



**NeTEx - CEN PT  
Standards context**

**June 2021**

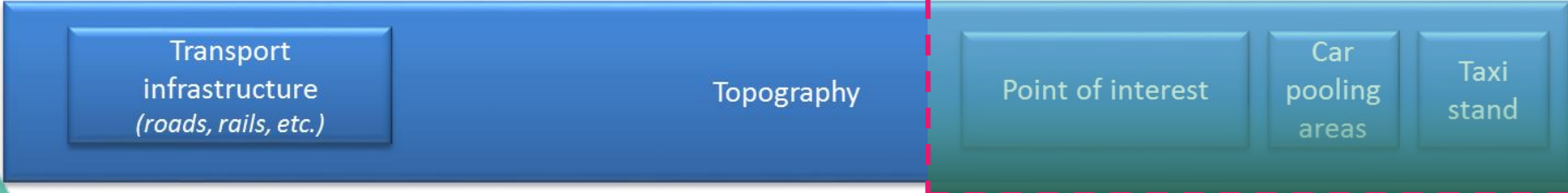
**Christophe Duquesne – Ulf Bjersing**





# Standards and categories

## NeTEx





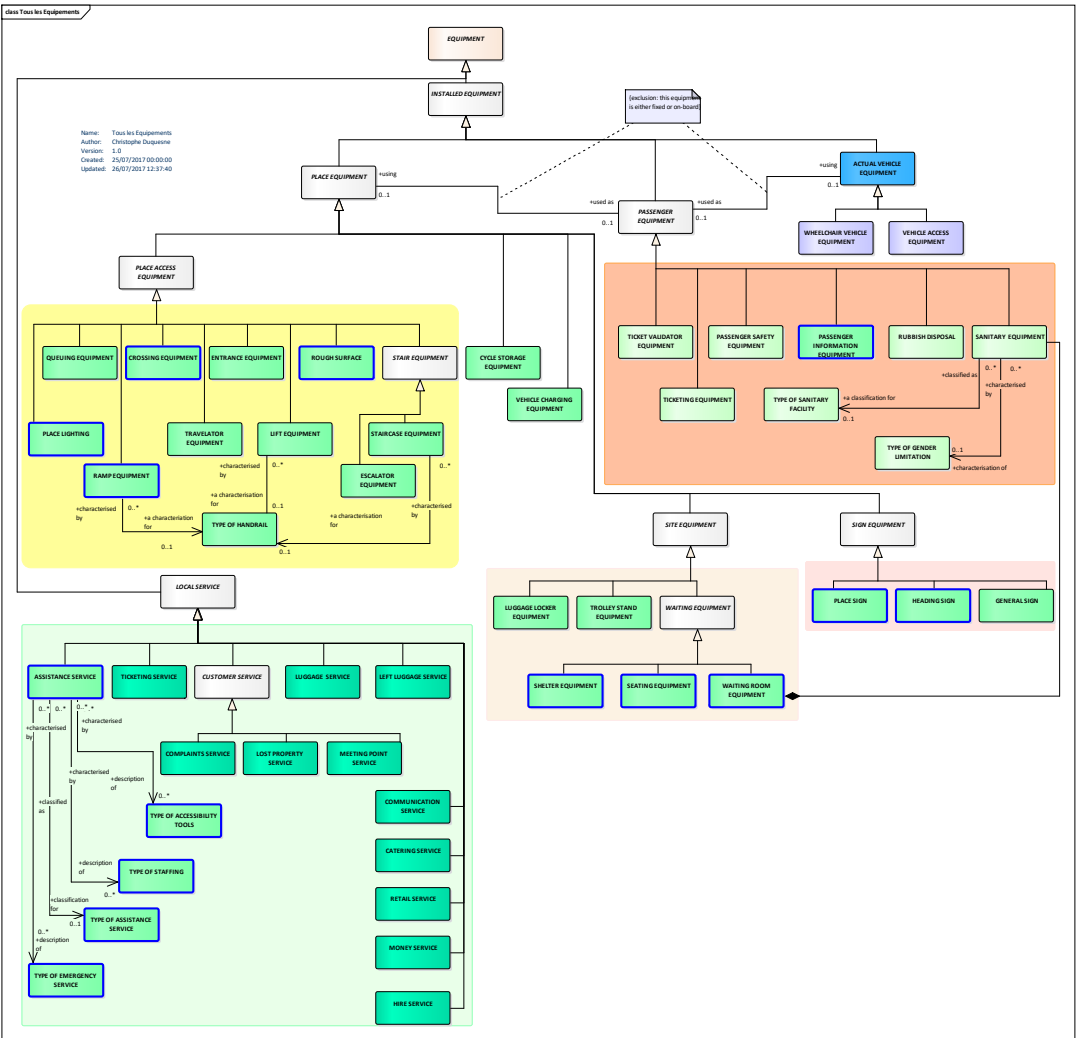
# Data categories in mobility

But there are a lot of additional, more transverse categories :

