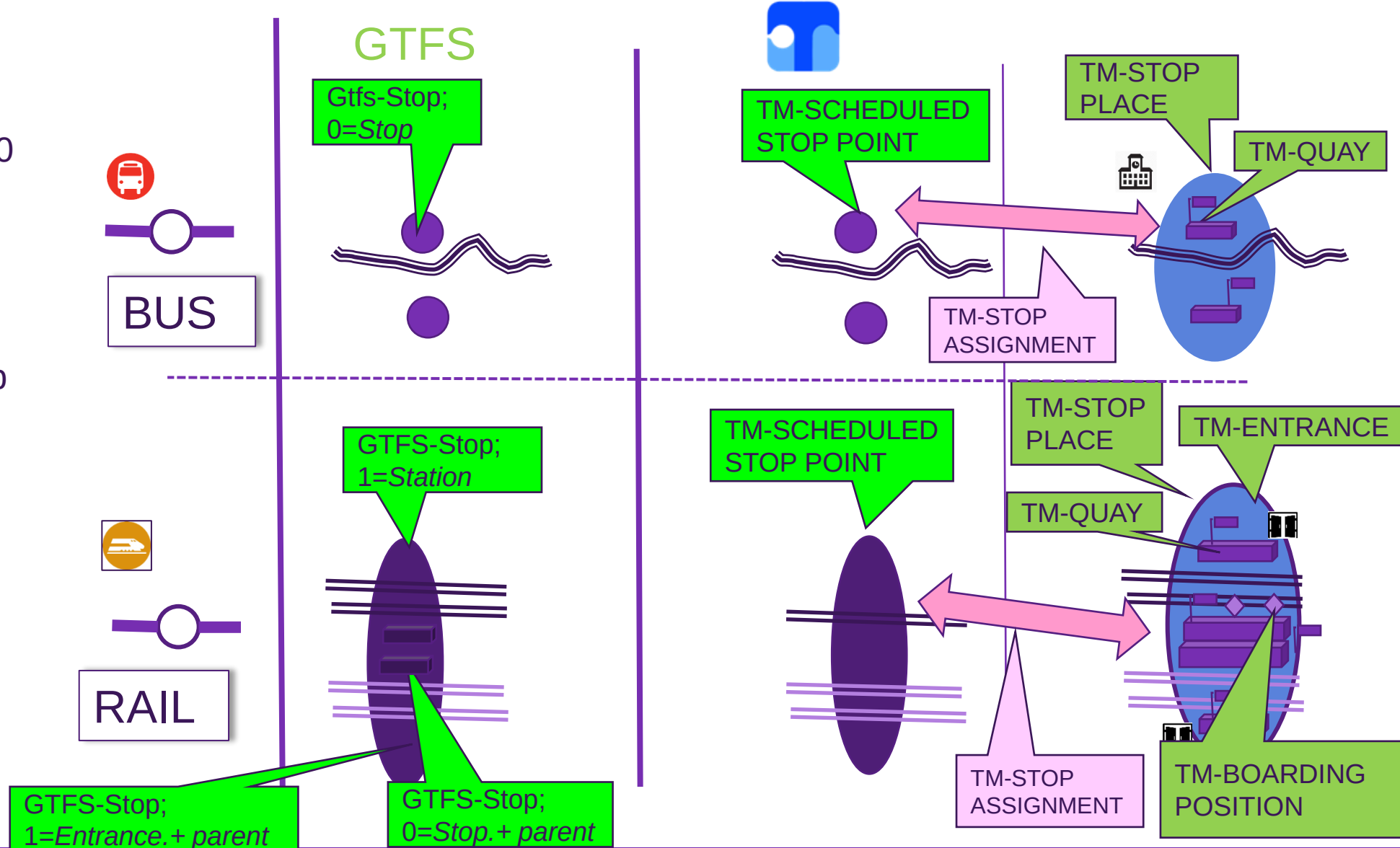
Physical Connection



- ▶ Transfer times for planning Timetable
- ▶ Navigation microplanning (with accessibility)
- ▶ Transfer Times for planning a trip (for given accessibility)

Logical vs Physical Stop

- ▶ Transmodel v6.0 separates scheduled & physical stop concepts
- ▶ GTFS uses stop for both stop area and stop point





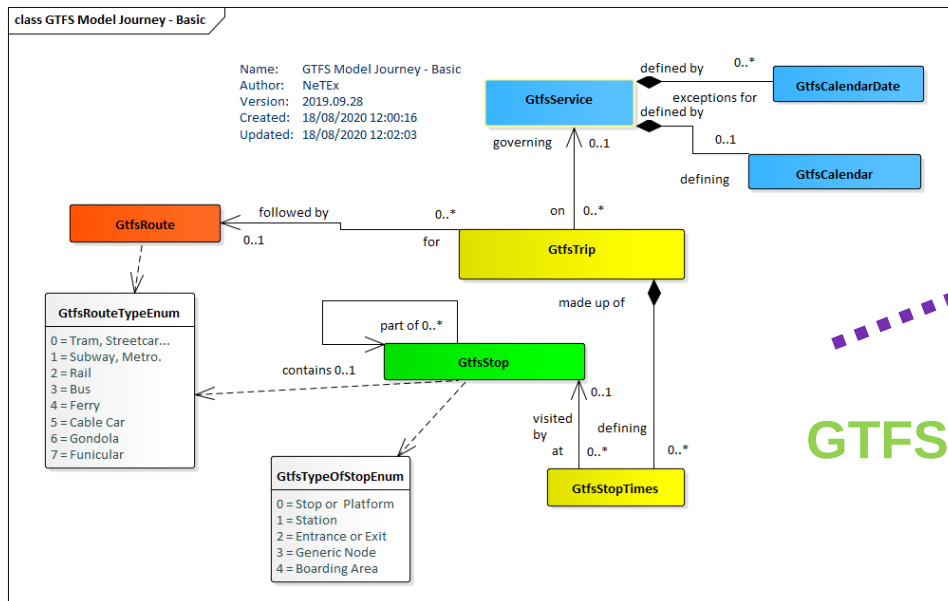
- ▶ NB Terminology: in Transmodel, a Passenger makes a TRIP, a vehicle makes a VEHICLE JOURNEY (=GTFS Trip)
- ▶ GTFS **stop_times** record corresponds to a view (CALL) that combines passing times etc
 - ▶ Times or Frequencies repeated on each journey
 - ▶ Destination displays, etc, repeated on each journey.
 - ▶ Shape plot is for whole journey
- ▶ GTFS Can alternatively map direct to POINT IN JOURNEY PATTERN
- ▶ Key Equivalences
 - ▶ GTFS Trip = SERVICE JOURNEY / TEMPLATE SERVICE JOURNEY
 - ▶ GTFS Stop_Times = CALL (View of POINT IN JOURNEY PATTERN + TIMETABLED PASSING TIMES + DESTINATION DISPLAY)
 - ▶ GTFS Frequency = JOURNEY FREQUENCY GROUP (HEADWAY JOURNEY GROUP or RYTHMICAL FREQUENCY GROUP)
- ▶ GTFS Doesn't separate dated / undated journey concepts
 - ▶ All journeys are DATED JOURNEYS?



