UK Fares and NeTEx Profile – Suppliers Workshop

CPT London 29 August 2019

11:00 – 11:30	**Intro & Initial Q&A**
11:30 – 12:00	**NeTEx Overview -**
12:00 – 13:00	**Common Profile features: UML & examples -**
13:00 - 13:45	Lunch Break
13:45 - 14:15	Basic Profile: Stop & Timetable UML & examples
14:30 - 14-45	Tea Break
14:45 - 16:30	Fare Profile: Basic Fares : UML & examples
16:30 – 17:00	Supplier Q&A

Objective: Facilitate Technical engagement with NeTEx, especially for Fares

❖ Intro & Initial Q&A

❖ Quick overview of NeTEx

❖ UML & XML Examples
1. Common Framework
2. Stops & Timetables
3. Fares

❖ End Q & A

Initial Q&A - Supplier Interests & Concerns?

▶ **Areas of Interest:**

- Timetables,? Fares?
- Timescales for engaging with NeTEx?

▶ **Areas of Uncertainty?**

- Specific issues ./questions

▶ **Areas of Concern?**

▶ Gaps?

▶ Unnecessary Features

▶ Ways of simplifying?

▶ **How to engage**

▶ Shared Validation processes ?

▶ Future requirements?

NeTEx & UK Standards
A Brief Overview

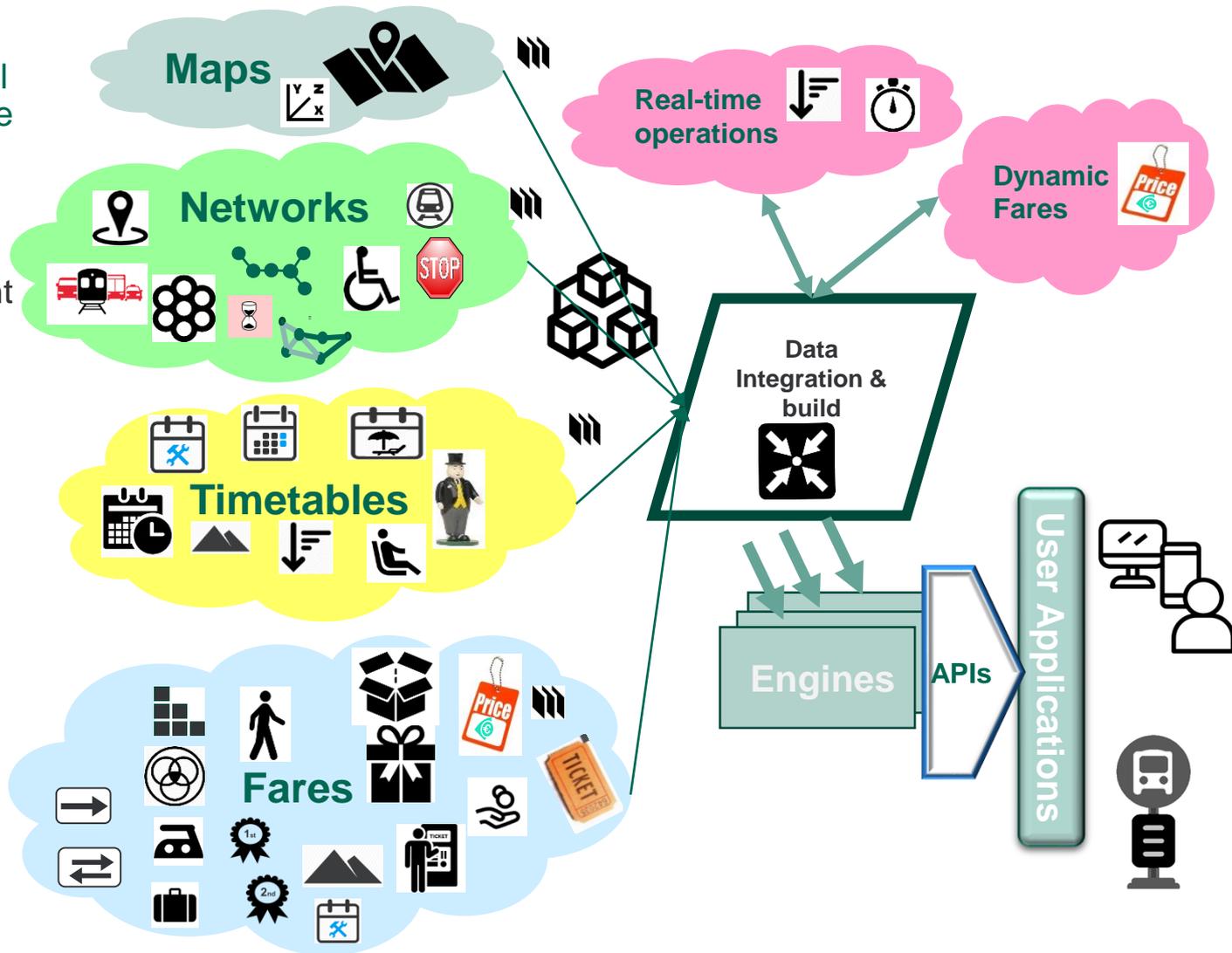# Why? - Integrating data for Passenger Information services

- 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**

Maps

Networks

Timetables

Fares

Real-time operations

Dynamic Fares

Data Integration & build

Engines

APIs

User Applications

Department for Transport

- Complementary formats & protocols:
  - Bulk exchange of static data (NeTEx)
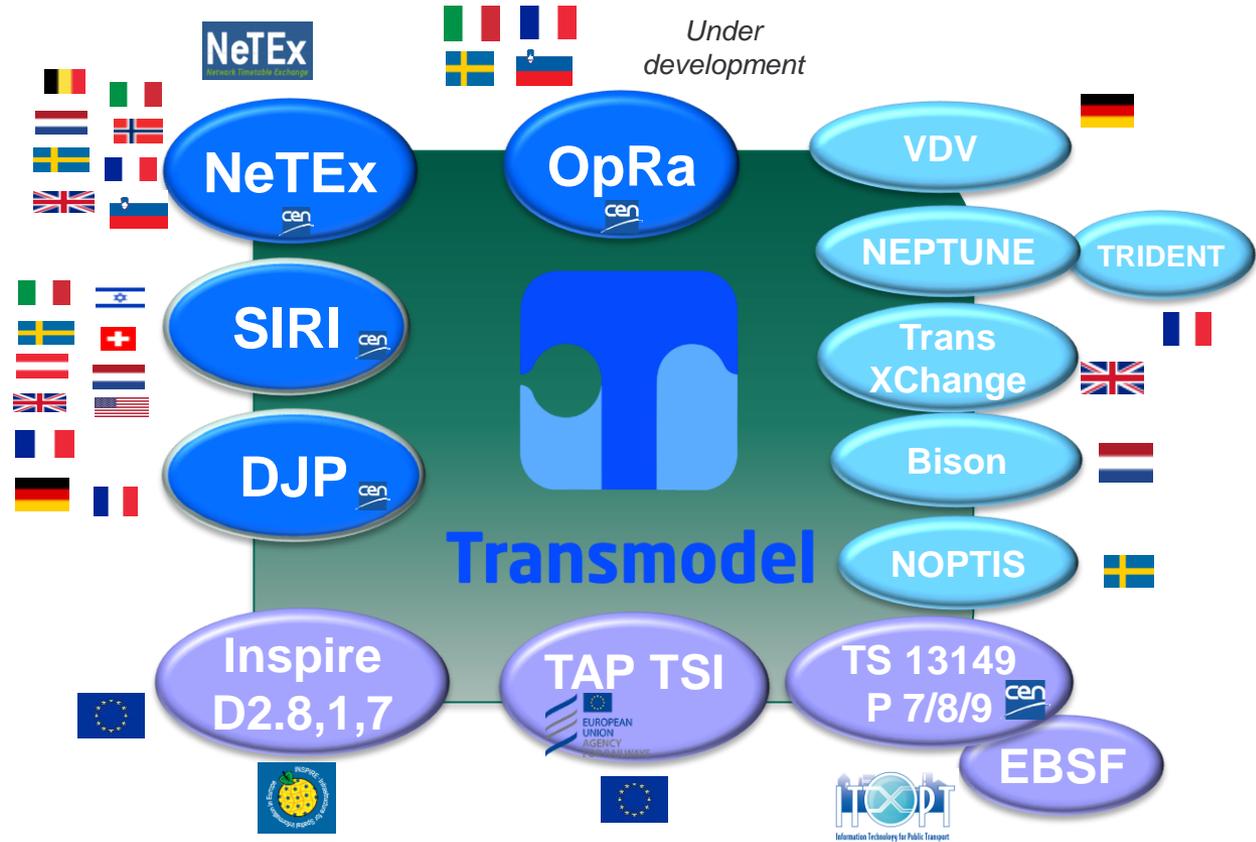 - Dynamic APIs for data (SIRI, DJP)
- Flexibility: adaptations to local needs
  - National Standards & profiles
- Coherent "Bridges" to standards for other domains

  GIS – eg Inspire

  Road – Eg DATEx

NeTEx — Network Timetable Exchange

Under development

NeTEx · OpRa · VDV · NEPTUNE · TRIDENT · SIRI · Trans XChange · DJP · Bison · Transmodel · NOPTIS · Inspire D2.8,1,7 · TAP TSI · TS 13149 P 7/8/9 · EBSF

Flags Indicative, not Exhaustive — Transmodel based CEN Standard — Transmodel Interoperating European Standard — National Standard — API

What is NeTEx?

▸ **A CEN standard format for the exchange of PT data for Passenger Information**

  ▸ Networks, Timetables, Fares

▸ **Based on CEN Transmodel conceptual model for PT data** (NeTEx is a subset)

  ▸ Concepts evolved over 20 years from real PT systems across Europe. (Now on Version 6.0)

