

Using the CEN NeTEx Standard to represent basic Rail fare data

- Briefing Report for the UIC

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Contents

- Introduction,
 - Motivation, Process, Methodology
 - NeTEx Functional Scope
 - Demonstration of UML & XML tools
- Rail Mappings
 - Mapping Methodology
 - B1, B2, B3 Mapping
- Summary Comments




NeTEx - CEN Standard

- XML standard for exchanging Public Transport data – primarily for passenger information systems
- Deliverables
 - CEN Specification Documents
 - Part 1 – Network (Stops, routes etc)
 - Part 2 - Timetables
 - Part 3 – Fares
 - UML Models
 - XML Schema & Examples



CEN TC278 Working Groups



CEN / TC278
Road Transport & Traffic Telematic
Plenary Chair: 

WG1, *Electronic Fee Collection* 

WG3, *Public Transport* 

WG4, *Traffic and Traveller Information* 

WG5, *Traffic Management*

WG7, *Geographic Road Data* 


WG8, *Road Traffic Data*

WG9, *Dedicated Short Range Communications* 

WG10, *Human-Machine Interfaces* 

WG12, *AutoVehicle and Equipment Ident* 

WG13, *Architecture & Terminology* 

WG14, *Recovery of Stolen Vehicles* 


WG15, *eSaftey* 

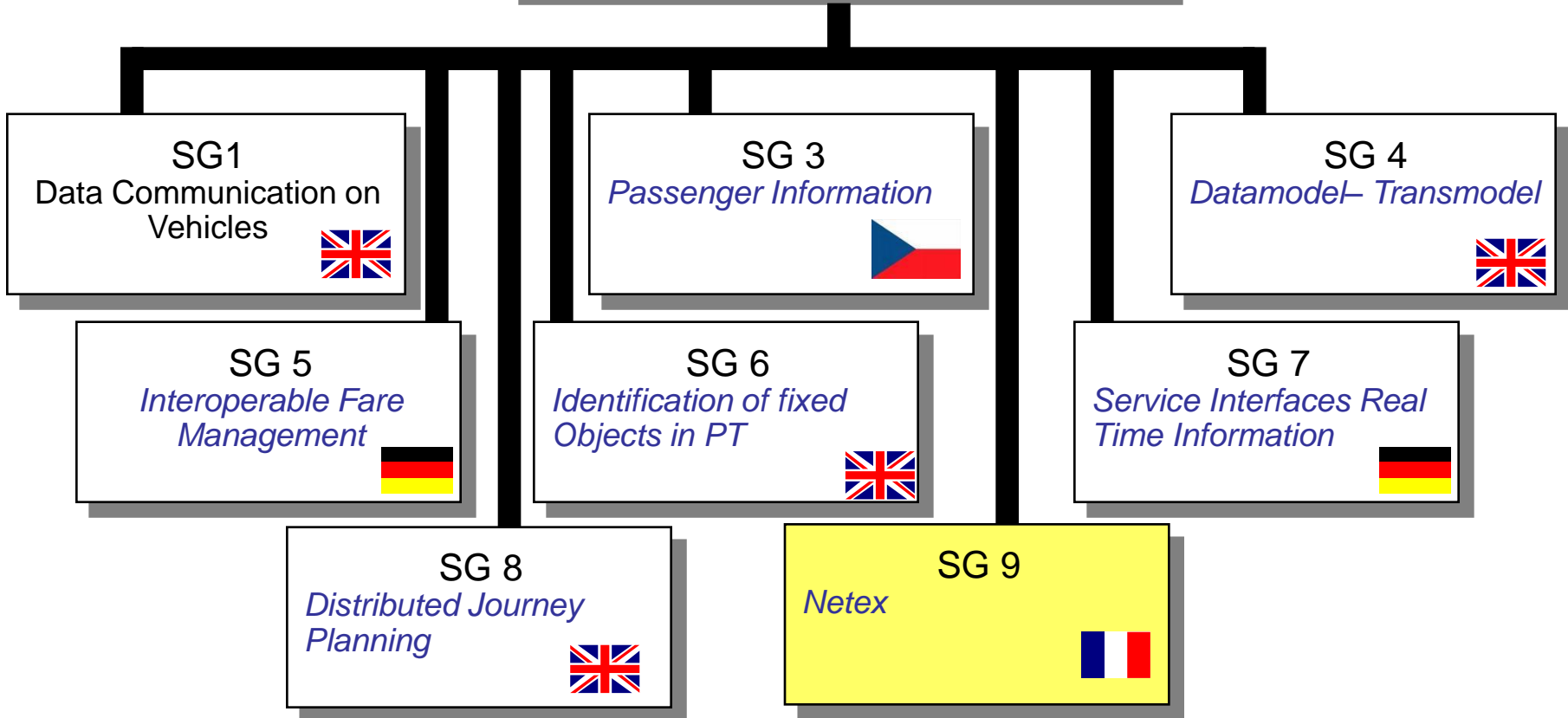


CEN TC278 WG3 Sub-groups



CEN / TC278 / WG 3
Public Transport

Plenary Chair: 



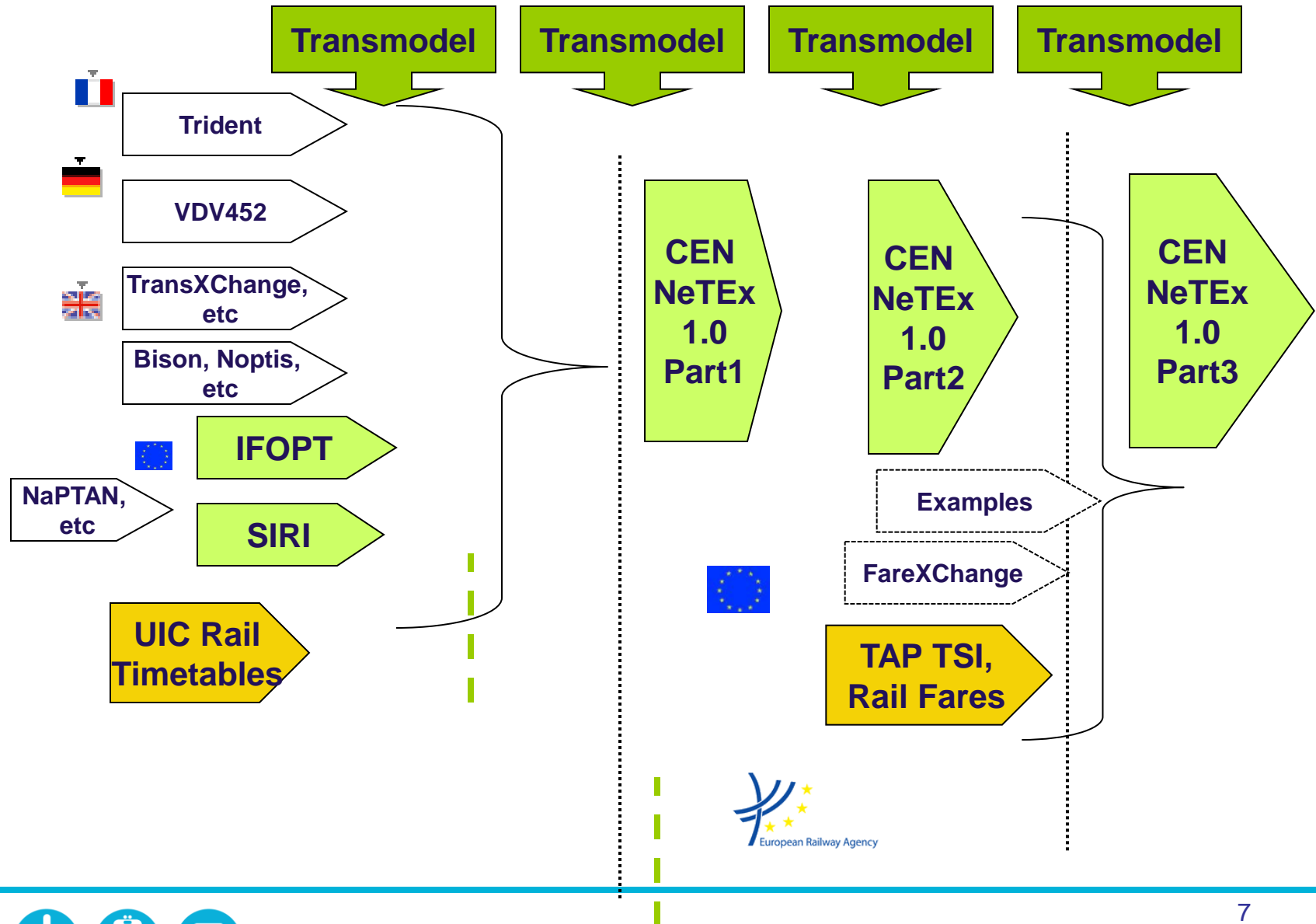
CEN Process



- Multi country participation organised through national standards bodies
- Open review and voting process
 - Draft, comment, revise, vote
- Build on existing standards
- Time limitations to complete and to review
- Different tracks - Full Standard vs Technical Specification