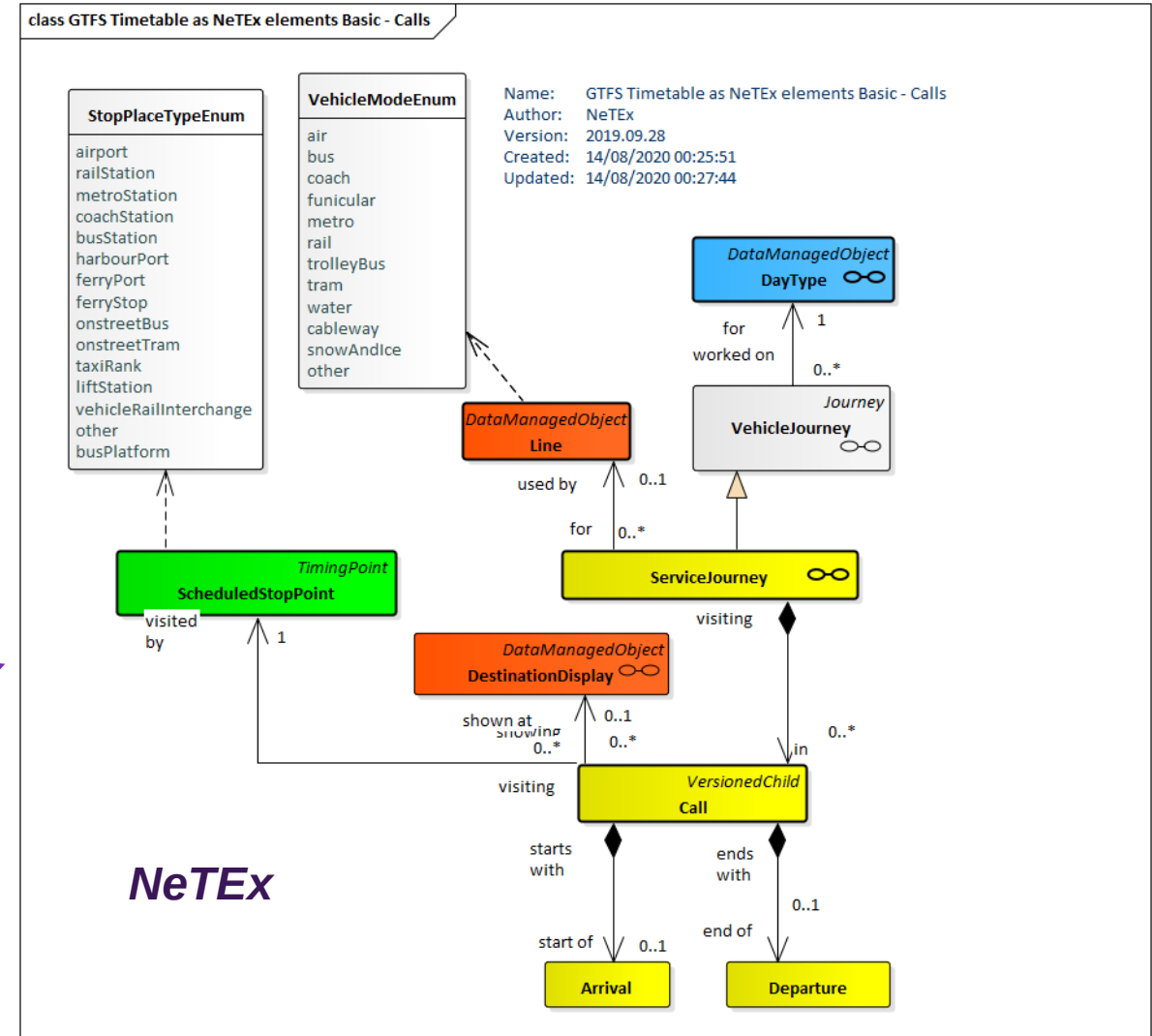
NeTeX elements equivalent to GTFS – Timetable Intro #1

Using NeTeX CALLS

- ▶ trip ➔ SERVICE JOURNEY
- ▶ stop times ➔ CALL
- calendar ➔
 - DAY TYPE



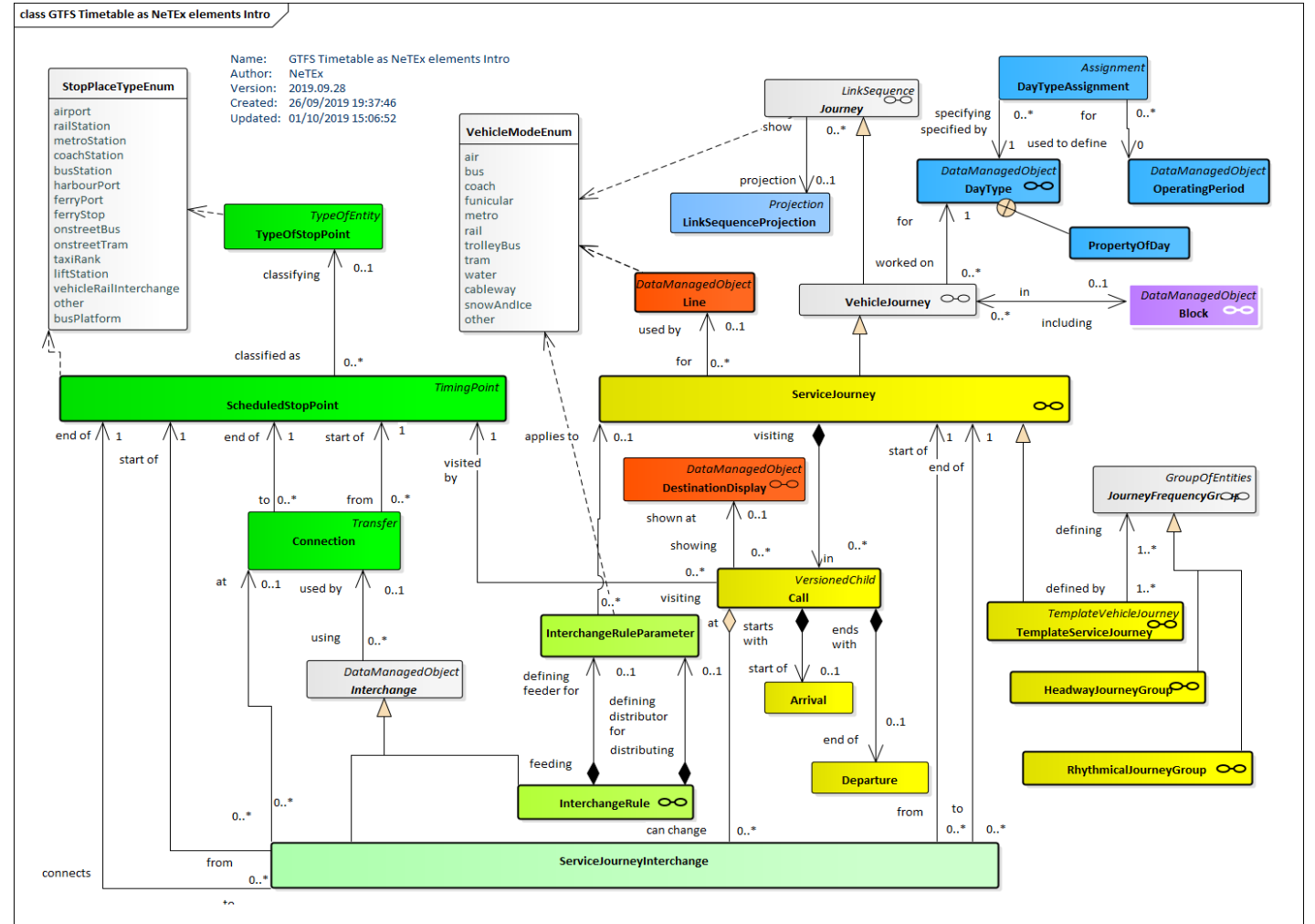
GTFS



NeTEx elements equivalent to GTFS – Timetable #1)