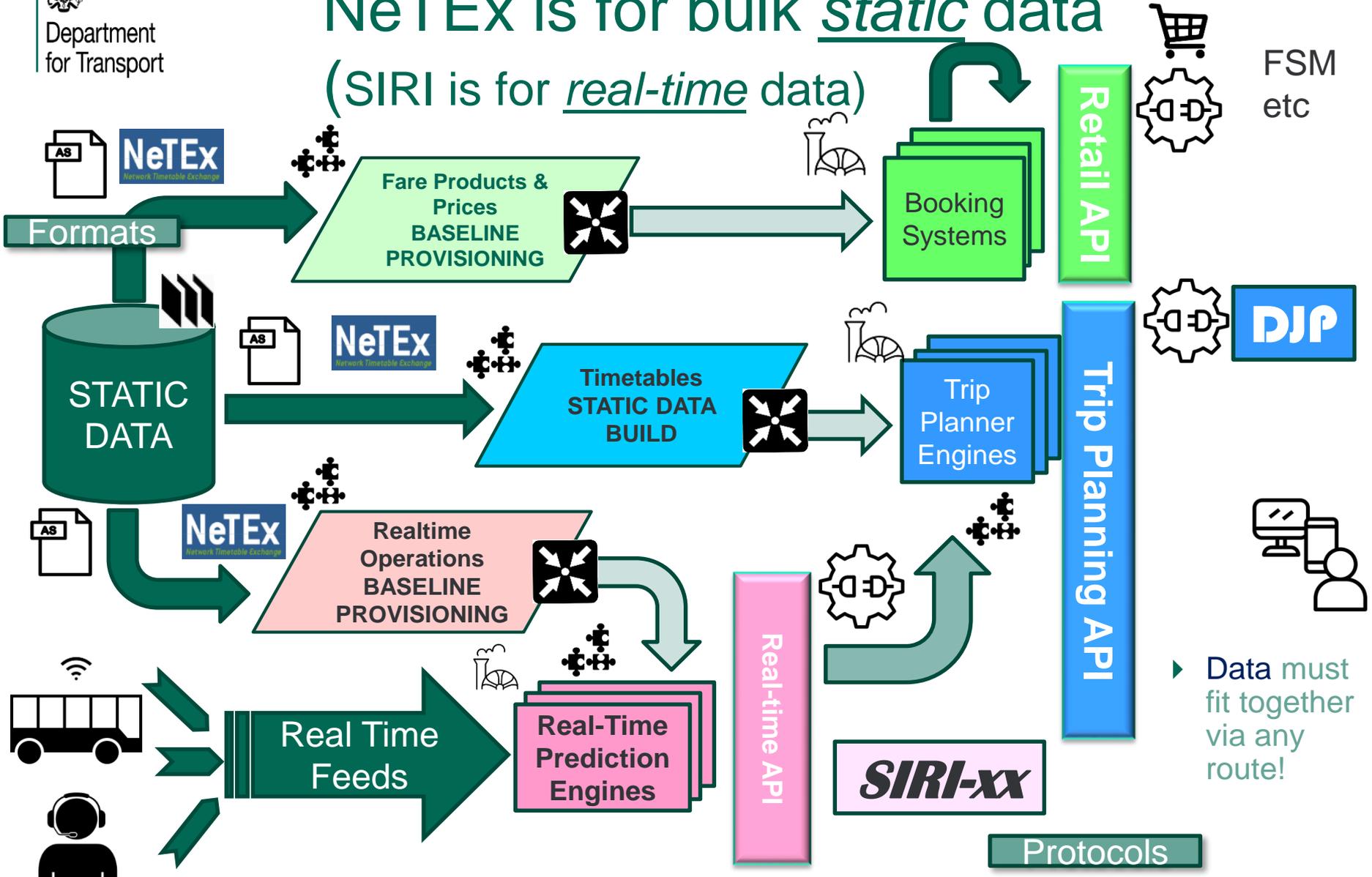 ▸ Now mandated for widespread EU use

▸ **Uses a modular XML schema**

  ▸ Model driven design from conceptual model in UML
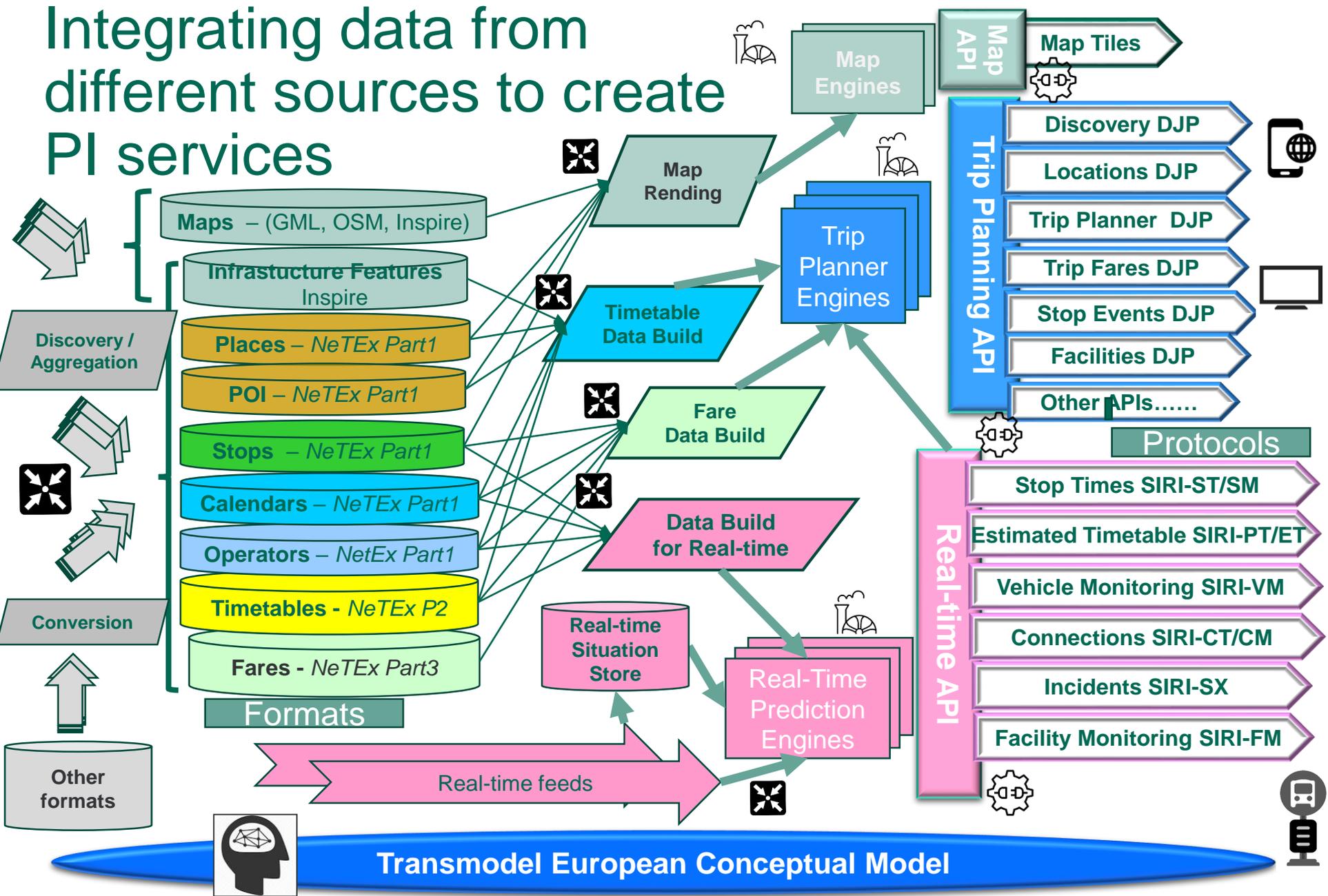
  ▸ Free to use under a GPL License

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

FSM etc

Formats

STATIC DATA

Fare Products & Prices BASELINE PROVISIONING

Booking Systems

Retail API

Timetables STATIC DATA BUILD

Trip Planner Engines

Trip Planning API

DJP

Realtime Operations BASELINE PROVISIONING

Real Time Feeds

Real-Time Prediction Engines

Real-time API

SIRI-xx

▸ Data must fit together via any route!

Protocols

September 19

Integrating data from different sources to create PI services

Map Engines

Map API — Map Tiles

Trip Planning API
- Discovery DJP
- Locations DJP
- Trip Planner DJP
- Trip Fares DJP
- Stop Events DJP
- Facilities DJP
- Other APIs……

Map Rending

Trip Planner Engines

Maps – (GML, OSM, Inspire)

Infrastructure Features Inspire

Discovery / Aggregation

Places – *NeTEx Part1*

POI – *NeTEx Part1*

Timetable Data Build

Fare Data Build

Protocols

Real-time API
- Stop Times SIRI-ST/SM
- Estimated Timetable SIRI-PT/ET
- Vehicle Monitoring SIRI-VM
- Connections SIRI-CT/CM
- Incidents SIRI-SX
- Facility Monitoring SIRI-FM

Stops – *NeTEx Part1*

Calendars – *NeTEx Part1*

Operators – *NetEx Part1*

Timetables - *NeTEx P2*

Fares - *NeTEx Part3*

Data Build for Real-time

Conversion

Formats

Real-time Situation Store

Real-Time Prediction Engines

Other formats

Real-time feeds

Transmodel European Conceptual Model

Transmodel and the EC ACT/ ITS MMTIS Regulation

NATIONAL ACCESS POINT

data exchange formats

INSPIRE	NeTEx	SIRI	TAP TSI	IATA	DATEX II

Transmodel

spatial network

rail

air

road transport
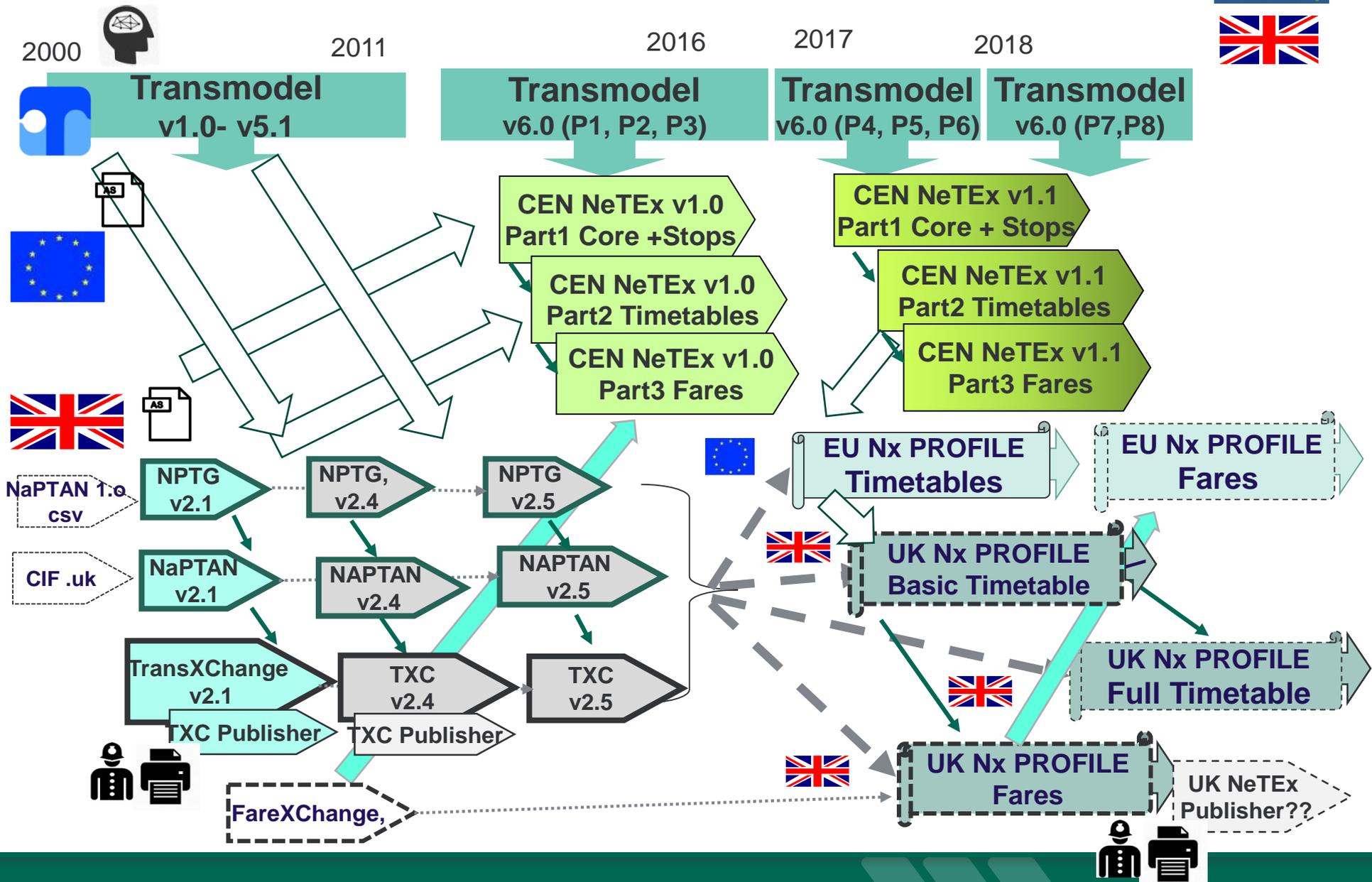
multimodal: **road, rail, water, air**
urban & long distance transport