Evolving a Concrete PT Timetable schema



Why? - Business Drivers

- European data exchange standards
 - Reducing costs
 - Shared markets, wide tool base, reusable components
 - Common specifications for procurement and exchange
 - Makes data costs viable for new functions
 - Managing Complexity
 - Simplified, uniform solutions
 - Harnesses know-how & best practice
 - Increasing Capability
 - Enables Advanced function, especially electronic delivery
 - Passenger information, ticketing
 - Large scale coverage, multimodal
 - More powerful representations & functions
 - Interoperability



Why ? - Political Drivers

- **Passenger rights**
 - Objective, timely information, cross-modal
 - E.g. EU ITS action plan.
 - Accessibility
- **Sustainability / Green**
 - Encourage use of PT
 - Make use of PT capacity efficient (ITS)
 - E-ticketing enables more passengers on urban systems
- **Harmonisation**
 - Free flow of data and system use between regions

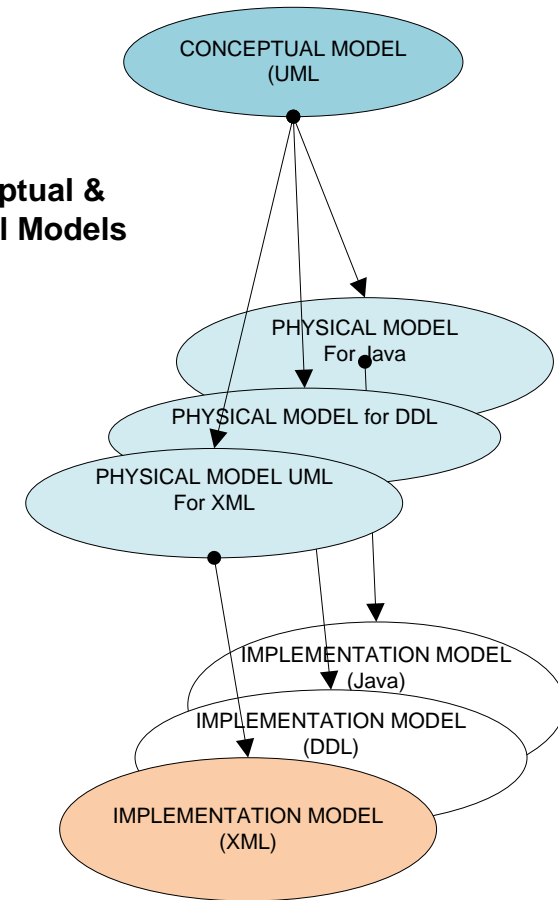


NeTEx / Transmodel Methodology



Models – Levels of Abstraction

- Conceptual model is implementation independent
 - Transmodel based, modular UML
- Conceptual model may have multiple physical models for different target implementations.
 - NeTEEx Physical design for XML as modular UML Model
- Implementation is derived from physical model
 - Eg. XML, DDL etc
 - NeTEEx XML Schema