Using NeTEX CALLs

- ▶ trip ➔
 - SERVICE JOURNEY
- ▶ trip + frequency
 - ➔ TEMPLATE SERVICE JOURNEY + HEADY FREQUENCY GROUP
- ▶ stop times ➔ CALL
 - calendar ➔
 - DAY TYPE
 - ▶ transfer ➔
 - CONNECTION
 - SERVICE JOURNEY INTERCHANGE
 - INTERCHANGE RULE



NeTEx elements equivalent to GTFS – Timetable Intro #2

Using NeTEX POINTS IN PATTERN

► trip ➔

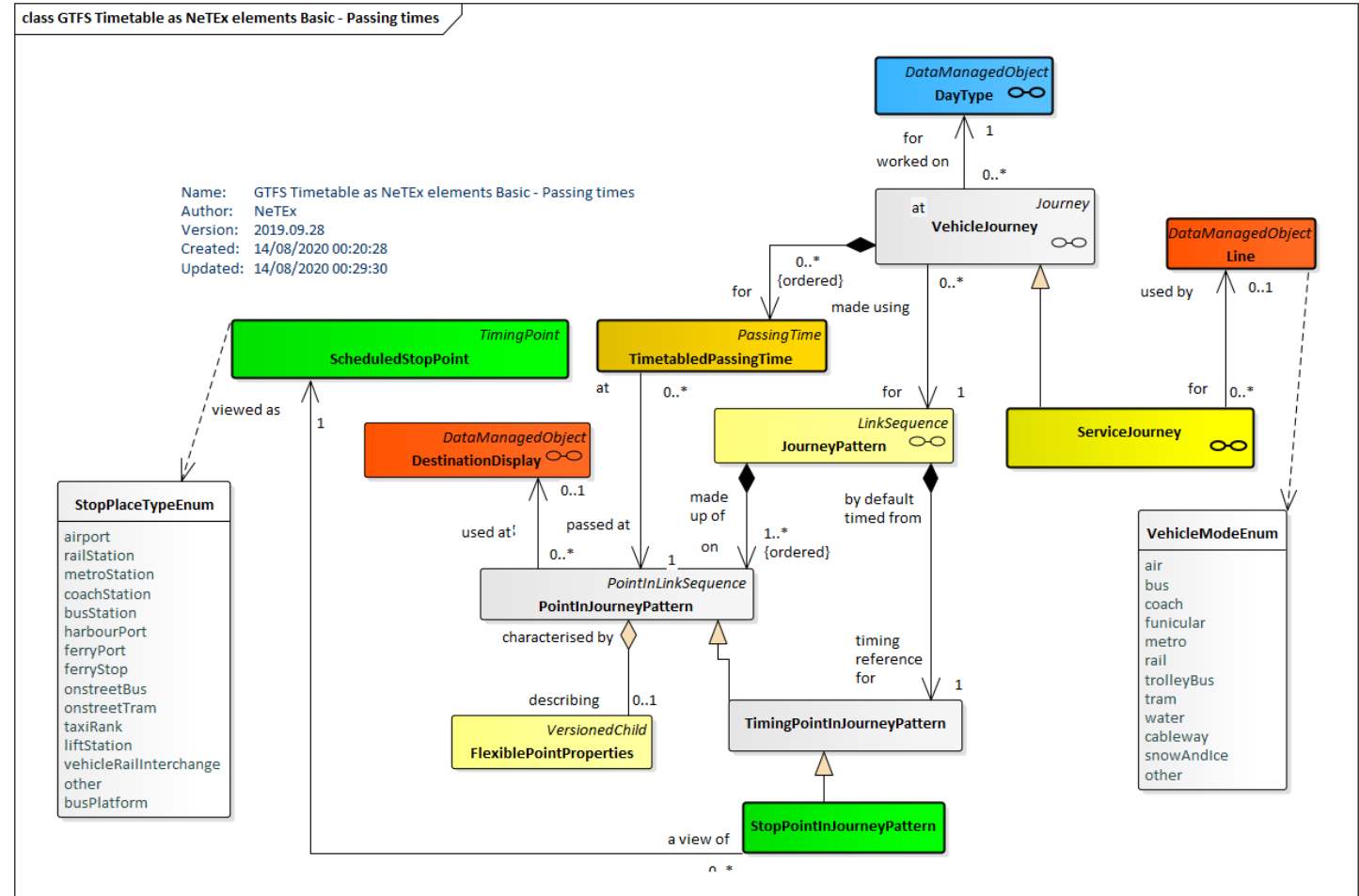
- SERVICE JOURNEY

► stop times ➔

- POINT IN PATTERN + TIMETABLED PASSING TIME