- Equipment (see figure)
- Accessibility
- Roles and Responsibilities
- Data Frames
- Versioning
- Etc.

or more detailed ones, for example in **PT Schedule information** you will have :

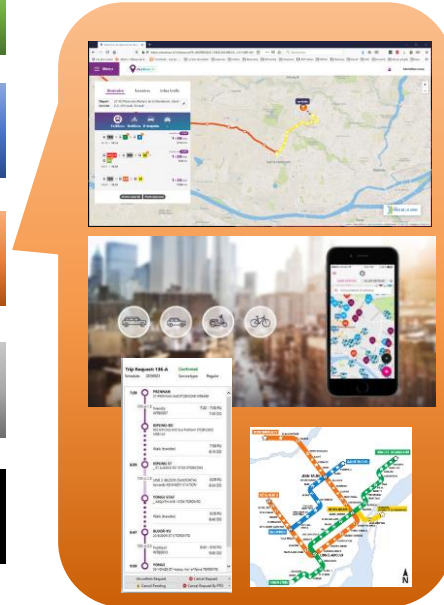
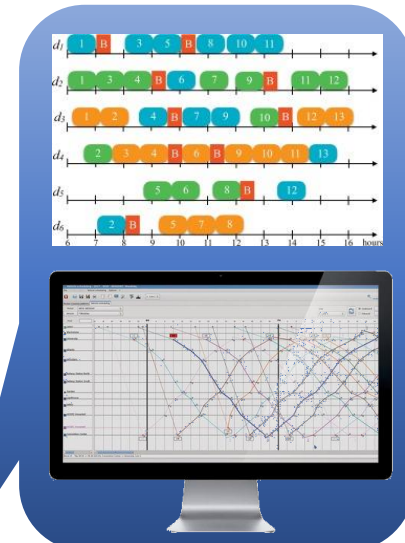
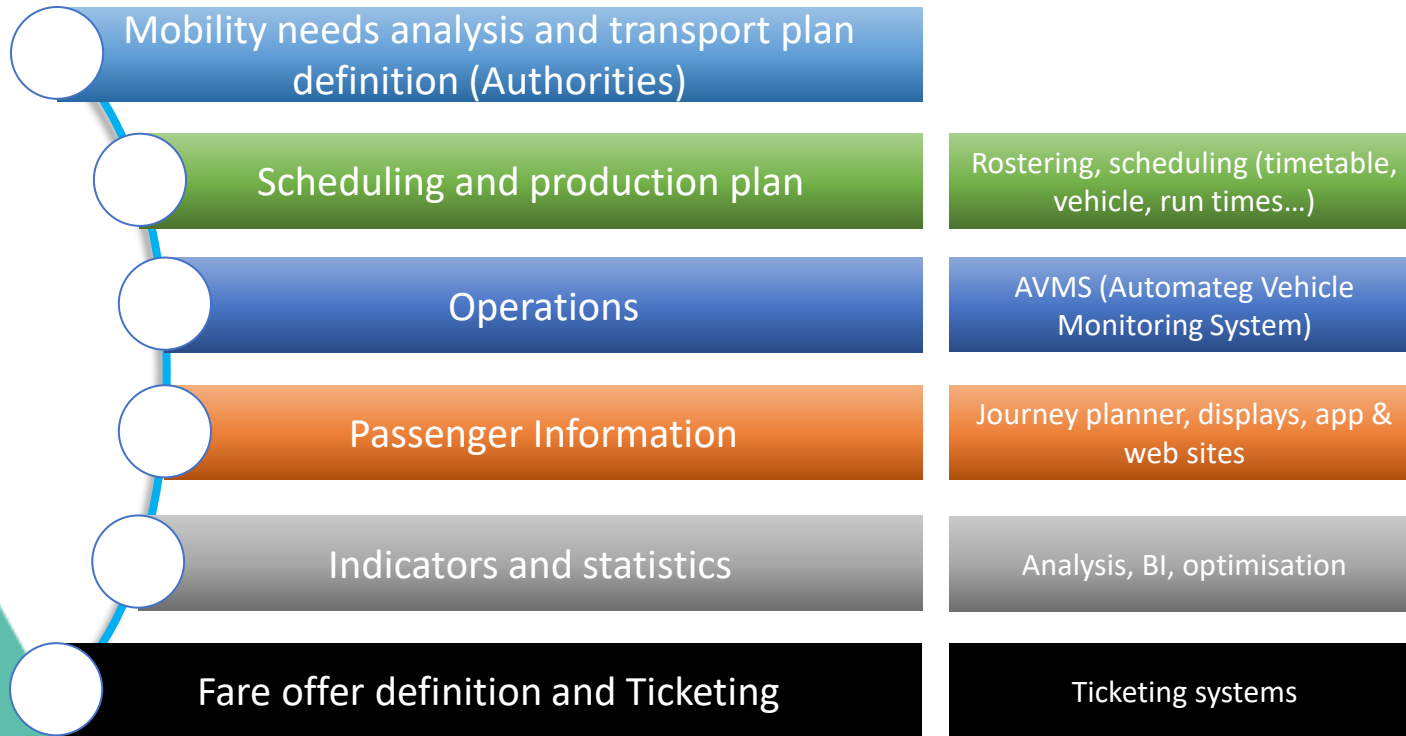
- Network topology (lines, etc.)
- Timetables (services, calendars, passing times, etc.)
- Operational information (run times, blocks, vehicles, etc.)
- Etc.