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

NeTEx – Evolution from National Standards

2011 2012 2016 2018

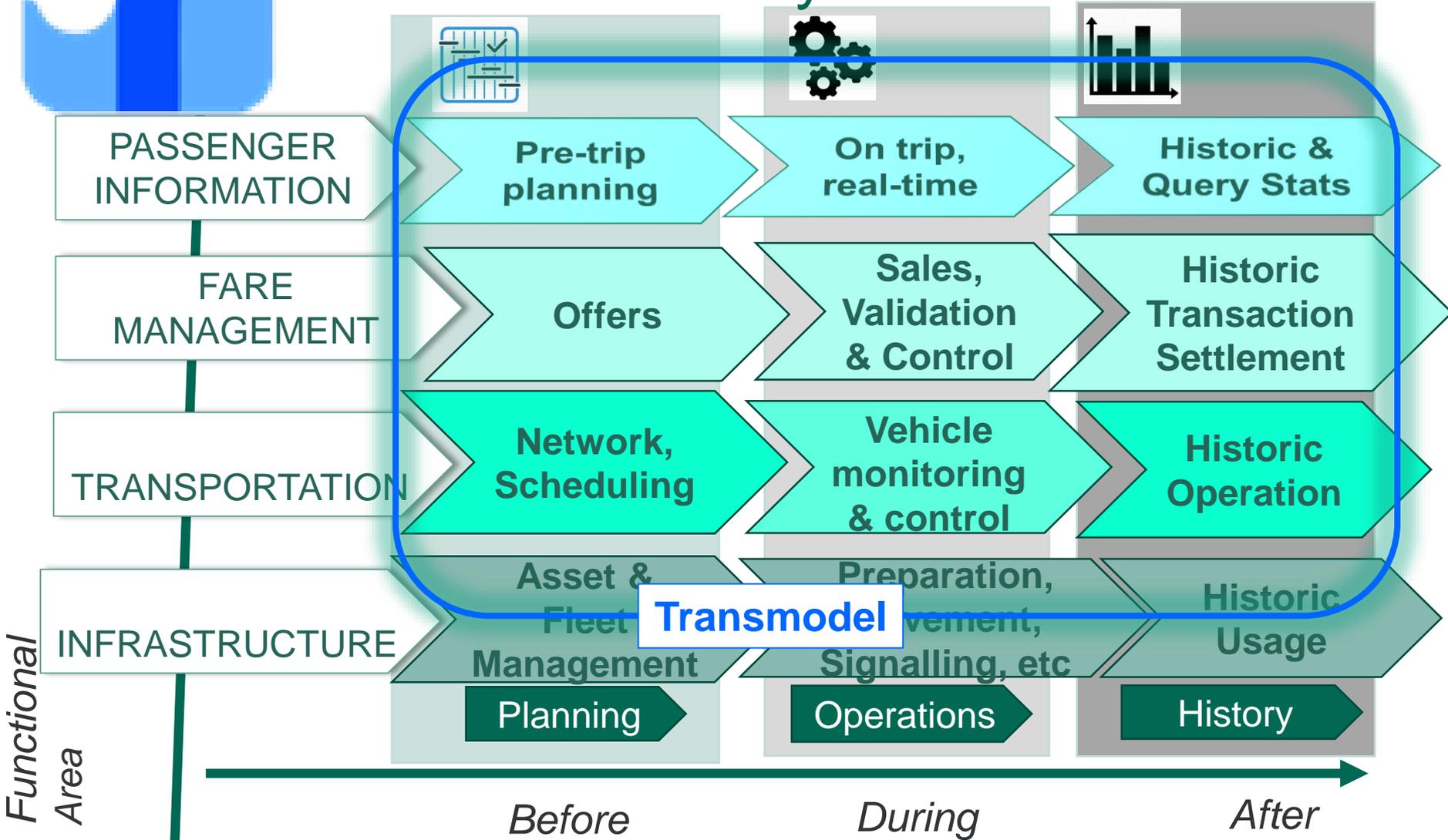**Transmodel v1.0- v5.1**

Transmodel v6.0

Transmodel v6.0 (P1, P2, P3)

Transmodel v6.0 (P4, P5, P6)

Transmodel v6.0 (P7,P8)

Legacy .fr

Legacy .de

Legacy .uk

Legacy .nl

Trident/ NEPTUNE

VDV452

TransXChange, etc

Bison, Noptis, etc

NaPTAN, etc

IFOPT

FareXChange,

SIRI

UIC leaflets

GTFS,

TAP TSI (Rail fares)

CEN NeTEx v1.0 Part1

CEN NeTEx v1.0 Part2

CEN NeTEx v1.0 Part3

CEN NeTEx v1.1

NeTEx
Network Timetable Exchange

.de profile

.fr profile

.nl profile

.no profile

NeTEx EU PROFILE Time tables

NeTEx EU PROFILE Fares

NeTEx – and UK National Standards

NeTEx
Network Timetable Exchange

2000	2011	2016	2017	2018

Transmodel v1.0- v5.1

Transmodel v6.0 (P1, P2, P3)

Transmodel v6.0 (P4, P5, P6)

Transmodel v6.0 (P7,P8)

CEN NeTEx v1.0 Part1 Core +Stops

CEN NeTEx v1.0 Part2 Timetables

CEN NeTEx v1.0 Part3 Fares

CEN NeTEx v1.1 Part1 Core + Stops

CEN NeTEx v1.1 Part2 Timetables

CEN NeTEx v1.1 Part3 Fares

EU Nx PROFILE Timetables

EU Nx PROFILE Fares

NaPTAN 1.o csv

CIF .uk

NPTG v2.1

NPTG, v2.4

NPTG v2.5

NaPTAN v2.1

NAPTAN v2.4

NAPTAN v2.5

TransXChange v2.1

TXC v2.4

TXC v2.5

TXC Publisher

TXC Publisher

UK Nx PROFILE Basic Timetable

UK Nx PROFILE Full Timetable

UK Nx PROFILE Fares

UK NeTEx Publisher??

FareXChange,

What is a NeTEx Profile?

Moving Britain Ahead

Public Transport data - Functional Activity *vs* Time of Travel

Functional Area	Planning	Operations	History
PASSENGER INFORMATION	Pre-trip planning	On trip, real-time	Historic & Query Stats
FARE MANAGEMENT	Offers	Sales, Validation & Control	Historic Transaction Settlement
TRANSPORTATION	Network, Scheduling	Vehicle monitoring & control	Historic Operation
INFRASTRUCTURE	Asset & Fleet Management	Preparation, Movement, Signalling, etc	Historic Usage

Transmodel

Before　　*During*　　*After*

Standards Scope
Transmodel subdomains

Functional Area

	Before	During	After
PASSENGER INFORMATION		On trip, real-time	Historic & Query Stats
FARE MANAGEMENT	planning	Sales, Validation & Control	Historic Transaction Settlement
TRANSPORTATION	Network, Scheduling	Vehicle monitoring	Historic Operation
INFRASTRUCTURE	Asset & Management	Preparation, movement, Signalling, etc	Historic Usage
	Planning	Operations	History

GTFS-RT

GTFS

DJP

NeTEx — Network Timetable Exchange

SIRI-xx

OPRA

Transmodel

Simplifying implementation 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 & codespaces (NPTG, NaPTAN, NOC).
  - Use of coordinate systems (O/S, WGS85..), Time zones, etc..
  - Grouping of elements in document
- **Profile - Use in National Context**
  - Granularity of NeTEx data files
  - Participants & Workflow of data exchange
  - Validation & Verification processes
- **Profile Management**
  - Stakeholders engaged in profile revision process
  - Governance of processes for future evolution

Scope of Profiles

POI & Accessibility data Profile

Stop & Timetable PI Profile

NeTEx
Network Timetable Exchange

Fare Profile

Validation & Control data Profile

Infrastructure data Profile

Timing data Profile

September 19
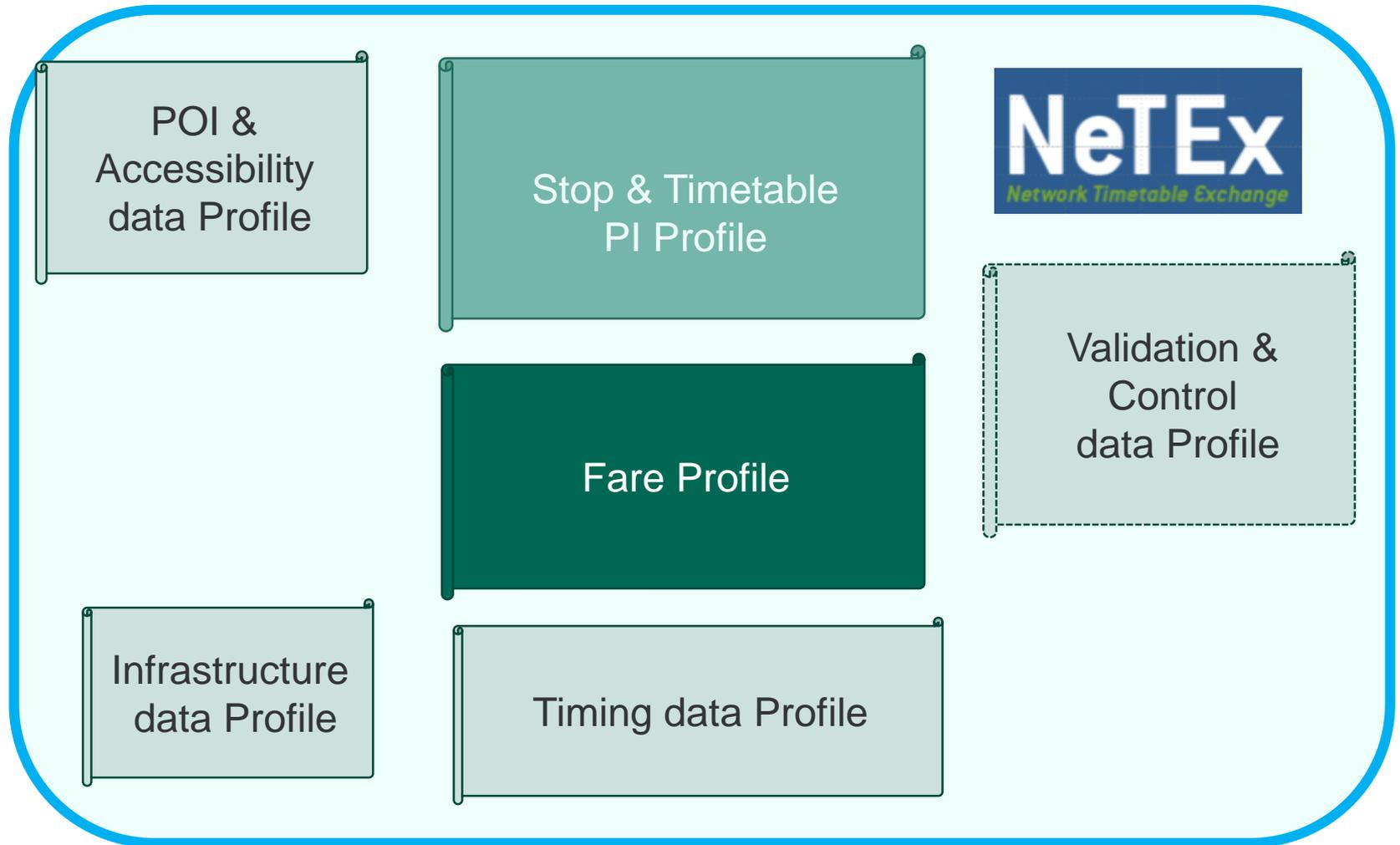
European Passenger Information Profile (EPIP)