▪ calendar ➔

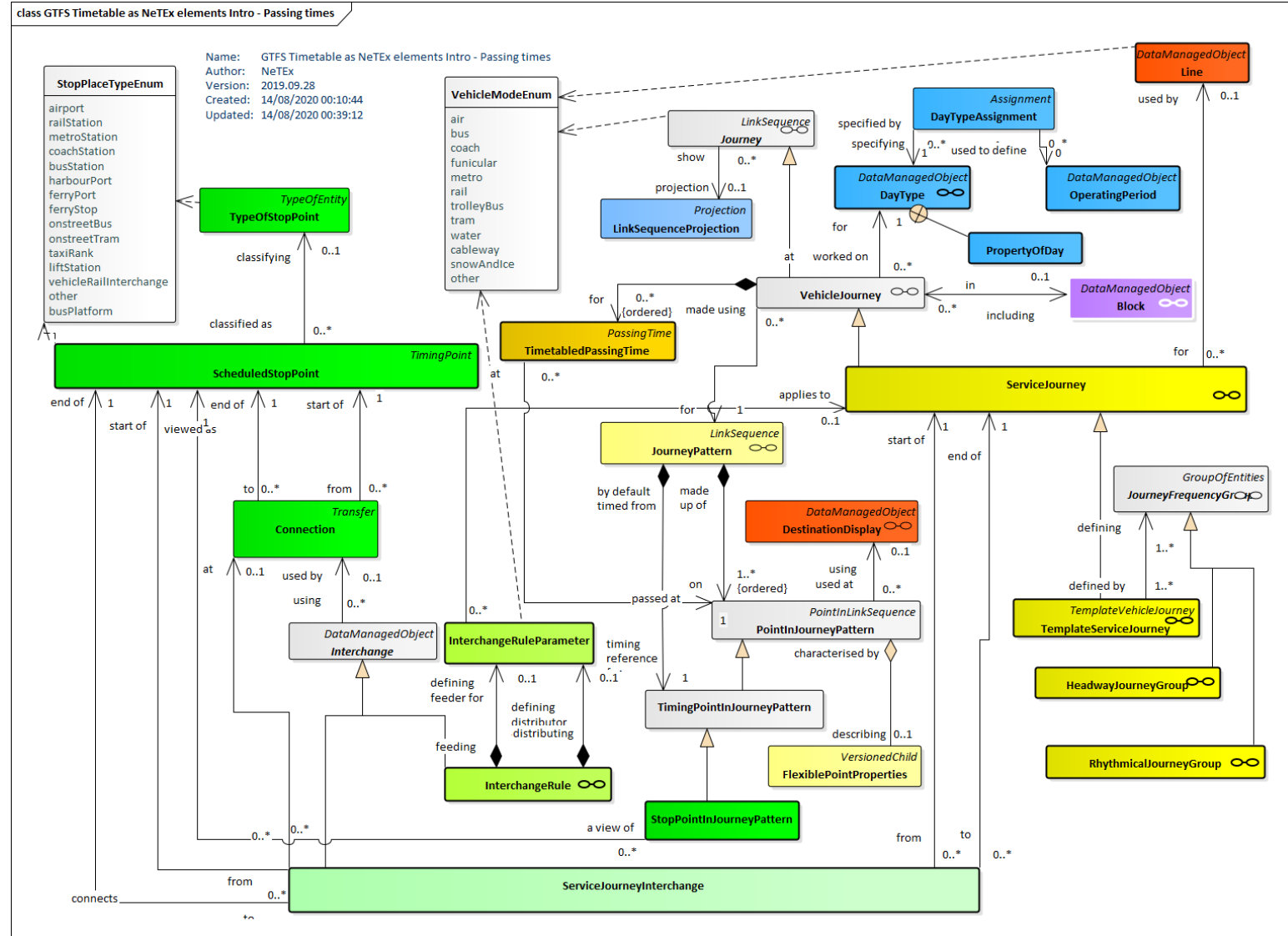
- DAY TYPE



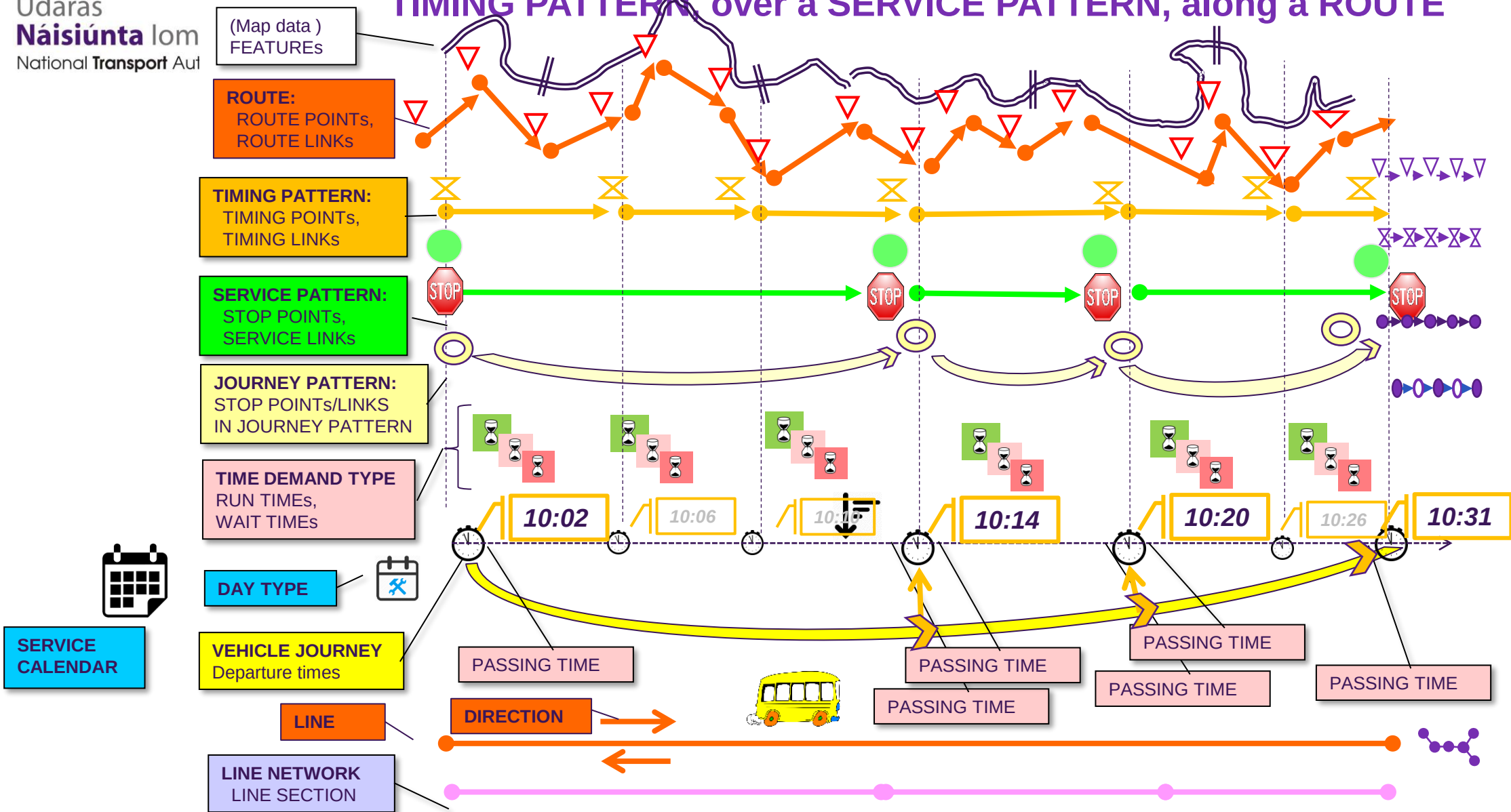
NeTEx elements equivalent to GTFS – Timetable #2

Using NeTEx POINTS in PATTERN

- ▶ trip →
 - SERVICE JOURNEY
- ▶ trip + frequency →
 - TEMPLATE SERVICE JOURNEY + HEADY FREQUENCY GROUP
- ▶ stop_times →
 - POINT IN PATTERN + TIMETABLED PASSING TIME
- calendar →
 - DAY TYPE
- ▶ transfer →
 - ▶ CONNECTION
 - SERVICE JOURNEY INTERCHANGE
 - INTERCHANGE RULE