Conceptual vs Concrete Levels; Model Driven Design,

1. NeTEx /Transmodel Conceptual Model - UML

NeTEx Framework
VERSION, VERSION FRAME
Packages

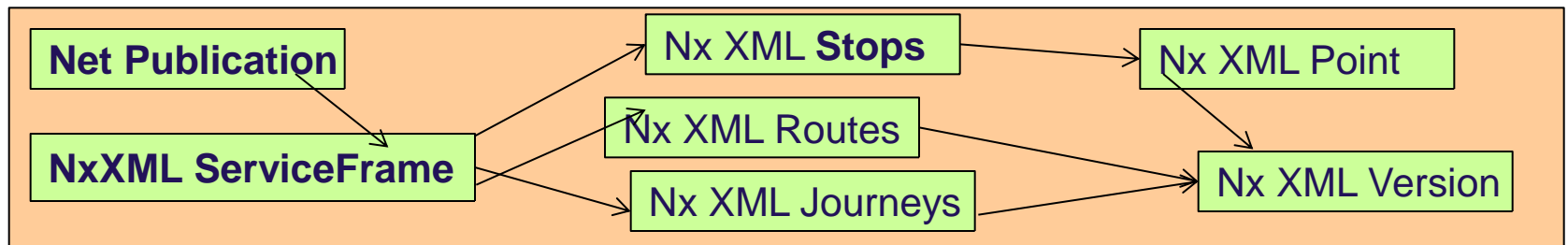
UML Transmodel PT Concepts – NeTEx submodel
POINTS, LINKS, STOP POINTS, ROUTES, ROUTE LINKS,
JOURNEY PATTERNS, JOURNEYS, etc, etc
Packages

2. NeTEx + Physical XML Class Model - UML

Framework Classes
Version, ServiceFrame

Physical Model Concrete Classes
Points, Links, Stops, Routes, RouteLinks,
JourneyPatterns, Journeys, etc, etc
Packages

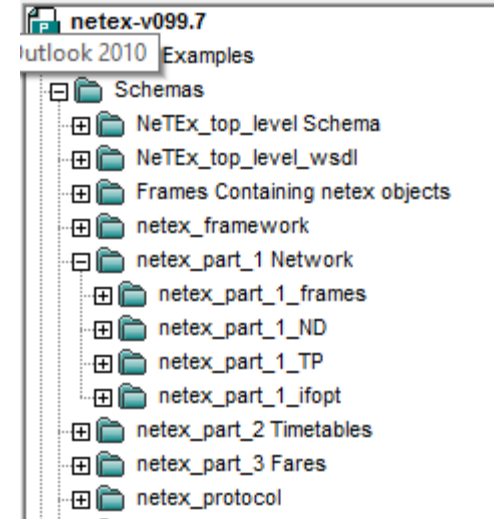
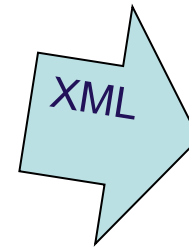
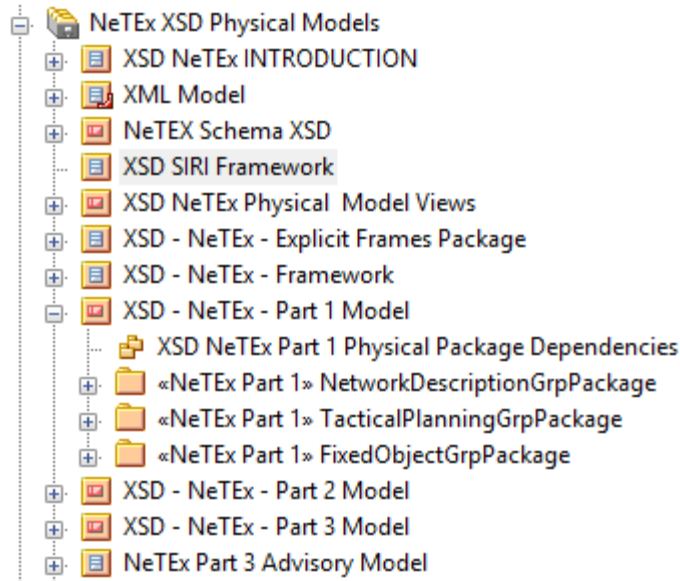
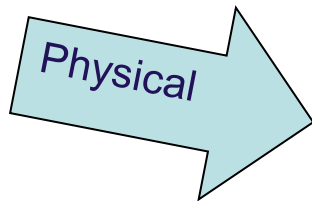
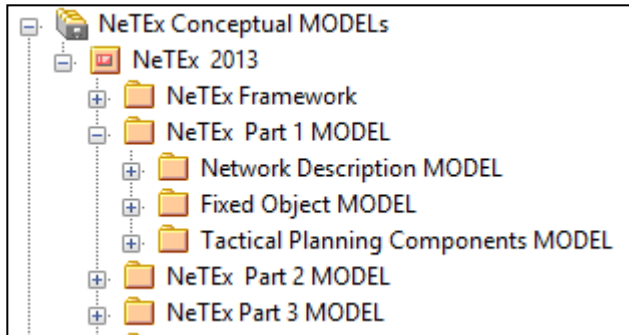
3. XML Implementation – NeTEx Schemas: How to Serialize?