# Public Transport related business cases

- Multiple and often complex business cases
- Each system or tool has a specific (and partial) point of view

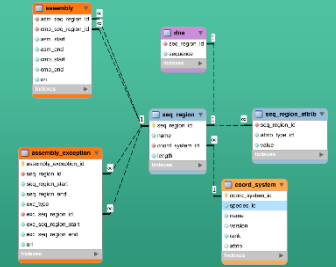





# PT Standard dependencies and relations

## TRANSMODEL

Conceptual data model covering all the public transport data domains




**NeTEx** 

Exchange data format for scheduled information

**SIRI** 

Exchange data format for real time information

**OpRa** 

Exchange data format for observed information

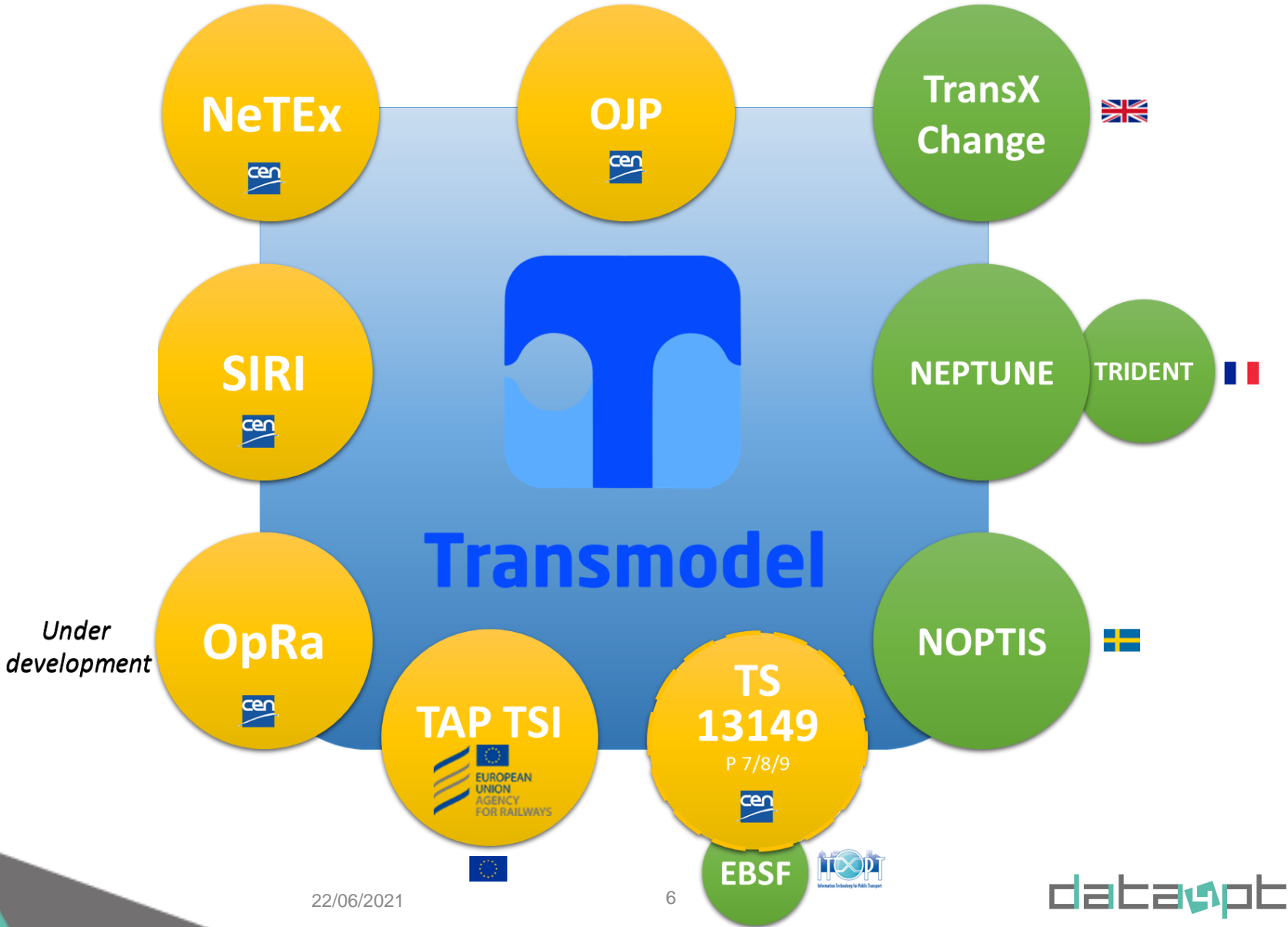