▶ Final draft for country review May 2019
  - Draft available on Netex.uk website

▶ Minimal profile for Basic Passenger Information
  - Covers localities, stops and timetables
  - Timetables are basic - Passing times only (no timings)
  - No Fares

▶ Intended for international and cross-regional exchange
  - E.g. National Access Points can convert existing data

▶ Shorter, implementation focused specification
  - Includes validation rules and other implementation details
  - Pan-European identifier system for frames & documents

▶ Model for UK Base profile
  - How to map a minimum set of UK timetable data
  - Presentation Conventions also used Fare profile documentation

Moving Britain Ahead

September 19

UK NeTEx Profile Project
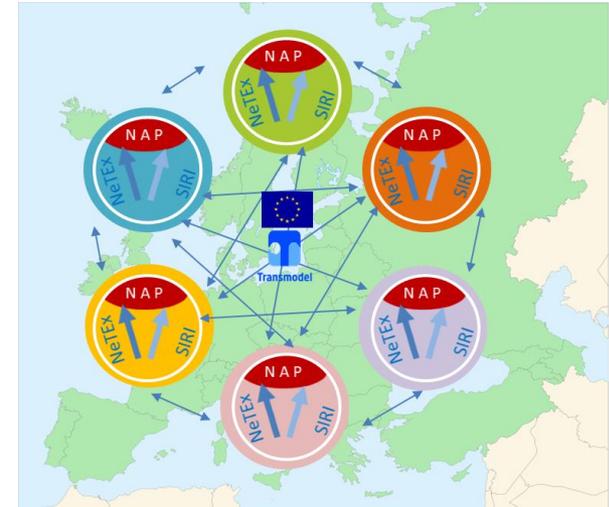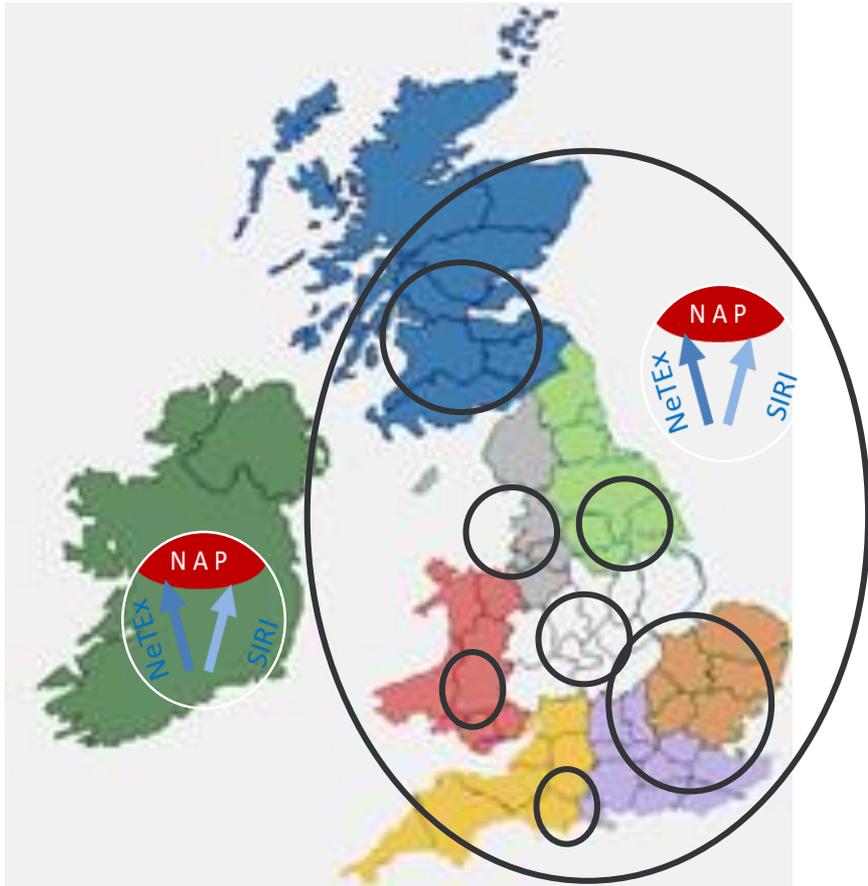
- ❖ Develop a **UK PI Profile** that shows how UK Timetable data can be made available in NeTEx to conform to common EU Profile
  - ▪ Subset of existing TransXChange capability

- ❖ Develop a UK **Fare** Profile

  - • New UK standard for exchanging fares
  - • Focus on buses

Conformance to a Profile

▶ **Strict** Conformance

- ▶ Use only the identifier **codespaces, values, groupings**, etc of the profile.
- ▶ Use **only** the XML elements, and attributes 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.

Moving Britain Ahead

September 19

Degrees of Conformance

NeTEx
Network Timetable Exchange

Any NeTEx XML element

Codespaces/ Identifiers,

Values,

Grouping conventions, etc

Profile elements only

STRICT

NeTex Elements only
AUGMENTED +

User Extensions
EXTENDED

September 19
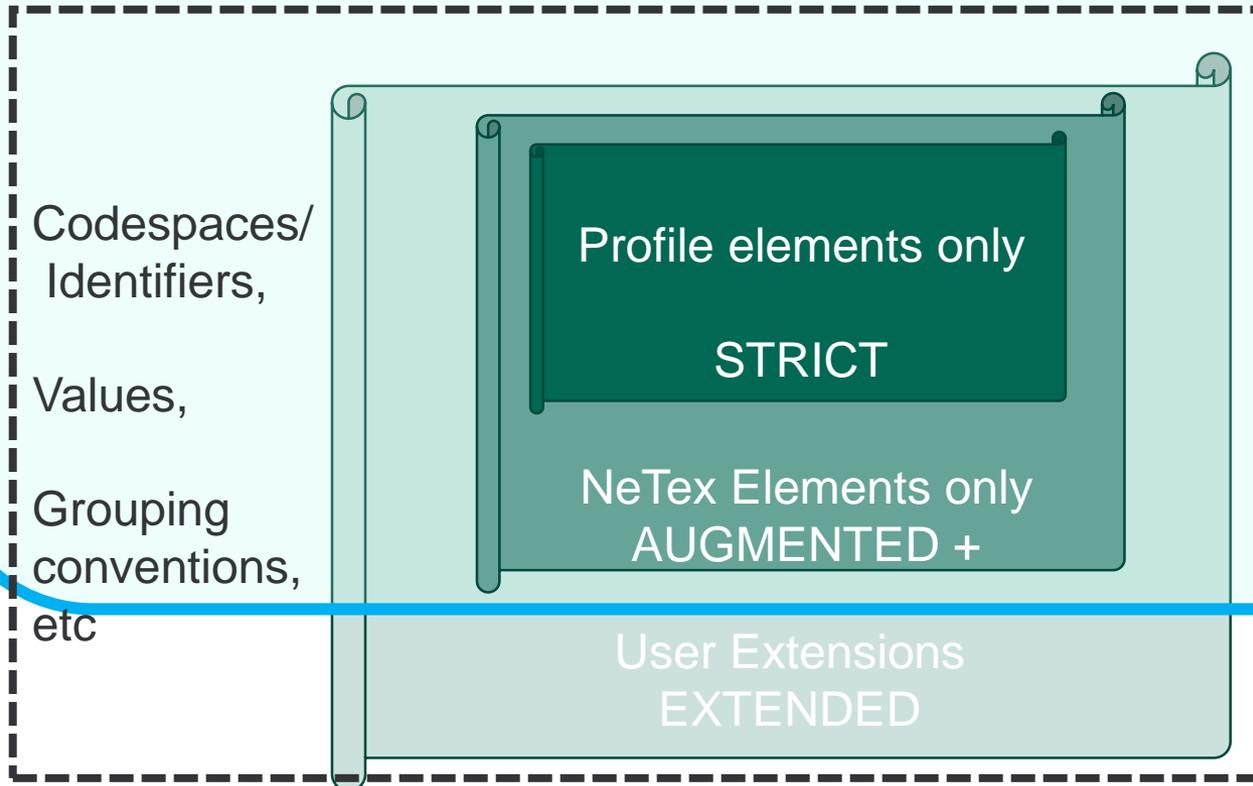
EPIP vs UK Profiles - comparison

Department for Transport

NeTEx — Network Timetable Exchange

Codespaces/ Identifiers,

Values,

Grouping conventions, etc

European Stop & Timetable Profile (EPIP) STRICT

🇬🇧 Strict (FXCP-1)

🇬🇧 AUGMENTED +

🇬🇧 UK Fare Profile s (FXCP-2)