4. XML Examples



Common Modular Organisation of Packages



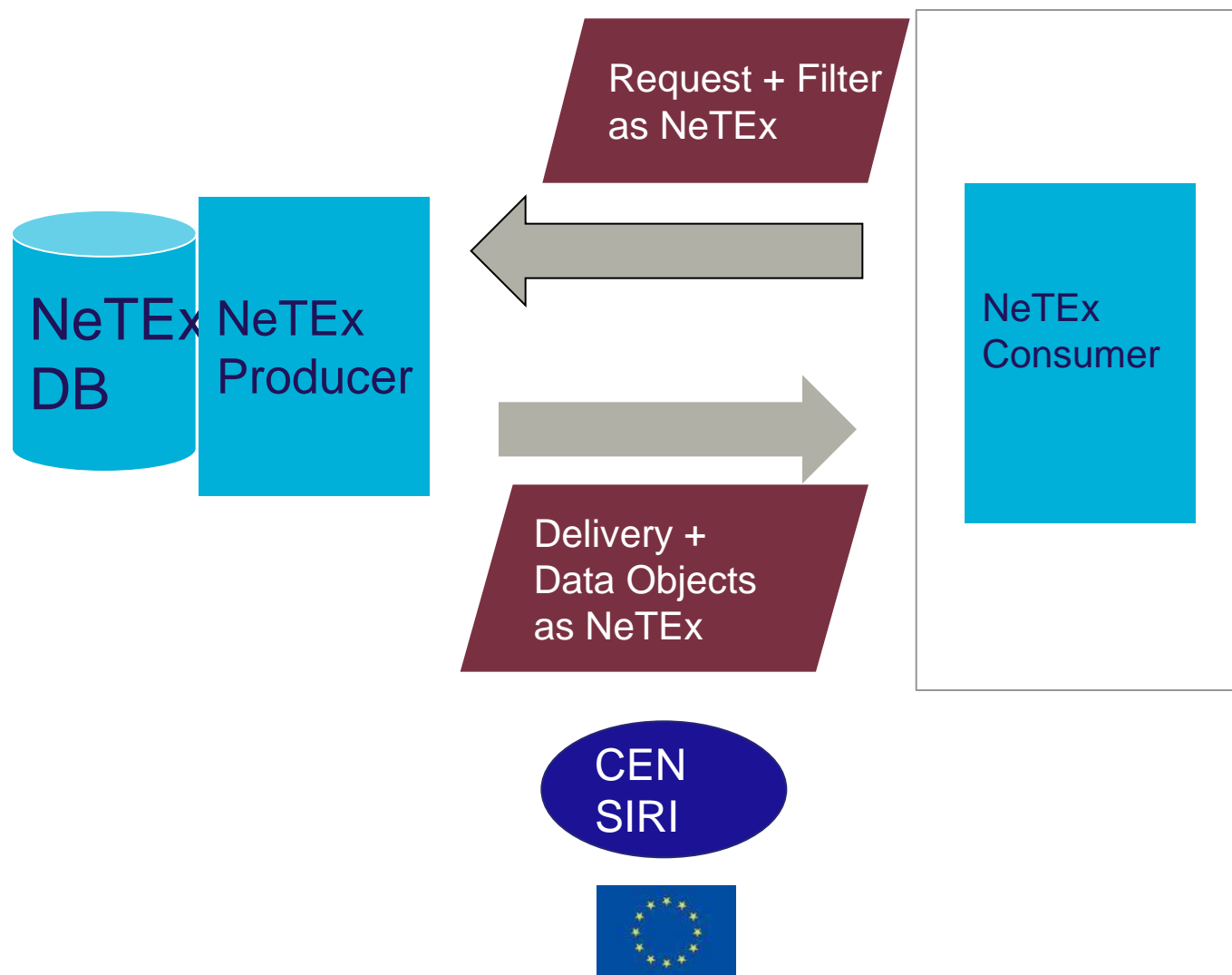
Protocols vs Formats

- NeTEx separates payload from message
 - Includes version and container (“Version Frame”) constructs
- Data exchange as XML documents with any file protocol
 - E.g. FTP, SMTP, http
- Includes SIRI based message protocol
 - Request/Response - data satisfying specific filter criteria
 - Publish/Subscribe – eg for daily timetable changes