GTFS

GTFS RT



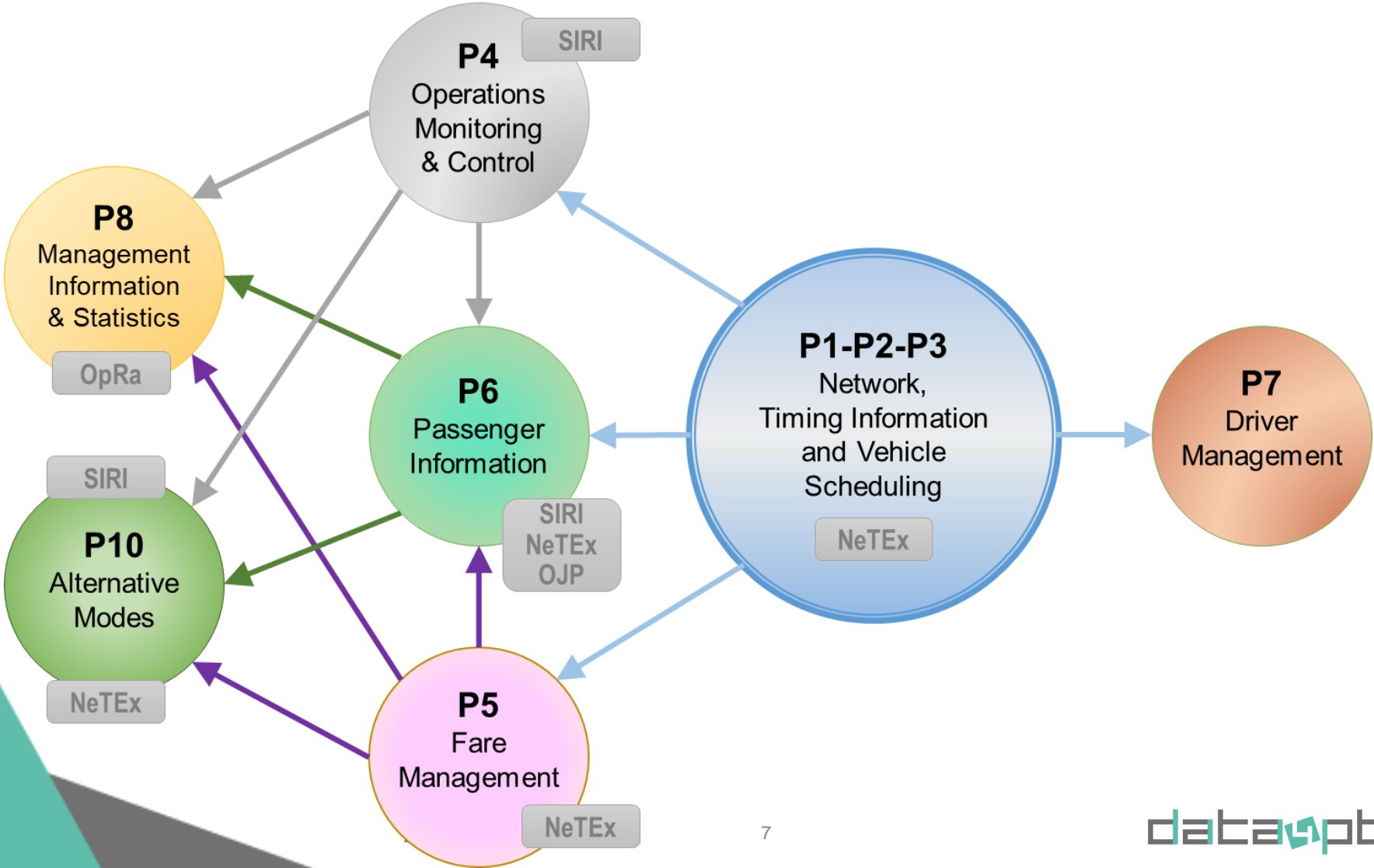


# Transmodel ecosystem



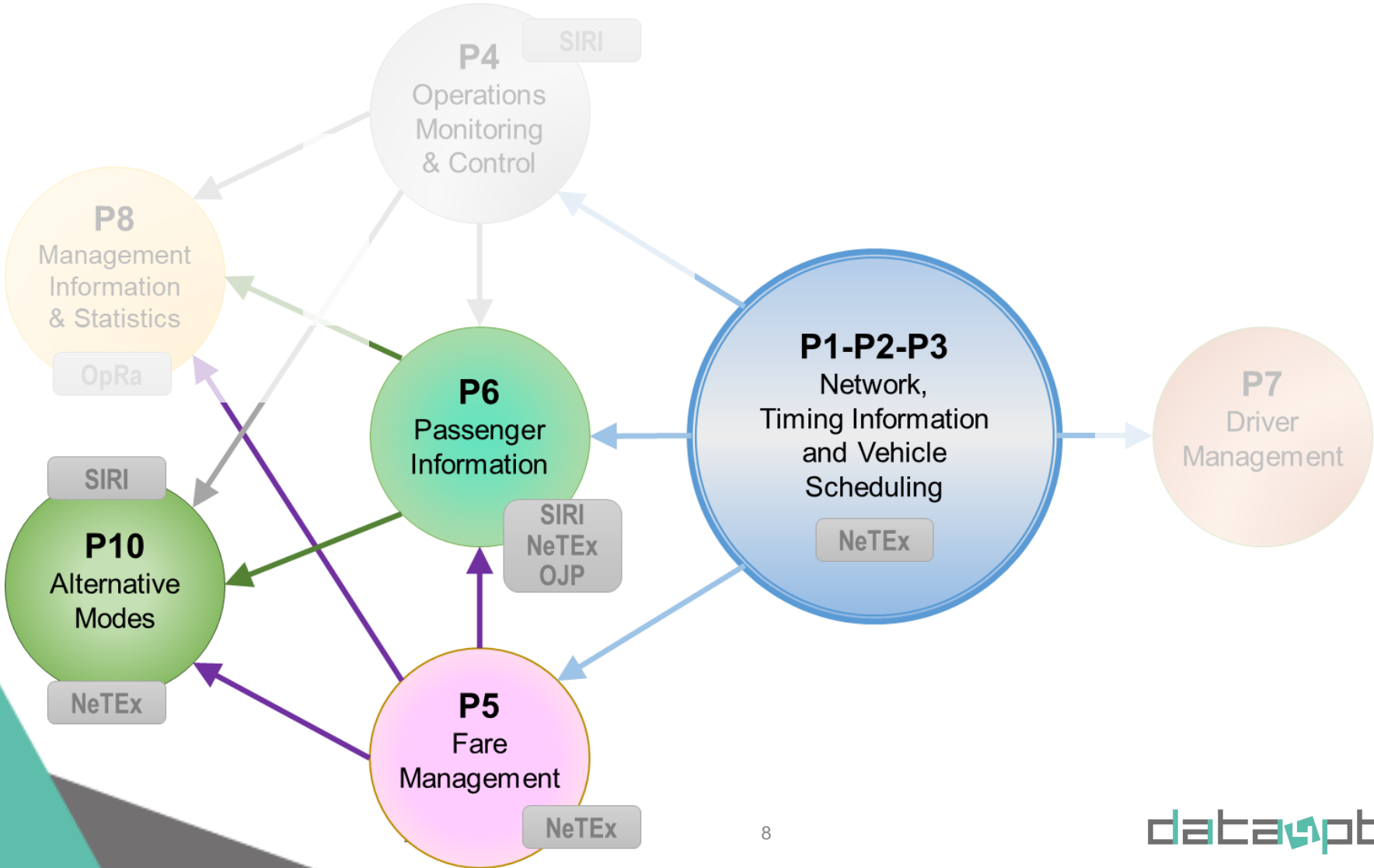


# Transmodel content





# Transmodel content associated with exchange standard NeTEx







# NeTEx

**Name** : NeTEx

**Reference** : CEN TS 16614-1, 16614-2 and 16614-3

**Status** : Part 1 : Common concepts and Network Description  
Part 2 : Timing information  
Part 3 : Fare Information  
Part 4 : EPIP - EU Passenger information profile  
Part 5 : New Modes (under TC review)  
Part 6 : EU Accessibility Profile (under development)

<i>Conceptual model :</i>	<i>no (based on Transmodel, aligned with Transmodel 6)</i>
<i>Exchange format :</i>	<i>yes</i>
<i>Data category :</i>	<i>Scheduled data for mobility (operational and passenger information data)</i>
<i>Temporal scope :</i>	<i>Scheduled data, and static data</i>

**Main scope** : Network description, timetables and fares.

**Example of covered objects** : Stop Place, Timing point, Equipment, Facilities, Line, Route, Fare product, Access rights, Accessibility, etc.