STRICT

🇬🇧 AUGMENTED +
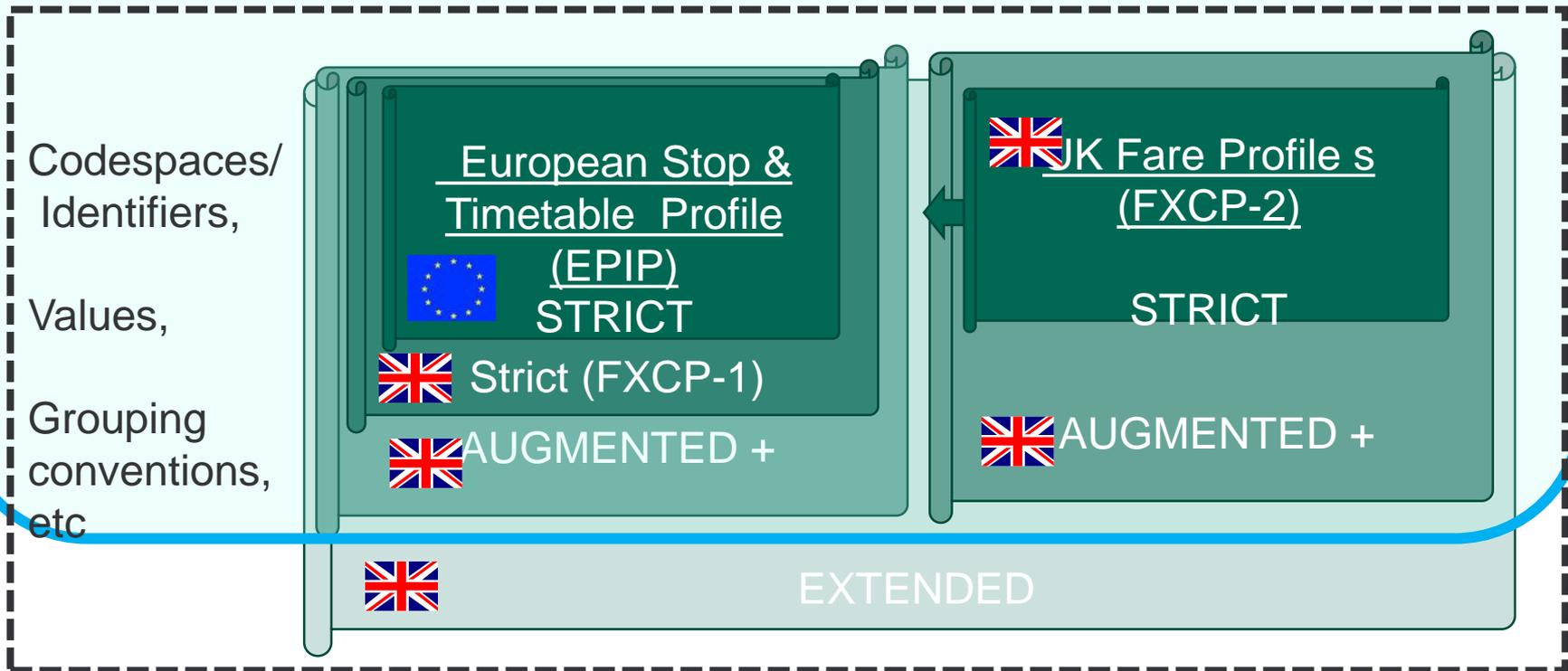
🇬🇧 EXTENDED

UK Basic profile extends EPIP

NeTEx Resources

1. NeTEx

2. Fare Profile

NeTEx & Transmodel CEN Specifications Documents

Department for Transport

2. UK Basic Profile

NeTEx EPIP Profile

3. UK Fare Profile

NeTEx Part1

Common Framework & Network definition

NeTEx Part2

Timetables etc

NeTEx Part2

Fares etc

Transmodel Part1

Common Framework

Transmodel Part2

Network definition

Transmodel Part3

Timetables

Transmodel Part4

Operations & Control

Transmodel Part5

Fares & Validation

TM 6,7,8

September 19
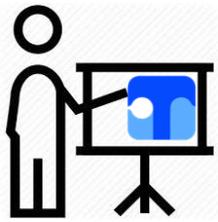
MODEL DRIVEN DESIGN

- **Conceptual Model is implementation independent**
  - Use to design
  - 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

Concept

CONCEPTUAL MODEL

Design

Physical Model for HLL

Physical Model for DDL

Physical Model for XML

Implementation

in **Java**

Implementation in **SQL**

Implementation in XML
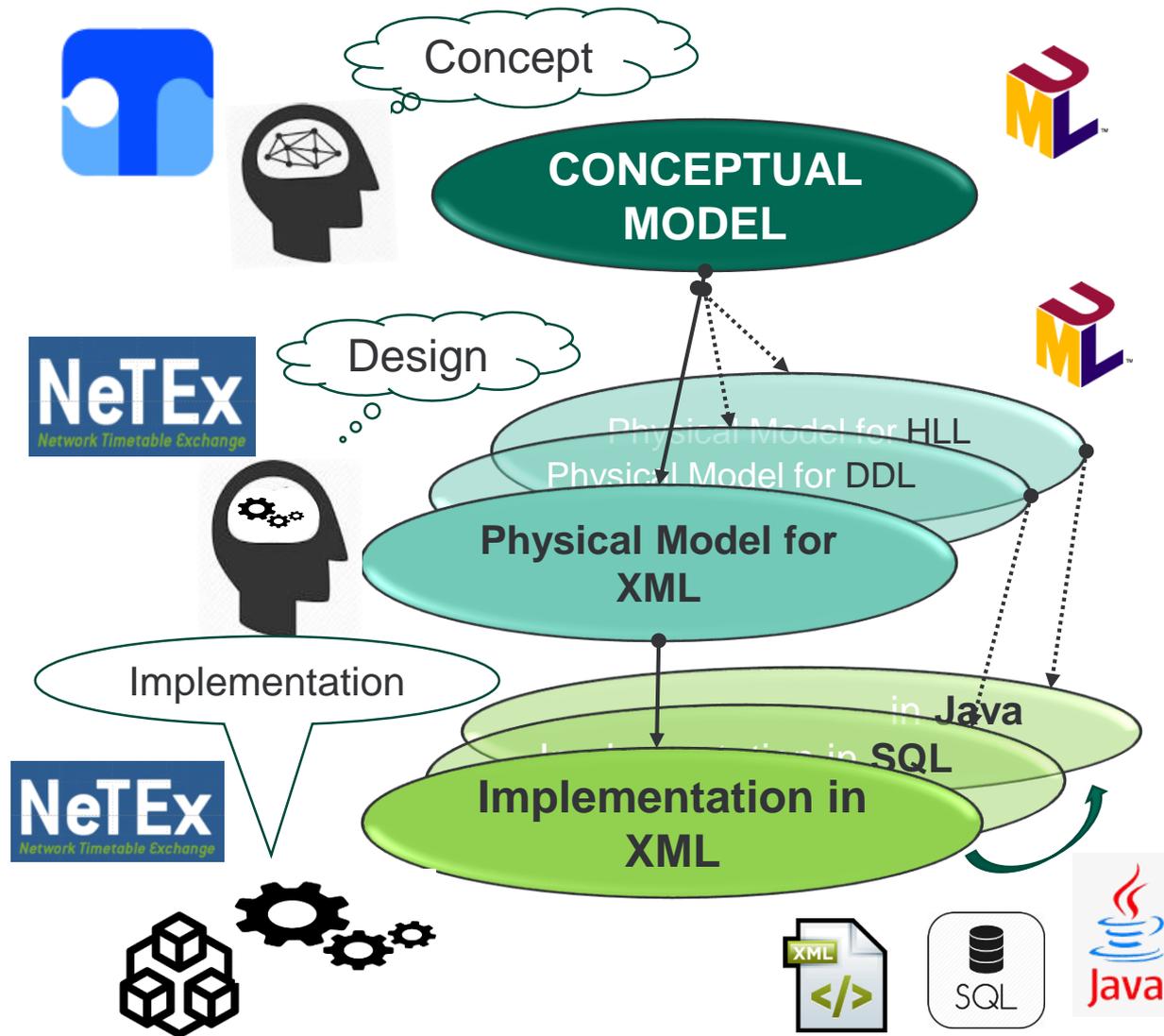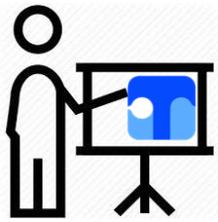
Designing a CEN Exchange format - Package & Element level traceability

Conceptual → **Physical** NeTEx → **Schema** NeTEx
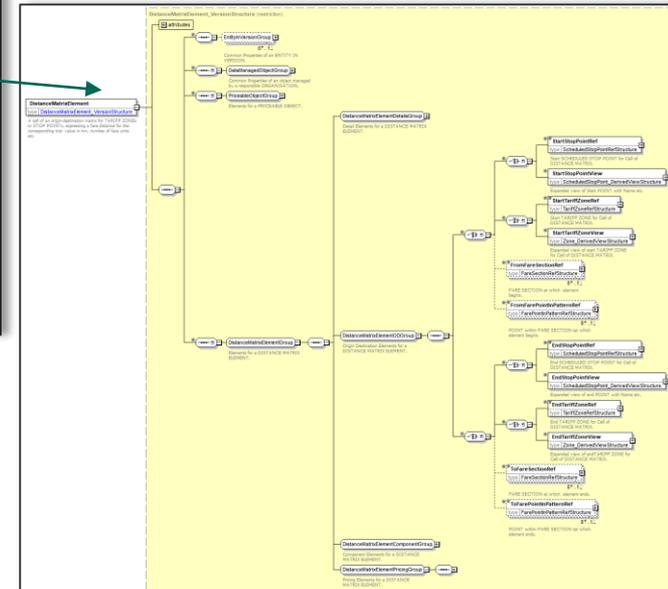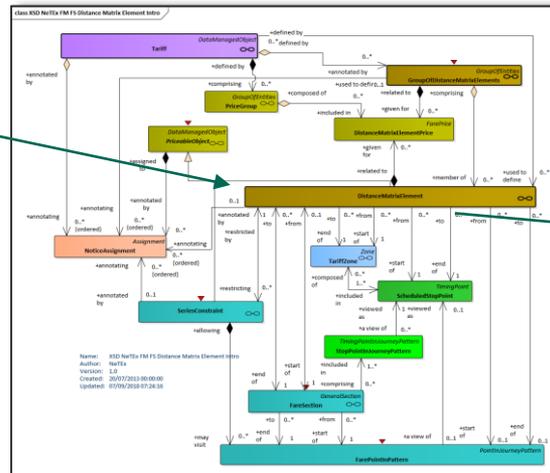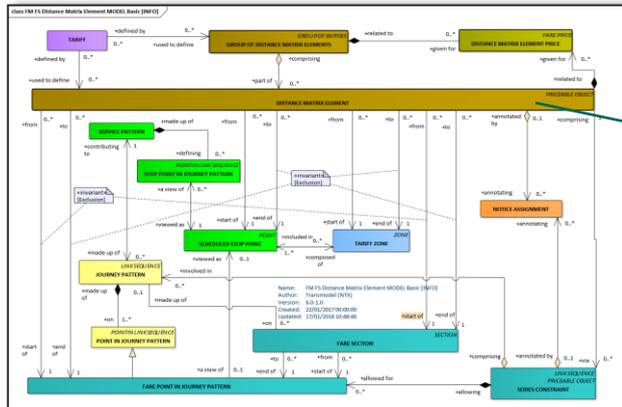
▶ **Traceability**

- Equivalent elements can be found at each level

- Physical design and Implementation each add further detail and constraints

▶ **Tool support (EA, XML SPY, OXYGEN, etc)**

NeTEx Deliverables & IPR

- **CEN specification documents (Modular)**
  - P1: *Network*, P2: *Timetables*, P3: *Fares*
  - Available from BSI £ Buy, Copyright CEN
- **UML Models (Modular). £ Free, GPL**
  - Conceptual, Physical
- **NeTEx XML schema (Modular). £ Free, GPL**
  - Uniform grouping & versioning mechanisms to support large scale integration
- **XML Examples (Modular). £ Free, GPL**
  - By Topic and Subject
- **Website, white papers. £ Free, GPL**
  - http://netex-cen.eu/

UK NeTEx Deliverables & IPR
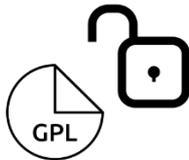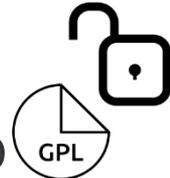
- UK Profile(s) £ Free, GPL
  - Basic Timetable,
  - Basic Fares, Additional Fares
  - *Full Timetable,*
- UML Models of UK Profile. **£ Free, GPL**
  - Conceptual, Physical
- XML Examples (Modular). £ Free, GPL
  - Fares
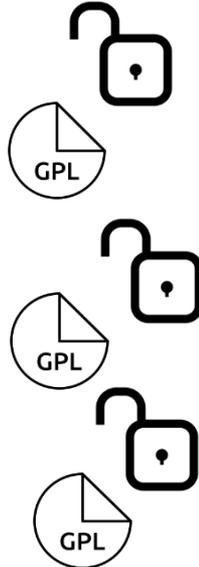
NeTEx UK Profile Progress - Specification

FareXChange documentation	Audience	Contents	FXCP Status	EPIP Status	XML Examples
Part1 **Introduction**	Overview, +Technical Intro	• **NeTEx intro.** • **Scope of profile**, Rationale for scope. • *Examples of UK Bus fare products in scope.*	Review Draft 5/2019		
Part2 **Framework, Stops & Timetable**	Technical detail	• Common profile elements. • Basic Stop elements; Basic Timetable elements. • Use of UK data sets & identifiers. • Coding, validation and data quality rules. • **Mapping from NPTG, NaPTAN, TransXChange.** • *Examples of using UK data.*	Review Draft 5/2019	Final Draft 4/2019	Draft 5/2019
Part3 **Fares**	Technical detail	• **Basic model elements for UK Bus Fares.** • **Advanced model elements for UK Bus Fares**. • Coding, Validation and data quality rules. • Use of NaPTAN and NOC data • *XML Examples. **Mapping to csv / spreadsheet***	Review Draft 5/2019	Future	Draft 5/2019

Netex.uk mirror site

Department for Transport

NeTEx Network Timetable Exchange -

CEN/TS 16614

UK Mirror site

UK Mirror

NeTEx UK

- Home
- Overview
- Downloads & Schema
- History
- Terms of Use
- Contact

Related Standards

- NeTEx (UK)
- FareXChange UK
- CEN NeTEx
- CEN Transmodel
- SIRI

Official sites

- CEN

NeTEx is a CEN/ Technical Standard for exchanging Public Transport schedules, fares and related data.