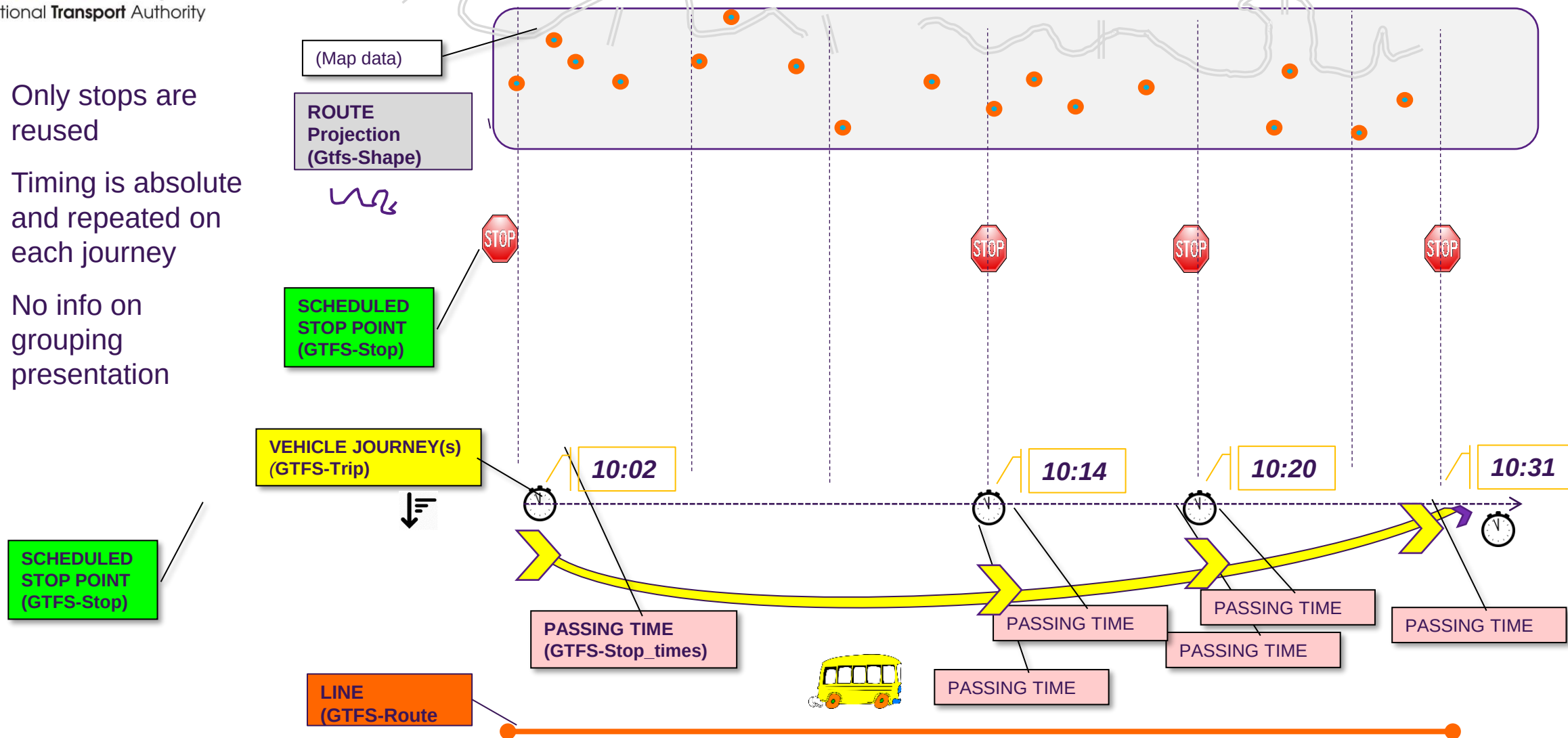
A VEHICLE JOURNEY follows a JOURNEY PATTERN, to a TIMING PATTERN over a SERVICE PATTERN, along a ROUTE



GTFS

A VEHICLE JOURNEY (Gtfs-Trip) is for a LINE

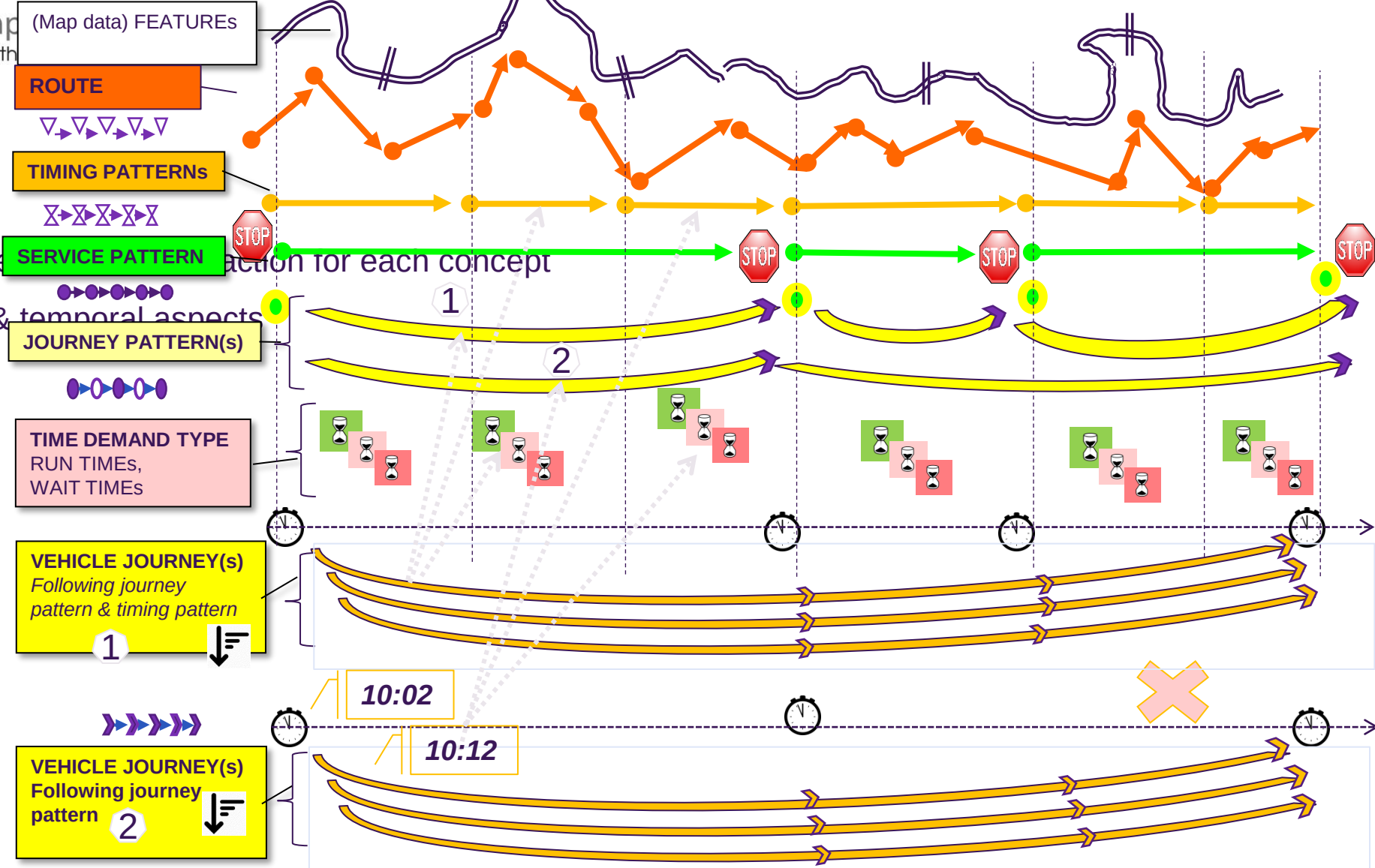
- ▶ Only stops are reused
- ▶ Timing is absolute and repeated on each journey
- ▶ No info on grouping presentation