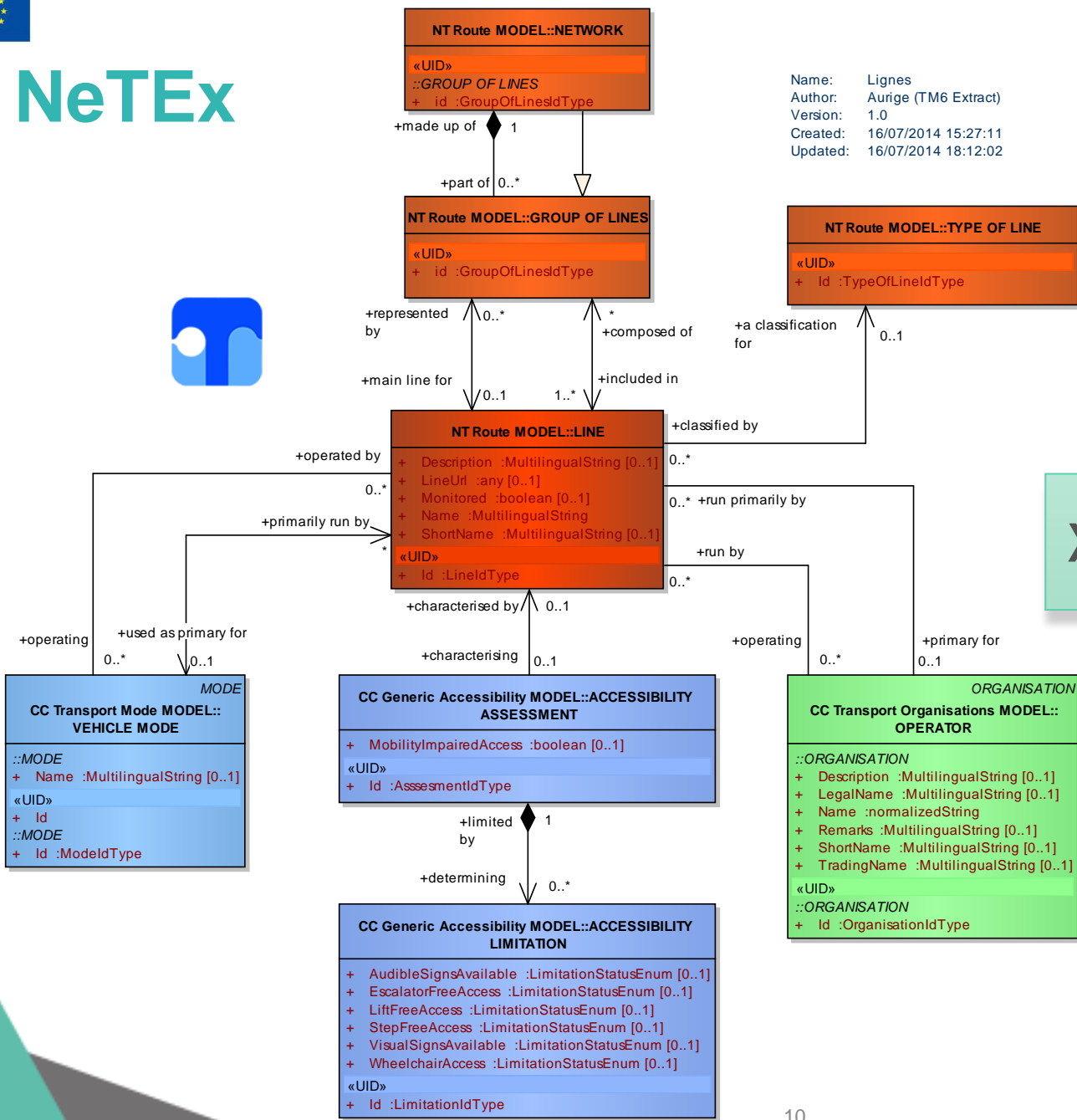
**Web site** <http://netex-cen.eu>



# NeTEx



Name: Lignes  
 Author: Aurige (TM6 Extract)  
 Version: 1.0  
 Created: 16/07/2014 15:27:11  
 Updated: 16/07/2014 18:12:02