The official NeTEx site is at http://netex-cen.eu/

This is a UK development site to assist the use of NeTEx formats for UK data.

NeTEx is intended to provide a European wide standard for exchanging Public Transport data for Passenger Information;

- NeTEx is a general purpose format capable of exchanging timetables and fares for Rail, Bus, Coach, Ferry, Air or any other mode of public transport. It includes full support for rail services and can be used to exchange UIC (International Union Of Railways) data

- NeTEx is based on the CEN Transmodel standard which specifies a Conceptual model for Public Transport data.

  NeTEx uses a fully articulated model that represents PT concepts as well characterised, layered abstractions; the format is designed for the efficient, updateable exchange of complex transport data between distributed systems. This allows the data to be used in modern web services architectures and to support a wide range of passenger information and operational applications.

- The NeTEx schema is free to use and its development is managed by the CEN standards process.

cen — European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

© Copyright CEN NeTEx 2014-2019
Page last Updated 2019/07/12

Department for Transport

Resource -UK profile "FareXChange"

Department for Transport

FareXChange
UK Fare Profile 🇬🇧
Network Timetable Exchange

Development site

UK Fares profile

- Home
- Overview
- Scope
- Downloads
- History
- Terms of Use
- Contact

Examples

- Examples

UK Standards

- FareXChange profile
- NeTEx UK
- UK NaPTAN (Stops)x
- UK TransXChange (Timetables)
- UK NOC (Operators)

CEN Standards

- CEN NeTEx
- CEN Transmodel
- CEN SIRI

FareXChange - Downloads

Downloads

UK NeTEx Fare Profile

- **UK Profile Draft for review. June 2019.**
  1. NeTEx UK Profile 1 - Intro pdf (2019.06.17-v0.09)
  2. NeTEx UK Base Profile 2 - Base profile pdf (2019.06.30-v0.14)
  3. NeTEx UK Fare Profile 3 - Fares pdf (2019.06.17-v0.17)
- **European Passenger Information Profile - Final Draft May 2019.**
  1. NeTEx UK Profile 1 - Intro pdf (2019.06.17-v0.09)

Presentations

- Summary December 2018
  1. NetEx UK Fare Profile Summary of Basic Scope - PPT/pdf
- Workshops - London & Manchester November 2018
  1. NeTEx Introduction - PPT/pdf
  2. NeTEx UK Fare Profile Basic Fares Scope - PPT/pdf
  3. NeTEx UK Profile Stop & Timetable scope - PPT/pdf
  4. NeTEx UK Fare Profile Advanced Profile requirements - PPT/pdf

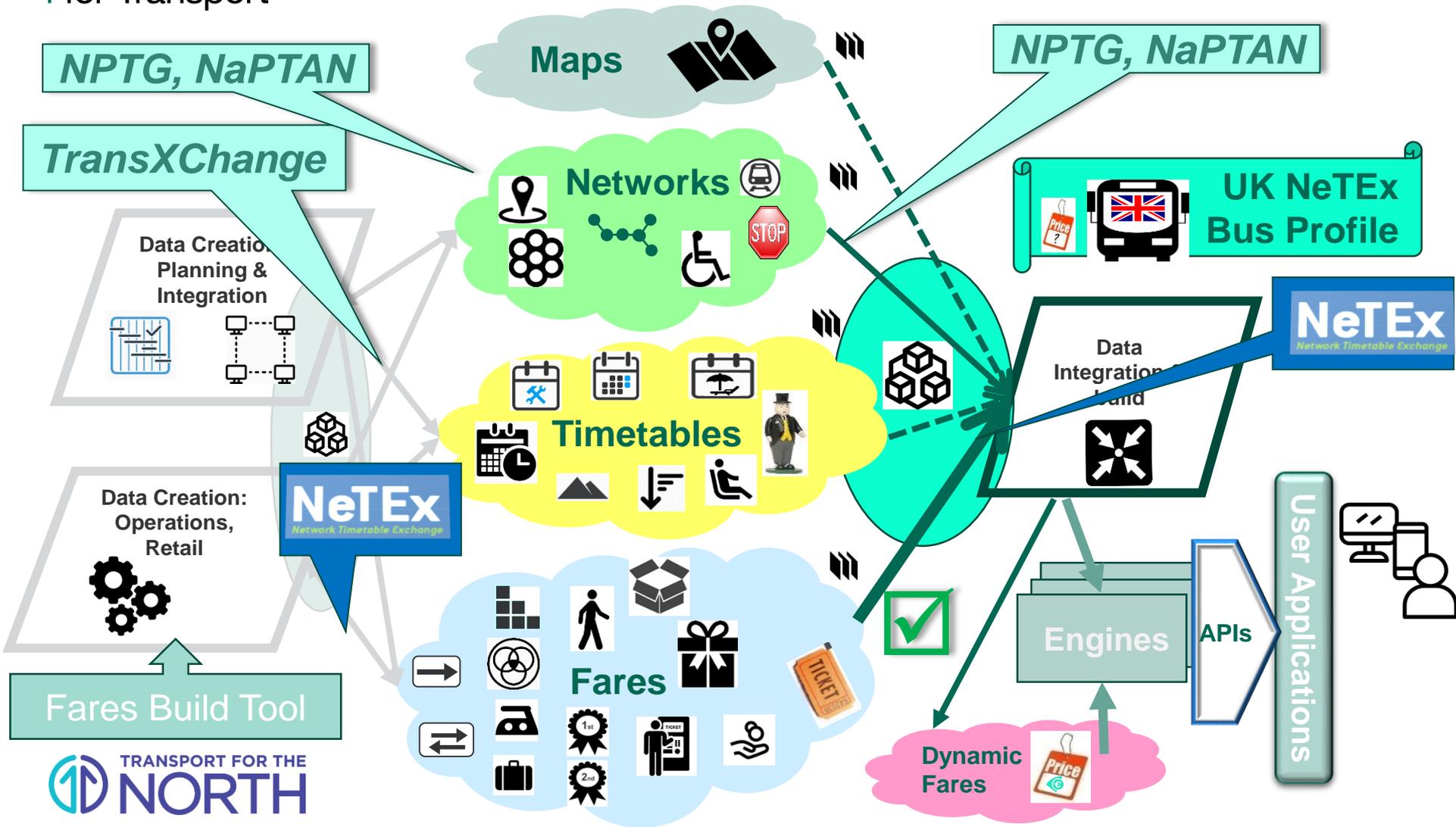Moving Britain Ahead

Scope of UK NeTEx Bus Fare profile
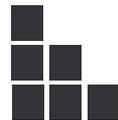
Main UK use case is Fare & Price distribution – i.e. Downstream

Department for Transport

NPTG, NaPTAN

TransXChange

Maps

NPTG, NaPTAN

Networks

UK NeTEx Bus Profile

Data Creation: Planning & Integration

Timetables

Data Integration Build

NeTEx

Data Creation: Operations, Retail

NeTEx

Fares Build Tool

TRANSPORT FOR THE NORTH

Fares

Engines

APIs

User Applications

Dynamic Fares

Aspect	UK Legacy	Basic UK profile	Advanced UK Fare Profile	Future / Further ?
Common Frame-work	(nptg, naptan txc)	• Versioning & Validity • Frames & grouping • Identifiers & references	same	
Localities	NPTG	• Locations & • Plus Bus Zones	same	
Stops	NaPTAN	• Stops , Tariff ones	same	*Accessibility,? POI?*
Timetables	TXC	• Simple EU timetables • (no timings, no op data)	n/a	*Full TXC, Rail features?*
Fares	**new**	• **Basic Bus Fares**	**More Complex Bus Fares**	*Long distance Fares?*

▸ Basic Profile

▸ Advanced Profile

▸ Out of current scope / For Future roadmap?

UK Profile scope - Modes

▶ **Can be covered by Basic Products**

- **Bus**
- **Bus as add-on** to Rail etc (e.g. Plus bus)
- **Ferry**
- **Light Rail**, **Tram**?

▶ **Require additional Advanced Features**

- **Bus supplements to Rail (**PlusBus**)**
- **Metro** / London Underground, PAYG, Capped fares)

▶ **Require additional complex features**

- **Coach**? (Seat Reservations, luggage, Routing?....)
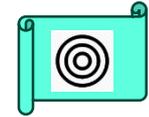- **Rail** (routing, complex times of trave,, etc)

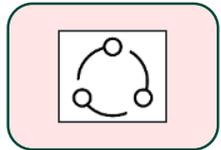"What is the minimum set of products needed to describe all common UK bus fares?"

Basic Product Types - terminology

▸ Trip

The product gives the right to make a one-off journey

▸ Pass

The product combines access rights to make repeated journeys within a time interval (Day, Week, Month etc)

▸ Carnet

The product comprises a number of Trips or Passes sold as a bundle at a discount. They must be used within a given period.

September 19

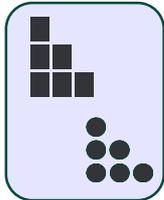# Tariff Structures - Spatial aspects:

▶ **Flat** – There is only one price for the fare or product regardless of distance.

▶ **Point-to-point, Zone–to-Zone.** The fare gives the right to travel between two named stops. A discrete fare price can be given for each origin/destination pair.

- Usually the fare prices increase progressively with increasing distance travelled, but the increase is not necessarily a strict linear function (further may be cheaper, and individual O/D prices may be adjusted arbitrarily to optimize yields, traffic, competitive advantage, etc).

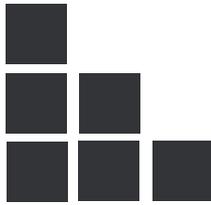- Both Zone/Stage count and distance fares can be expressed as Z2Z/ P2P.

▶ **Named Zone(s):** The fare gives the right to travel in one or more identified zones. A fare price can be given for any allowed combination of zones.

- If the zones are disjoint , then this is in effect "Zone to Zone" If the zones overlap or are nested then the topology is more complex,

- **Stage / Section count**. The fare gives the right to travel a certain **number** of sections or "stages" regardless of which specific sections they are. There is a price per zone used. The resulting fare prices are inherently progressive.

1

Bewbush West - Crawley - Broadfield/Pease Pottage

Adult Single Fares

Bewbush West (loop)						
160 **Bewbush** Neighbourhood Centre						
240	160 **Gossops Green** Shops					
240	240	160 **West Green** Crawley Hospital/Apple Tree				
240	240	240	160 **Crawley** Town Centre			
240	240	240	240	160 **Southgate Avenue** North		
240	240	240	240	240	160 **Southgate** Wensleydale	
240	240	240	240	240	240	160 **Broadfield** (all stops)
240	240	240	240	240	240	240	160 **Pease Pottage** Black Swan

Fares are shown in pence. Eg. 170 = £1.70

To calculate your fare, find your location, and your destination, where the row and the column cross is your fare.