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

- Separate action for each concept
- Spatial & temporal aspects
- Reuse



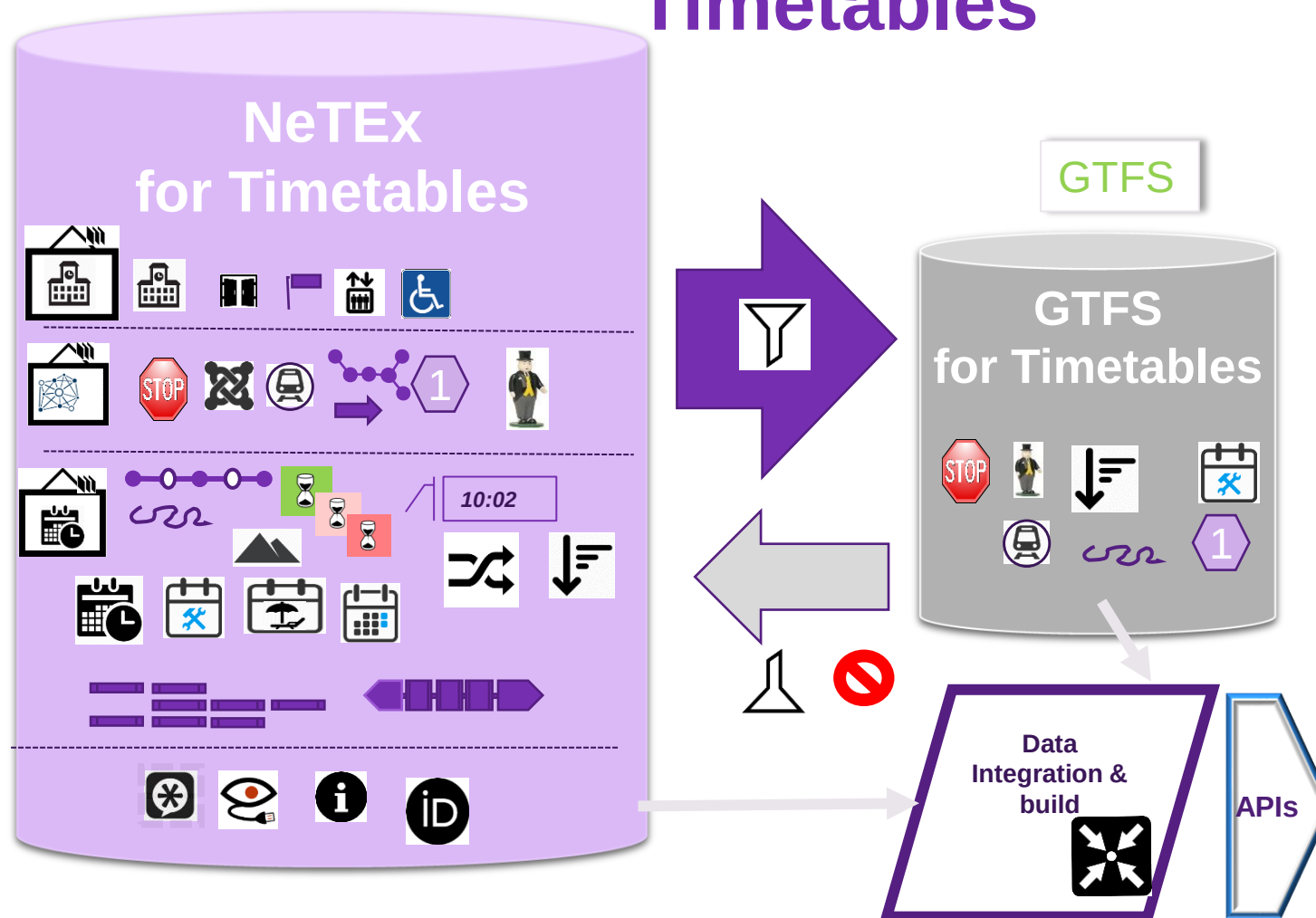
DAY TYPES

SERVICE CALENDAR

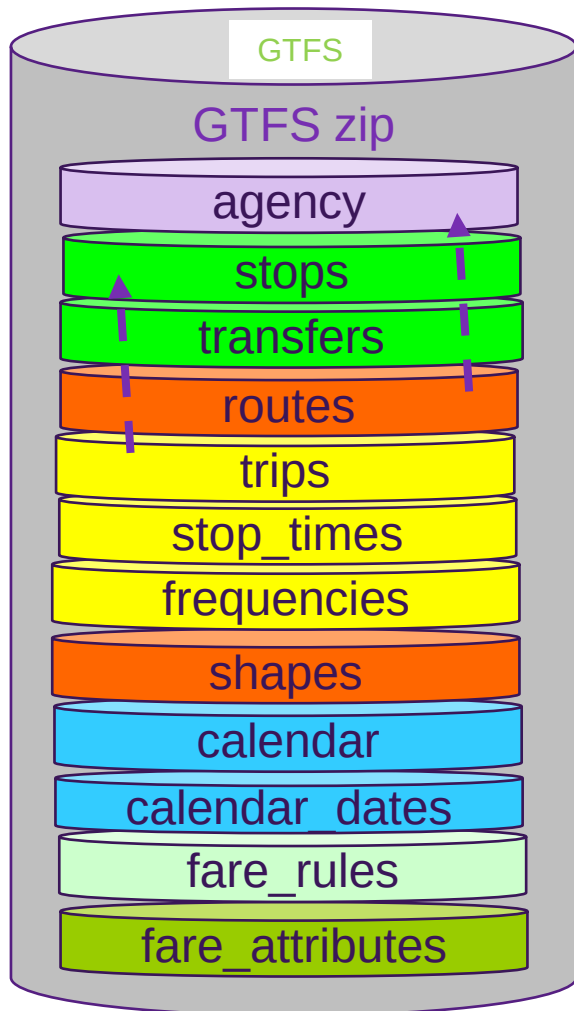
- ▶ GTFS is useful subset of timetable data for trip planning
 - ▶ Layers & times at stop resolved to single sequence
 - ▶ Does not have underlying reusable elements to build
 - e.g. journey patterns, routes.
 - ▶ Does not cover complex aspects
 - e.g. grouping, connections, join/spilt, makeup, etc
 - ▶ Does not cover some operational data
- ▶ Round trip is “Lossy”
 - ▶ Lose some elements



NeTEx & GTFS Interoperation - Timetables

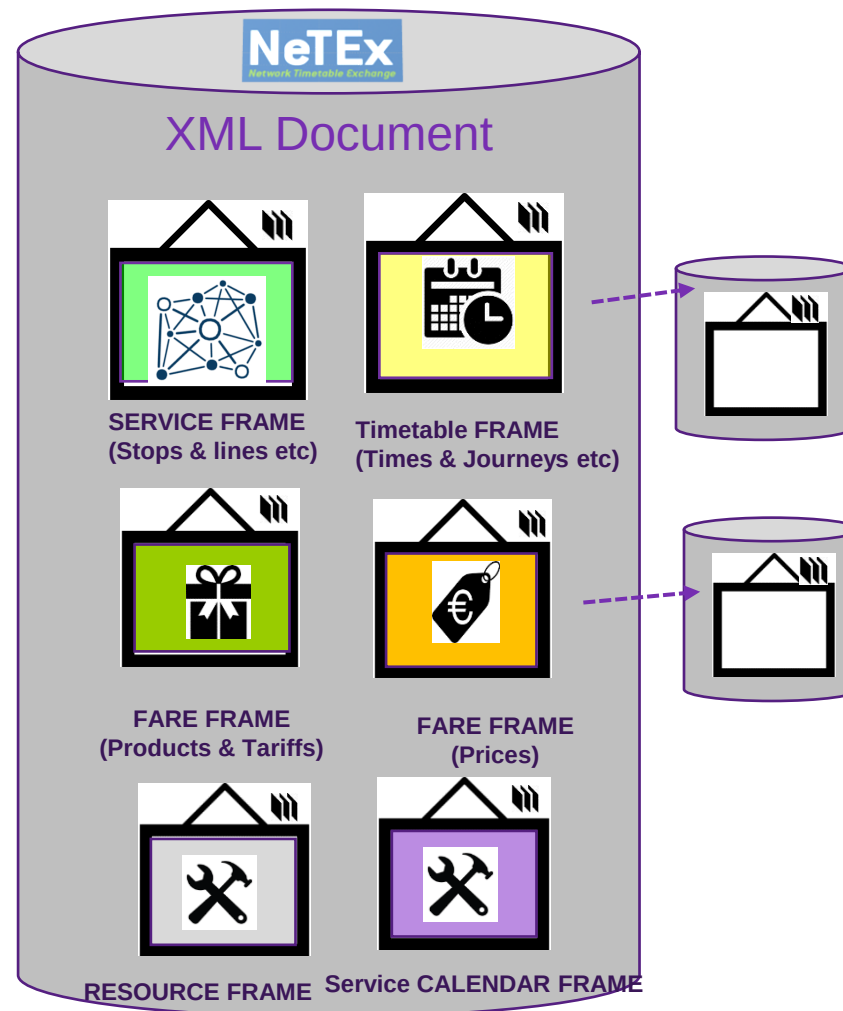


GTFS



Packaging: Cvs vs XML

- ▶ GTFS zips flat files together
- ▶ NeTEx uses “Version Frames” to organise data within a document
- ▶ Documents may have external references 
- ▶ Coherent Validity at frame level;