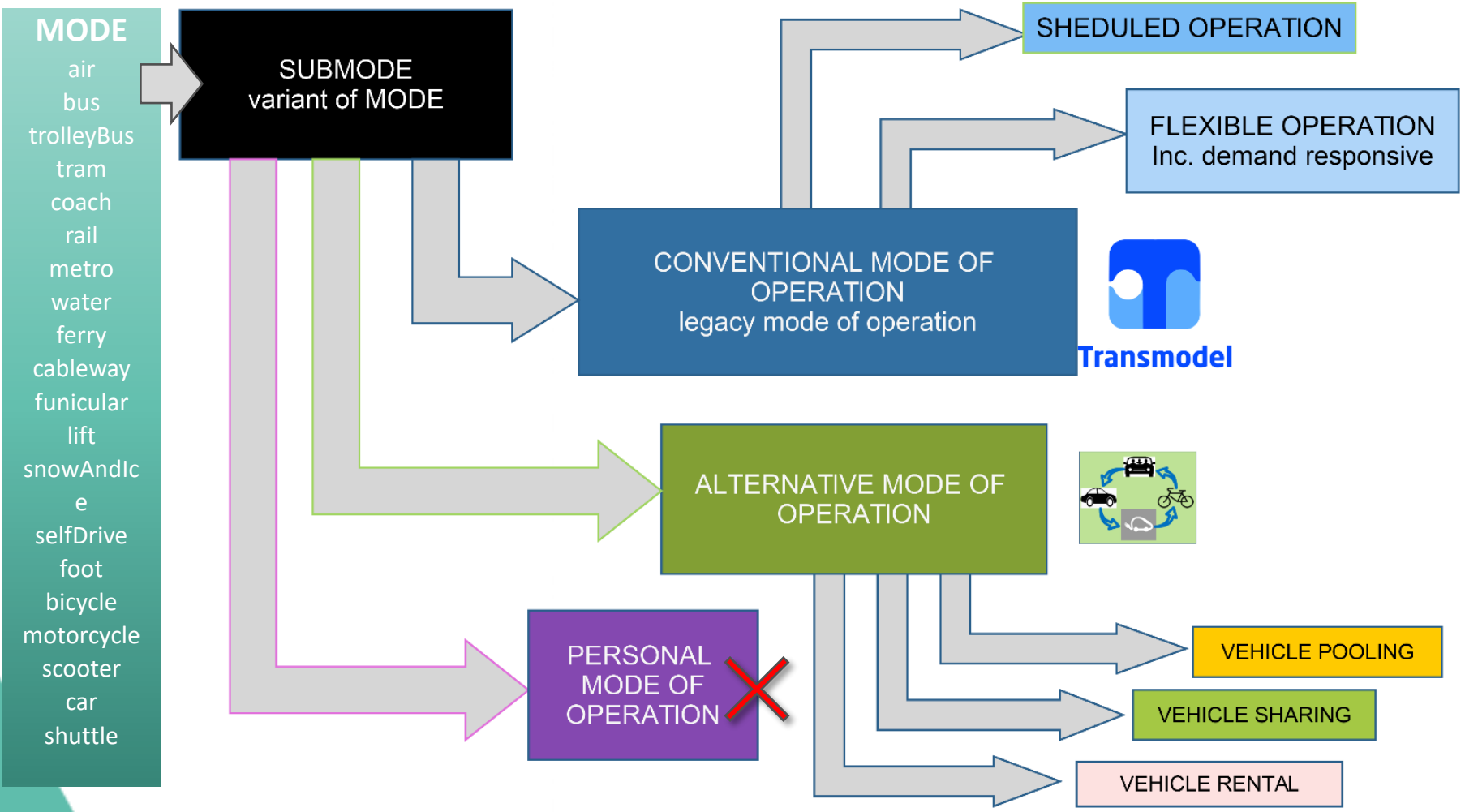
# NeTEx is a data exchange formats (possible use via an API)

```
<!-- Frame NETEX_ARRÊT-->
<GeneralFrame version="001" id="AURIGE:TypeOfFrame:NETEX_ARRÊT-Le-Corbusier:LOC">
  <Name>Frame NETEX_ARRÊT Le Corbusier</Name>
  <Description>Frame NETEX_ARRÊT pour l'exemple d'arrêt Le Corbusier</Description>
  <TypeOfFrameRef ref="FR:TypeOfFrame:NETEX_ARRÊT" version="1.01:FR-NETEX_ARRÊT-1.0" </TypeOfFrameRef>
  <members modificationSet="all">

    <!-- ===== -->
    <!-- LIEU D'ARRÊT MONOMODAL Jules Michelet -->
    <StopPlace version="001" id="FR:78197:StopPlace:00004:LOC">
      <!-- le "LOC" sera supprimé si l'on dispose d'un référentiel d'arrêt partagé -->
      <Name>Jules Michelet</Name>
      <Description>Lieu d'arrêt monomodal Jules Michelet</Description>
      <Centroid>
        <Location id="AURIGE:Location:00011:LOC">
          <Longitude>2.071341</Longitude>
          <Latitude>48.766715</Latitude>
        </Location>
      </Centroid>
      <placeTypes>
        <TypeOfPlaceRef ref="monomodalStopPlace"/>
      </placeTypes>
      <RoadAddress version="any" id="AURIGE:RoadAddress:address11:LOC">
        <RoadName>Rue Le Corbusier</RoadName>
      </RoadAddress>
      <Landmark>Face à l'école maternelle Jeanne Moreau</Landmark>
      <TopographicPlaceRef ref="INSEE:TopographicPlace:78297"/>
      <OrganisationRef version="001" ref="AURIGE:Operator:768:LOC"/>
      <!-- Fait partie du Pôle Monomodal Le Corbusier -->
      <ParentSiteRef version="001" ref="FR:78197:StopPlace:00001:LOC"/>
      <TransportMode>bus</TransportMode>
      <StopPlaceType>onstreetBus</StopPlaceType>
      <quays>
        <QuayRef ref="AURIGE:Quay:008:LOC" version="001"/>
        <QuayRef ref="AURIGE:Quay:008:LOC" version="001"/>
      </quays>
    </StopPlace>
  <Quay version="001" id="AURIGE:Quay:008:LOC">
    <Name>Jules Michelet</Name>
```