Return Fares

Not available on this service.

Child Fares

Child Fares are available on this route at half the adult fare on single journeys.

Crawley Area Metrorider
Metrovoyager
Discovery Ticket
Gatwick Travelcard

Accepted throughout.

PlusBus

Crawley, Three Bridges, Gatwick Airport, Ifield and Horley PlusBus tickets are valid throughout. Please see www.plusbus.info for further information.
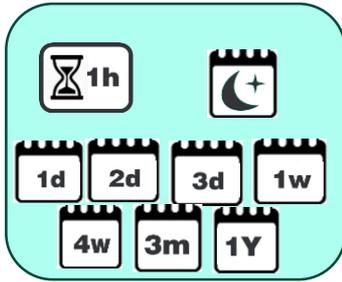
Concessionary Passes

Concessionary passes are valid throughout from 0930-2300 Mon-Fri, and anytime at weekends and public holidays.
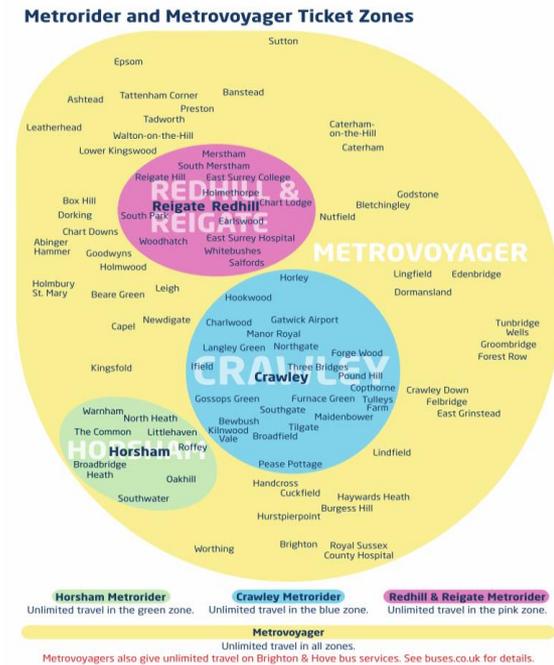
24.01.17   Metrobus Ltd, Wheatstone Close, Crawley, West Sussex, RH10 9UA.   Tel: 01293 449191

METROBUS

© Metrobus 2018   https://www.metrobus.co.uk/route-information/1

Zonal Pass with choice of durations –

Department for Transport

TIME INTERVALs

1h | Evening
1d | 2d | 3d | 1w
4w | 3m | 1Y

FARE ZONE

FARE PRICE

Metrorider and Metrovoyager Ticket Zones

Sutton, Epsom, Ashtead, Tattenham Corner, Banstead, Preston, Tadworth, Leatherhead, Walton-on-the-Hill, Lower Kingswood, Box Hill, Dorking, Chart Downs, Abinger Hammer, Goodwyns, Holmwood, Holmbury St. Mary, Beare Green, Leigh, Capel, Newdigate, Kingsfold, Warnham, North Heath, The Common, Littlehaven, Broadbridge Heath, Oakhill, Southwater, Worthing, Brighton, Royal Sussex County Hospital, Hurstpierpoint, Handcross, Cuckfield, Burgess Hill, Haywards Heath, Pease Pottage, Lindfield

RED & REIGATE — Merstham, South Merstham, East Surrey College, Reigate Hill, Holmethorpe, Reigate Redhill, South Park, Earlswood, Woodhatch, East Surrey Hospital, Whitebushes, Salfords, Chart Lodge, Chart Downs

CRAWLEY — Horley, Hookwood, Charlwood, Gatwick Airport, Manor Royal, Langley Green, Northgate, Forge Wood, Ifield, Three Bridges, Pound Hill, Crawley, Copthorne, Gossops Green, Furnace Green, Tulleys Farm, Southgate, Maidenbower, Bewbush, Kilnwood Vale, Broadfield, Tilgate, Roffey, Crawley Down, Felbridge, East Grinstead

HORSHAM — Broadbridge Heath, Horsham, Oakhill

Godstone, Bletchingley, Nutfield, Caterham-on-the-Hill, Caterham, Lingfield, Edenbridge, Dormansland, Tunbridge Wells, Groombridge, Forest Row

METROVOYAGER

Horsham Metrorider	Crawley Metrorider	Redhill & Reigate Metrorider
Unlimited travel in the green zone.	Unlimited travel in the blue zone.	Unlimited travel in the pink zone.

Metrovoyager
Unlimited travel in all zones.
Metrovoyagers also give unlimited travel on Brighton & Hove bus services. See buses.co.uk for details.

bought on bus with cash | stored on your mobile phone as m-tickets | loaded onto our smartcard the key

Crawley Metrorider
Unlimited travel in the Crawley Metrorider area.

* All day travel for up to 5 people (minimum of 1 adult & maximum of 2 adults travelling at any one time.)
** Available from 1800 and valid until 0359 on the following day.
*** For 2 adults, travelling together.

	1 day	1 week	Evening**	60 minute	1 day	2 day#	3 day#	1 week	4 week	Duo***	Evening**	1 day	1 week	4 week	13 week	Annual	Evening**
Adult	£4.90	£20	£4	£2.20	£4.20	£7.90	£11.50	£18	£59	£7.90	£3.70	£4.20	£18	£59	£154	£520	£3.70
Child	£2.70	£11	-	£1.10	£2.35	£4.45	£6.45	£9.75	£32.50	-	-	£2.35	£9.75	£32.50	£79	£290	-
Student	-	-	-	-	-	-	-	-	-	-	-	£3.15	£13.50	£44.25	£115.50	£390	-
Family*	£9	-	-	-	£9	-	-	-	-	-	-	-	-	-	-	-	-

Stage /Section Count Fares

➢ Does not matter which section, just the number of sections.

First

© First Group 2018

Single tickets

The cost of single tickets within the West of England will be based on the route distance you travel, with five single fares available:

Up to three miles
- **Adult** — from £2
- **16-21 year old/student** — from £1.40
- **Child aged 5-15** — from £1

Three to six miles
- **Adult** — from £3
- **16-21 year old/student** — from £2.10
- **Child aged 5-15** — from £1.50

Six to nine miles
- **Adult** — from £4
- **16-21 year old/student** — from £2.80
- **Child aged 5-15** — from £2

Nine to twelve miles
- **Adult** — from £5
- **16-21 year old/student** — from £3.50
- **Child aged 5-15** — from £2.50

Over twelve miles
- **Adult** — from £6
- **16-21 year old/student** — from £4.20
- **Child aged 5-15** — from £3

How is your single fare calculated?

Distance-based fares for the West of England

In the West of England (excluding Bath Inner and Weston-super-Mare Town Zones – see pages 6 and 14) your single fare is worked out based on the route distance you are travelling.

Distances are calculated using fare stage sections rather than individual bus stops, with each section being approximately one mile long*.

If you travel in 1-3 mile long sections it'll be £1.50, 4-6 mile long sections will be £2.50 and so on.

Here is an example of one route and some of the fares along it:

Emersons Green, Sainsbury's to Long Close would be £1.50 as you are travelling in three sections (numbers 1, 2 and 3, Long Close is classed as section 3 in this example as it's where you are getting off the bus).

Long Close to Narroways Road would be £2.50 as you are travelling in four sections (4, 5, 6, 7, Long Close is counted as section 4 in this example as it's your boarding point).

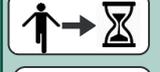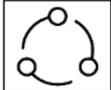Blackberry Hospital to Downend, The Leap would be £2.50 as you are travelling in four sections (5, 4, 3, 2).

Emersons Green, Sainsbury's
Church Farm Road
Betts Green
Bromfield Walk — ①
Meadgate
Blackhorse Lane
Downend, The Leap — ②
Leap Bridge
Four Acre Road
Queensholm Crescent
Wedgewood Road
Quakers Road
Bromley Heath Avenue
Cleeve Hill — ③
Long Close
Selbrooke Crescent
Ettricke Drive
Vassal Road
Straits Parade — ④
New Station Road
Fishponds, Channon's Hill
Channons Hill
Snowdon Road
Blackberry Hospital
Tanglewood Park
Small Lane — ⑤
River View
Brinkworthy Road
The Chine
Stapleton Church
Glenfrome Road
Stapleton Road — ⑥
Eastville, Eastgate Centre
Eastgate Road
Narroways Road — ⑦
Stafford Road
Sevier Street
Ashley Road, Brook Road
Denbigh Street — ⑧
Brigstocke Road
Stokes Croft
The Haymarket
Centre, Rupert Street — ⑨

Key
① Numbered sections
Bold name stops - Section boundary stop (can be counted in either section)
Non-bold names - All other bus stops

Moving Britain Ahead

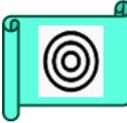September 19

Basic UK Bus fare products

Access rights		Tariff Structure						
Type of Product	PREASSIGNED FARE PRODUCT	Flat	Point to point	Named Zones	Zone/ Stage Count	Peak / Off Peak	Group Ticket	Temporal Conditions
TRIP (*"single ride"*)	*Short hop*	☑	☑	☑	☑	-	-	No journey break
	Single trip	☑	☑	☑	☑	☑	☑	Has use by date?
	Time-limited ("Hopper")	-	-	☑	-	☑	☑	Max trip duration, Can interchange
	Period Return	☑	☑	☑	☑	☑	☑	Has use by date?
	Day return	☑	☑	☑	☑	☑	☑	Must use same day
PASS	*Day pass*	-	-	☑	-	☑	☑	1Day(elapsed or calendar)
	Termtime	-	?	☑	-	-	-	Use during term 1Y
	Season pass	☑	☑	☑	-	-	☑	n x D,W,M, 1Y

Carnets: Multi-trip / Multi-pass offers

Access rights		Tariff Structures		
Type of Product	**FARE PRODUCT (AMOUNT OF PRICE UNIT)**	**Quantity**	**Related tariff structure**	**Temporal Conditions**
CARNET	*Multi-trip*	☑	Any individual Trip	Trips have use-by date Trips can be time limited
	Multi-Day pass	☑	Day Pass	Passes have specified duration Passes have use-by date
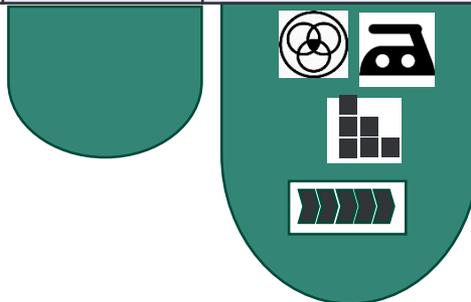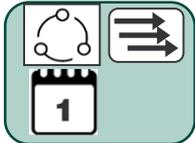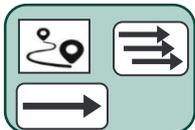
UK NeTEx Bus Fare Profile
Advanced features
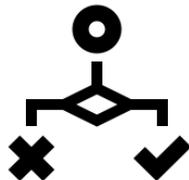
Some types of Complexity found of fares

▸ **Products supported by multiple operators**
  - Tariff structures covering large networks
    - ❑ E.g. *Plusbus*

▸ **Compound products / offers:**
  - Multiple products in one package
    - ❑ E.g. Oyster , Plusbus
  - Products that are available both as separate offers and as single purchase
    - ❑ E.g. Plusbus
  - Local variation in rules & participation?