Mappin Rail Data / Hafas

HaFas



- ▶ Irish rail data available in Hafas HRDF (Raw data format)
 - Proprietary format from HaCon
 - There exist mappings to VDV452 and to GTFS (e.g any Swiss rail SBB)
 - ❑ GTFS mapping is lossy
 - New mapping to NeTEx
- ▶ HRDF
 - Multifile, multirecord format, fixed & variable length
 - Uses UIC station codes
 - Stations, Journeys, Passing times, Day types, Interchanges, etc
 - Standardised journey attributes (NeTEx Facilities)
 - Platform assignment (NeTEx PASSENGER STOP ASSIGNMENT)
 - Section specific attributes (



Key Equivalencies between TXC and NeTEx

UK NPTG/ Naptan/TXC	Transmodel / NeTEx	Notes
<i>Txc:StopPoint</i>	SCHEDULED STOP POINT (STOP ASSIGNMENT + STOP PLACE + QUAY)	Revised representation st logical + Physical stop
<i>Txc:StopArea</i>	STOP AREA + STOP PLACE	
<i>Txc:Operator</i>	OPERATOR / AUTHORITY	Operator UK licences for Registration
<i>Txc:Line</i>	LINE	
<i>Txc:Service (Standard Service, FlexibleService)</i>	TIMETABLE FRAME	
<i>(Service direction)</i>	GROUP OF SERVICES + DIRECTION + DAY TYPE	
<i>Txc:OperatingProfile</i>	DAY TYPE + PROPERTY OF DAY SERVICE + SERVICE CALENDAR + DAY TYPE ASSIGNMENT	Revised representation
<i>Txc:LayoverPoint</i>		
...		



HaFas file/ NeTeX equivalents

HaFas file	Trans	Description	TM/NeTeX
eckdaten	Data validity	Validity period of data	COMPOSITEFRAME / VALIDITY CONDITION
betrieb	Undertaking	Transport Operator	OPERATOR
bahnhof	Stations	Station codes and names	SCHEDULED STOP POINT, STOPPLACE
koord	Spatial coordinates	Spatial coordinates of stations	LOCATION
maincoor	Spatial coordinates for	Spatial coordinates of other points	LOCATION
bhfattr	Station Accessibility	Accessibility attributes for a station and other properties	STOP PLACE/ ACCESSIBILITY ASSESSMENT, SITE FACILITY SET
umsteig	Connections	Connections and transfer times between modes	CONNECTION / SERVICE INTERCHANGE
bhfrt	Permitted station routings	Routings	
kminfo	Ranking	Relative rankings for transfers	CONNECTION
fplan	Journeys	Service journey with annotations	SERVICE JOURNEY OR DATED SERVICE JOURNEY,, JOURNEY PART,
fplan FPlan Laufwegzeilen	Run times	Passing times at stop	POINT IN JOURNEY PATTERN, PASSING TIMES,
fplan – G	Journeys	Type of rail service (Express , local etc())	TYPE OF PRODUCT CATEGORY
fplan – A	Attributes	Journey Facilities	SERVICEFACILITYSET
fplan – I	Infolinks	Journey Footnotes	NOTICE ASSIGNMENT,, NOTICE
bitfield	Operational days	stores validity days for a specific ID in the form of a bitmap.	DAY TYPE ASSIGNMENT
gleise	Platforms for	Platform assignments	PASSENGER STOP ASSIGNMENT, VALIDITY CONDITIONSs
infotext	Notice	Text notices associated with journeys etc	NOTICE
attribut	Facilities	Site & Onboard facilities	FACILITY
metabh	Station groups	Group of nearby stations	STOP AREA
sortkeys	Sort table for stations		N/A
attribue	Transport mode	Mode codes	TRANSPORT MODE
zugart	Train type	“Means of transport”	SUBMODE, TYPEOFSERVICE
vardim	System parameters		Default transfer timesetx



HaFas Example

SERVICE
PATTERN

DAY TYPE

SERVICE JOURNEY

```
*Z 00122 IR_____ A122 175300
> *G A 6000036 9990840 %
> *A VE 6000036 9990840 000374 %
> *I TH 0000002 %
> *A 1F 6000036 9990840 %
> *A BF 6000036 9990840 %
> *A RS 6000036 9990840 %
> 6000036 Dublin Connolly$Con 00735 %
> 6010013 Clontarf Road -00737 -00737 %
> 6010034 Killester -00739 -00739 %
> 6010025 Harmonstown -00740 -00740 %
> 6010044 Raheny -00743 -00743 %
> 6010028 Kilbarrack -00745 -00745 %
> 6010026 Howth Junction and -00746 -00746 %
> 6010043 Portmarnock -00747 -00747 %
> 6000057 Malahide -00750 -00750 %
> 6010053 Skerries -00757 -00757 %
> 6000006 Balbriggan -00800 -00800 %
> 6000061 Mosney -00803 -00803 %
> 6000034 Drogheda (MacBride) 00809 00810 %
> 6000040 Dundalk (Clarke) 00831 00831 %
> 7003300 Newry 00848 00849 %
> 6100000 PPASS -00858 -00858 %
> 7003310 Portadown 00909 00909 %
> 6010039 Lurgan -00917 -00917 %
> 7003280 Lisburn -00931 -00931 %
> 9990840 Belfast 00945 %
```

```
<ServicePattern version="any" id="ir:00122">
  <pointsInSequence>
    <StopPointInJourneyPattern version="any"
      id="ir:00122" order="1">
      <ScheduledStopPointRef version="any"
        ref="uic:6000036">Dublin
        Connolly</ScheduledStopPointRef>
    </StopPointInJourneyPattern>
    <StopPointInJourneyPattern version="any"
      id="ir:00122" order="2">
      <ScheduledStopPointRef version="any"
        ref="uic:6010013">Clontarf Road</ScheduledStopPointRef>
    </StopPointInJourneyPattern>
    ....
    <StopPointInJourneyPattern version="any"
      id="ir:00122" order="20">
      <ScheduledStopPointRef version="any"
        ref="uic:9990840">Belfast</ScheduledStopPointRef>
    </StopPointInJourneyPattern>
  </pointsInSequence>
</ServicePattern>
```