# Transmodel and NeTEx's modes

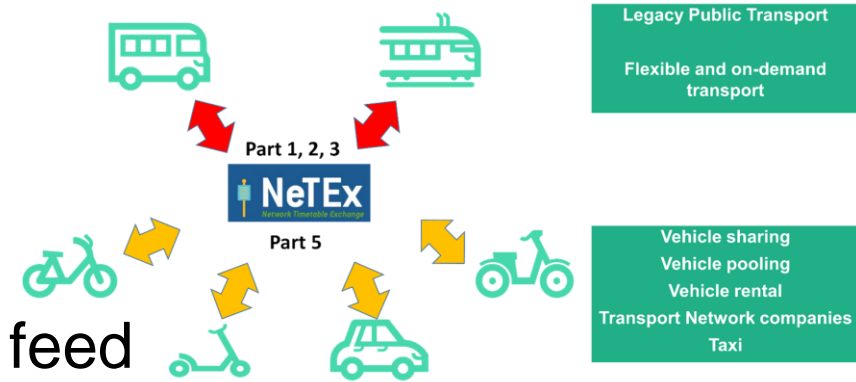




# NeTEx: use cases examples

## *CEN TS 16614-1 to 5*

### *Scheduled data exchange*



To feed journey planner

Passenger information system feed

Open data feed (often as an enhanced complement to GTFS)

AVMS feed

Exchange for co-operated network

Late schedule update (on a specific day) dissemination

Ticketing system feed



# Profiles



# Profiles: why ?

Standards are by their nature, **consensus documents**, taking into account a wide range of requirement

Standards may contain some redundant features in order to take into account some alternate **national specific** ways of working with PT.

The scope of a standard most often goes **much further than** the one of a **single use case**

Standards' documents are often quite **large and detailed** (also due to the expected detail level and prescribed editorial rules)

Standards contains a lot of **non mandatory features** (services, attributes, processes, etc.)

**Specific local rules** (coding, local processes, etc.) are not described in standards

- For example, reference to NaPTAN (national Stop reference database) in UK



# Profiles: why ?

As a summary

A profile

- **facilitates the implementation** of a standard
- **improves interoperability**

by

- **focusing only on what is needed**
- **filling the small gaps** voluntarily left by the standard
- **taking into account the local context.**





# Profiles: what ?

The profile contains information such as:

- Details of used services
- Details of the objects used in an exchange
- Details on the options proposed by the standard
- Details on optional elements
- Precision on the codifications to be used
- ...

To define a profile, you need to:

- Define/identify use cases and requirements
- Identify local constraints (processes, coding rules, reference data, etc.)
- Select in the standard what is necessary or useful to fulfil the two above
- Complement the standard with some specific (but standard compliant) local rules

From a practical point of view, profiles can be seen as an implementation guideline for a certain standard.



# Resources

## Support and resources (tools, etc.)

<https://data4pt-project.eu/>

<http://netex-cen.eu/>

<https://github.com/NeTEx-CEN/NeTEx>

<https://data4pt.org/wiki/NeTEx>

<http://www.normes-donnees-tc.org/format-dechange/donnees-theoriques/netex/> (in French)

<http://www.transmodel-cen.eu/>

<http://siri-cen.eu/>

## National NeTEx Profiles

<http://www.normes-donnees-tc.org/profils/>

[https://transportdatamanagement.ch/content/uploads/2020/11/NeTEx\\_Core-Realisation\\_Guide\\_TP\\_Suisse-v0.8.8.4.pdf](https://transportdatamanagement.ch/content/uploads/2020/11/NeTEx_Core-Realisation_Guide_TP_Suisse-v0.8.8.4.pdf)

<https://enturas.atlassian.net/wiki/spaces/PUBLIC/pages/728891481/Nordic%2BNeTEx%2BProfile>

<https://www.vdv.de/vdv-462-netex-recommendation-v00-22-english.pdf>

[http://netex.uk/forexchange/doc/uk\\_profile/DfT-NeTEx-3-Fares\\_Spec-2019.06.17-v0.17.pdf](http://netex.uk/forexchange/doc/uk_profile/DfT-NeTEx-3-Fares_Spec-2019.06.17-v0.17.pdf)

<https://bison.dova.nu/standaarden/nederlands-netex-profiel>

[https://data4pt.org/NeTEx/GraphicKit/XSD\\_reduced.zip](https://data4pt.org/NeTEx/GraphicKit/XSD_reduced.zip) (XSD reduced to EPIP scope)

## Tools

<https://github.com/entur/>

<https://github.com/enroute-mobi/> (<https://enroute.mobi/chouette/> )

<https://github.com/skinkie/hastus>

<http://docs.opentripplanner.org/en/dev-2.x/Netex-Norway/>

[https://github.com/CanalTP/transit\\_model/tree/master/gtfs2netexfr](https://github.com/CanalTP/transit_model/tree/master/gtfs2netexfr)

<https://mobilitx.diginext.fr/>  
22/06/2021

<https://www.lumiplan.com/produit/mobiref/>



# data4pt

Thank you for your attention

Data4PT has received funding from the European Union's DG for Mobility and Transport under grant agreement No MOVE/B4/SUB/2019-104/CEF/PSA/SI2.821136