▸ **More complex Products & Tariff structures**
  - E.g. Capped Pay as You Go (Oyster)

▸ **Complex rules for a fare product, notably**
  - Day types / Timebands / Fare demand typs
    - ❑ E.g. *Metro & rail peak/offpeak into London*
    - ❑ Plusbus exceptions Night buses after 11.30
  - Exclusions / inclusions of services
    - ❑ E.g. all Metrobus in Crawley region except and line 4
  - Eligibility conditions

▸ **Combining rules specified at different levels**
  - E.g. Temporal Validity conditions on tariff, product, sales offer

Moving Britain Ahead

September 19

Peak and Offpeak – Fares

Department for Transport

▸ E.g. Concessionary Pass product has use restrictions

Crawley Area Metrorider
Metrovoyager
Discovery Ticket
Gatwick Travelcard
Accepted throughout.

PlusBus
Crawley, Three Bridges, Gatwick Airport, Ifield and Horley PlusBus tickets are valid throughout. Please see www.plusbus.info for further information.

Concessionary Passes
Concessionary passes are valid throughout from 0930-2300 Mon-Fri, and anytime at weekends and public holidays.

FARE DEMAND FACTOR

Peak: *DT-Weekdays 0:00-09:30, 23:00-00:00*

Off-Peak: *DT-Weekdays 09:30-23:00, + DT-Weekend*

DAY TYPEs

TIMEBANDs

SERVICE CALENDAR

2020
2019
2018

Date → Day Type
2018/01/01 → DT-Holiday
2018/01/02 → DT-Weekday
2018/01/03 → DT-Weekday
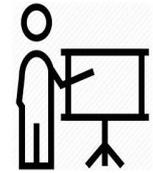*2018/01/04 → DT-Weekend*

…..etc

DAY TYPE ASSIGNMENTs

2020
2019
2018

Fare Validity ,
2018/01/01;
  00:00-24:00 Off-Peak
2018/01/02;
* *00:00-08:30 Off-Peak*
* *08:30-09:30 Peak*
* *09:30-17:00 Off-Peak*
ETC, ETC

September 19

Interoperating fares – eg Plus Bus : Zonal add on for rail tickets

FARE ZONEs

TOPOGRAPHIC PLACEs
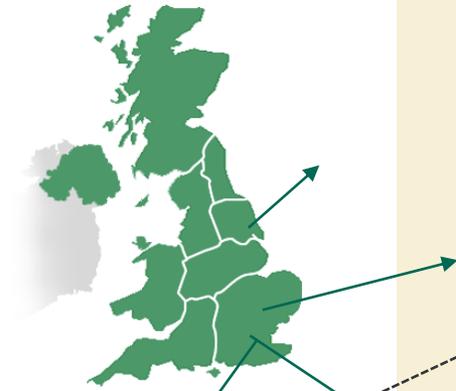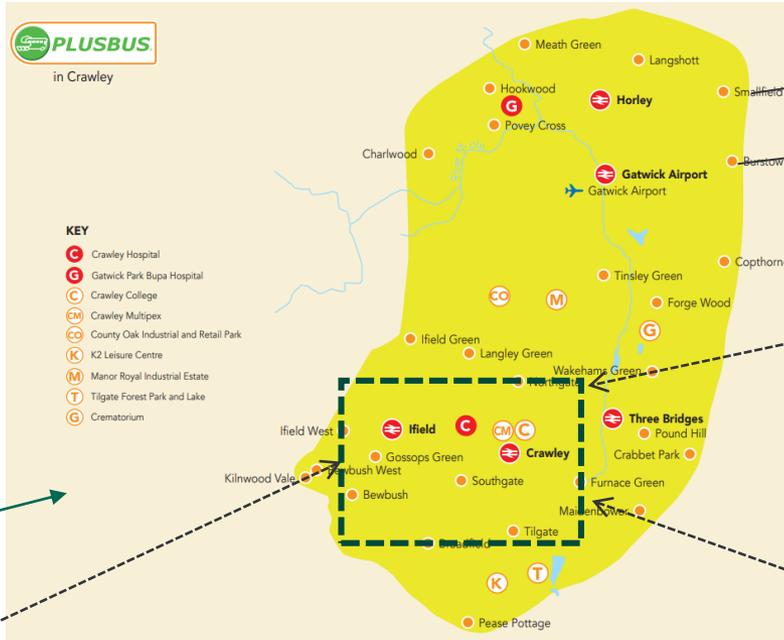
Zones around country

- Multiple participating Bus operators
- Exceptions in each zone
- Sold via rail sales channels

UK Rail card products
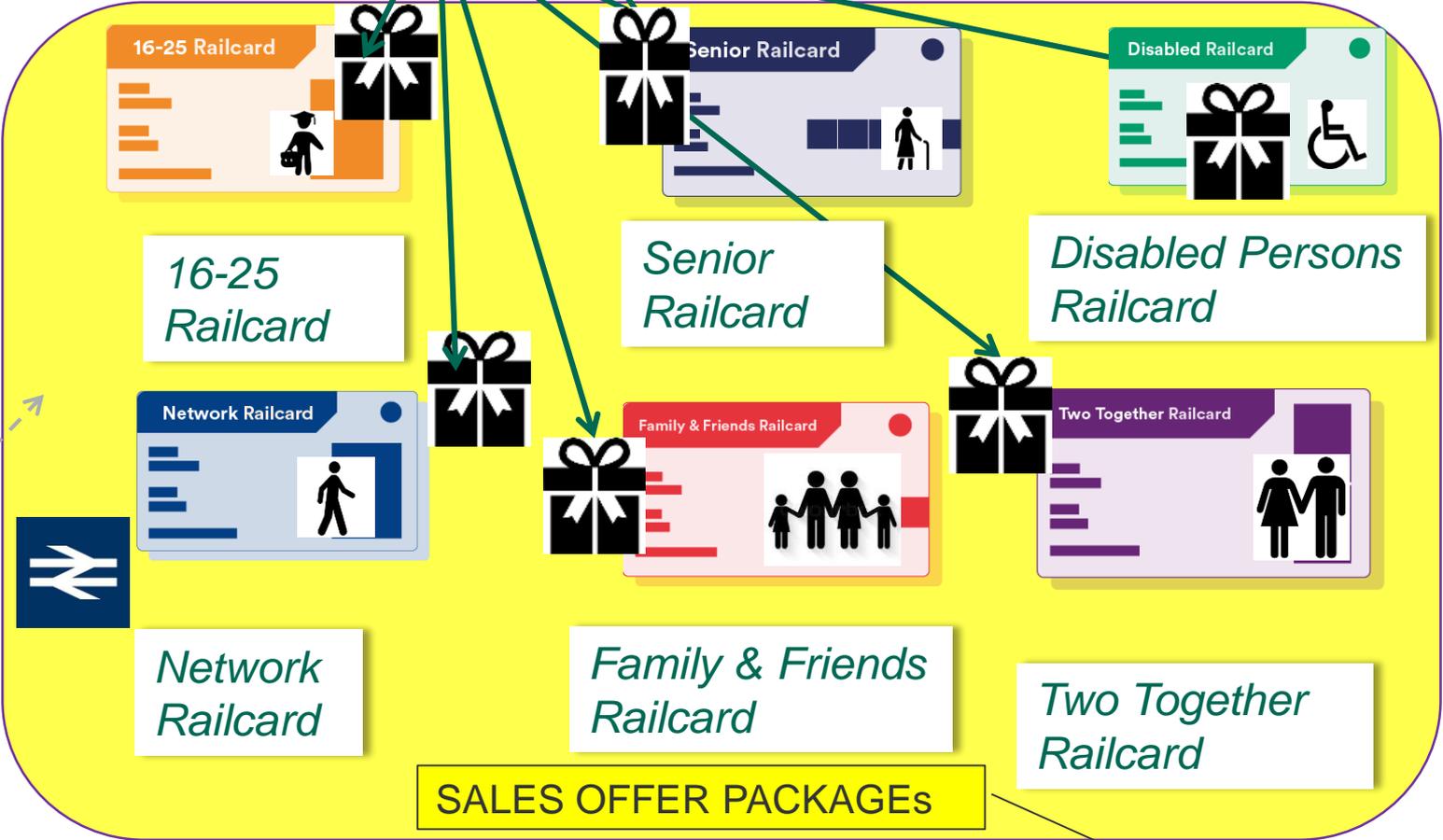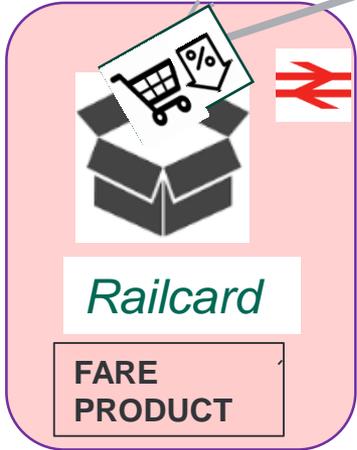

- Single FARE PRODUCT
- Multiple SALES OFFER PACKAGEs
  - Different USER PROFILEs
- Shared properties defined by GROUP OF SALES OFFER PACKAGES

Department for Transport

Flat rate

Railcard GSOP

Railcard

FARE PRODUCT

USER PROFILEs

16-25 Railcard

Senior Railcard

Disabled Persons Railcard

Network Railcard

Family & Friends Railcard

Two Together Railcard

SALES OFFER PACKAGEs

Complex UK Bus Fare Products Discount cards, etc

	FARE PRODUCT	Peak / Off Peak	(Can) or Must be Account Based	Notes
SALES DISCOUNT	SALES DISCOUNT RIGHT	☑	☑	E.g. like a Railcard
	CAPPED SALES DISCOUNT RIGHT	☑	☑	PAYG e.g. Oyster
USAGE DISCOUNT	USAGE DISCOUNT RIGHT	☑	☑	Rebate for use, e.g. mileage
STORED VALUE	AMOUNT OF PRICE UNIT	-	☑	Stored value
ENTITLING PRODUCT	THIRD PARTY PRODUCT	-	-	E.g. Military Pass

Additional Product Types - terminology

▸ **Discount Right**

The product gives the right to purchase other fare products for travel at a discount, but is not itself a ticket. (e.g. Rail card, Oyster card).
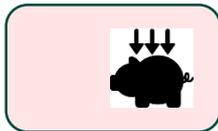
▸ **Capped Discount Right**

If there are multiple purchases, the purchase price is capped within a given time period (e.g. Oyster Card)
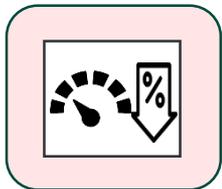
▸ **Usage Discount**

The product gives a discount or rebate based on access rights consumed within a given period. Requires an account.

▸ **Amount Of Price Unit**

The product holds an amount of stored value which can be used to purchase. May be linked to an account.

UK Fare profile: Basic vs Advanced Fare features.

Aspect		Basic Fare profile	Advanced Fare profile
Tariff Structure Spatial		• Point-to-Point, Zone-to-Zone • Zonal • Stage fare / unit section • Flat	**Composite tariffs**
Tariff - Temporal		• Time intervals	**+ Peak/ off-peak etc conditions**
Products		• Trip, • Pass, • Carnet	**+Sale Discounts, Capping**
Product options		• User Types, Group Tickets • Simple travel constraints	**+Complex travel constraints** **+Complex commercial conditions**
Sales Offers		• Media, Distribution Channel	
Scaling		• Line, Network, Operator(s)	**+Complex Multi-operator, National, modular**
Prices		• Absolute prices	**+ Derived prices**