SCHEDULED
STOP POINTS

Journey Part JOURNEY

```
<ServiceJourney version="any" id="ir:00122">
  <DepartureTime>07:35:00Z</DepartureTime>
  <dayTypes>
    <DayTypeRef version="any" ref="ir:000374"/>
  </dayTypes>
  <ServiceJourneyPatternRef version="any" ref="ir:00122"/>
  <OperatorRef version="any" ref="uicShortOperator:IR"/>
  <TransportMode>rail</TransportMode>
  <ServicePatternRef version="any" ref="ir:00122@JP"/>
  <DirectionType>outbound</DirectionType>

  <passingTimes>
    <TimetabledPassingTime version="any" id="ir:00122" order="1">
      <PointInJourneyPatternRef version="any" ref="ir:00122" order="1"/>
      <DepartureTime>07:35:00Z</DepartureTime>
    </TimetabledPassingTime>
    <TimetabledPassingTime version="any" id="ir:00122" order="2">
      <PointInJourneyPatternRef version="any" ref="ir:00122" order="2"/>
      <ArrivalTime>07:37:00Z</ArrivalTime>
      <DepartureTime>00:09:10</DepartureTime>
    </TimetabledPassingTime>
    ...ETC ETC
    <TimetabledPassingTime version="any" id="ir:00122" order="203">
      <PointInJourneyPatternRef version="any" ref="ir:00122" order="20"/>
      <ArrivalTime>09:45:01Z</ArrivalTime>
    </TimetabledPassingTime>
  </passingTimes>
```

PASSING TIMES

```
<parts>
  <JourneyPart version="any" id="ir:00122@6000036+9990840">
    <MainPartRef version="any" ref="ir:00122"/>
    <TrainNumberRef version="any" ref="ir:A122"/>
    <FromStopPointRef version="any" ref="uic:6000036"/>
    <ToStopPointRef version="any" ref="uic:9990840"/>
    <StartTime>07:35:00Z</StartTime>
    <EndTime>09:45:01Z</EndTime>
    <PurposeOfJourneyPartitionRef ref="ir:onboardAmenities"/>
    <facilities>
      <ServiceFacilitySet version="any" id="ir:00122@6000036+9990840">
        <TicketingServiceFacilityList>reservations</TicketingServiceFacilityList>
        <MealFacilityList>breakfast</MealFacilityList>
      </ServiceFacilitySet>
    </facilities>
  </JourneyPart>
</parts>
```





It even works
for real legacy
data/ (1962)
Thank You

SCHEDULED
STOP POINTS

SERVICE
LINKS

CONNECTION

SERVICE
PATTERN

DAY TYPE

LINE

TIMETABLE

SERVICE JOURNEYS

JOURNEY
PATTERNS

POINTS IN
JOURNEY
PATTERN

PASSING TIMES

GROUP OF
SERVICES

NOTICE

Dublin (Kingsbridge) and Portlaoise Kilkenny and Waterford															
Distance from Port- laoise	DOWN TRAINS	Sectional Running		Goods		Passenger		Passenger		Passenger		Goods		Passenger	
		Pas. Gds.		Loco. D.E.		D.E.		D.E.		D.E.		Loco. D.E.		D.E.	
		D S	D S	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.
		Miles													
—	KINGSBRIDGE ...	...	...	0 0 0 0	...	10 30	...	9 35	...	9 00	...	8 50	...	3 50	...
1	CONNIBERRY JUNCTION ...	...	W	13 15 22 25	...	Via	11 07 11 08	...	Via	...	...	11 42 12 11	...	6 35	...
14½	ATTAGH HALT ...	...	...	6 8 11 11	...	Carlow	11 16 11 17	...	Carlow	...	...	12 30 12 45	...	6 44	...
17½	BALLYRAGGET ...	...	...	3 4 6 6	...	...	11 25 11 25	...	...	...	...	2 35 1 45	...	6 50	...
24½	CASTLECOMER JUNCTION ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
—	KILKENNY (Check) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28½	KILKENNY ...	...	U W	13 14 21 22	...	2 39	5 10 11 38	...	11 43 11 19	...	11 52	3 36 3	...	2 10 3 05	...
34½	BENNETT'S BRIDGE HALT ...	...	...	7 9 13 12	...	5 25	...	...	11 51 12 01	...	12 02	3	...	3 22 4 00	...
39½	THOMASTOWN ...	...	U	6 7 12 17	...	5 45	...	...	11 57 12 10	...	12 11	...	...	4 18 4 45	...
43½	BALLYHALE ...	...	...	6 7 12 17	...	5 59	...	...	12 03 12 19	...	12 20	...	...	5 01 5	...
51½	MULLINAVAT HALT ...	...	...	10 10 21 24	...	6 20	...	...	12 13 12 32	...	12 33	...	...	6 00 7 50	...
54½	KILMACOW HALT ...	...	×	3 4 7 6	...	6 27	...	...	12 16 12 38	...	12 39	...	...	6 31 6 45	...
—	WATERFORD (Check) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
59½	WATERFORD ...	...	W	6 7 10 10	...	6 40	...	...	12 25	...	12 50	...	...	4 30	...

Waterford and Kilkenny, Portlaoise and Dublin (Kingsbridge)															
Distance from Water- ford	UP TRAINS	Sectional Running		PAS.		Passenger		Goods		Passenger		Passenger		PAS.	
		Pas. Gds.		D.T.		D.E.		Loco. D.E.		D.E.		D.E.		D.E.	
		D S	D S	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.
		Miles													
—	WATERFORD ...	...	W	0 0 0 0	...	7 10	...	8 20	...	9 00	...	1 20	...	4 00	...
—	WATERFORD (WEST) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2½	KILMACOW HALT ...	...	×	8 8 14 18	...	7 20	...	8 29 9 18	...	9 28	...	1 29 4 10	...	4 11 5 10	...
7½	MULLINAVAT ...	...	...	4 5 8 12	...	7 27	...	8 33 9 40	...	9 50	...	1 33 4 17	...	4 18 5 17	...
15½	BALLYHALE ...	...	W	12 12 23 26	...	7 42	...	8 45 10 17	...	10 35	...	1 45 4 32	...	4 33 5 32	...
20½	THOMASTOWN ...	...	...	5 5 12 9	...	7 50	...	8 51 8 52	...	10 51	...	1 50 4 40	...	4 41 5 40	...
25	BENNETT'S BRIDGE ...	...	...	7 7 14 15	...	8 00	...	9 00 11 33	...	12 03	...	1 57 4 50	...	4 51 5 50	...
—	KILKENNY (Check) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	KILKENNY ...	...	D W	8 9 14 14	...	8 11	...	9 09 9 12	...	12 21	...	1 10 2 06	...	2 16 5 01	...
35	CASTLECOMER JUNCTION ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
41½	BALLYRAGGET ...	...	+	14 15 21 25	...	Via	9 28 9 29	...	1 35 2 00	...	Via	...	...	...	...
44½	ATTAGH ...	...	...	4 4 8 9	...	Carlow	9 35 9 36	...	2 12 2 28	...	Carlow	...	...	...	...
50	ABBEYLEIX ...	...	D	7 9 13 13	...	...	...	9 45 9 46	...	2 45 3 15	...	...	...	5 37 5 38	...
58½	CONNIBERRY JUNCTION ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
59½	PORTLAOISE ...	...	•	14 16 25 28	...	...	...	10 02 10 04	...	3 45	...	...	...	5 54 5 57	...
—	KINGSBRIDGE ...	...	...	...	...	...	...	11 05	...	...	...	...	...	7 10	...

M—Scheduled Mail Train between Waterford and Portlaoise.

KILKENNY AND CASTLECOMER (Deerpark) BRANCH															
Miles from Kilkenny	DOWN TRAINS	Goods		Goods		D.E.		UP TRAINS				Goods		D.E.	
		arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.	arr.	dep.
—	KILKENNY ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4½	CASTLECOMER JUNCTION ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	CASTLECOMER ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
—	DEERPARK ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Branch now worked under "Single Engine in Steam" system. Sectional Running for Goods Trains Kilkenny and Castlecomer in each direction 47 min