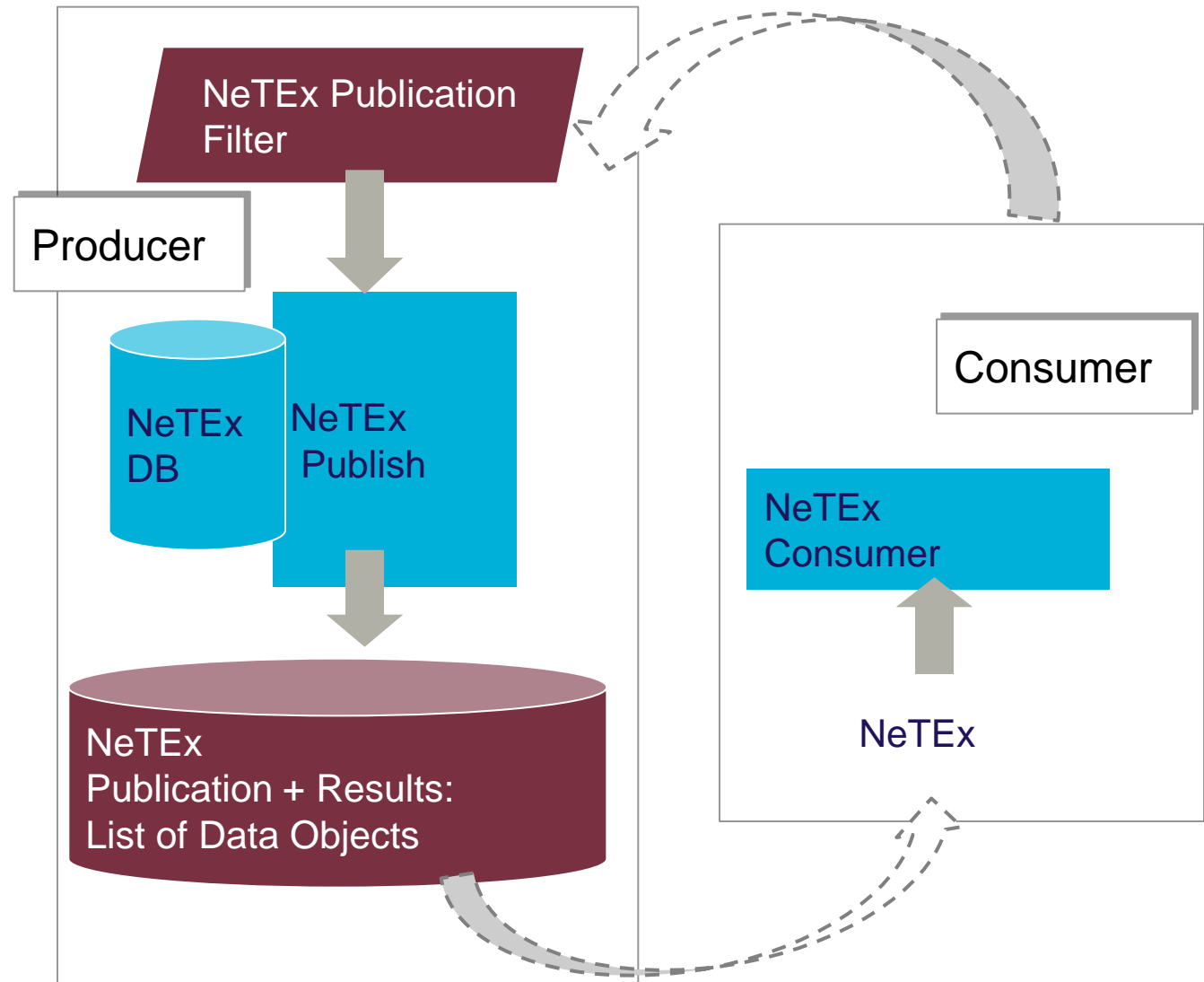
NeTEx SIRI: Request/Response

- Request for one or more NeTEx data objects
- Filter says which objects &/or values



NeTEx Publication

- **Asynchronous exchange**
 - One off or
 - Periodic
- **Reusable XML components**
 - Same XML payload as for SIRI
 - Data Objects
 - Common Filters



Data quality- XML Integrity constraints

- Data types: E.g. valid date, time, integer, duration, language string, enumerations, etc
- Uniqueness: Each identifier declared only once
- Referential integrity: referenced entities are also present in document

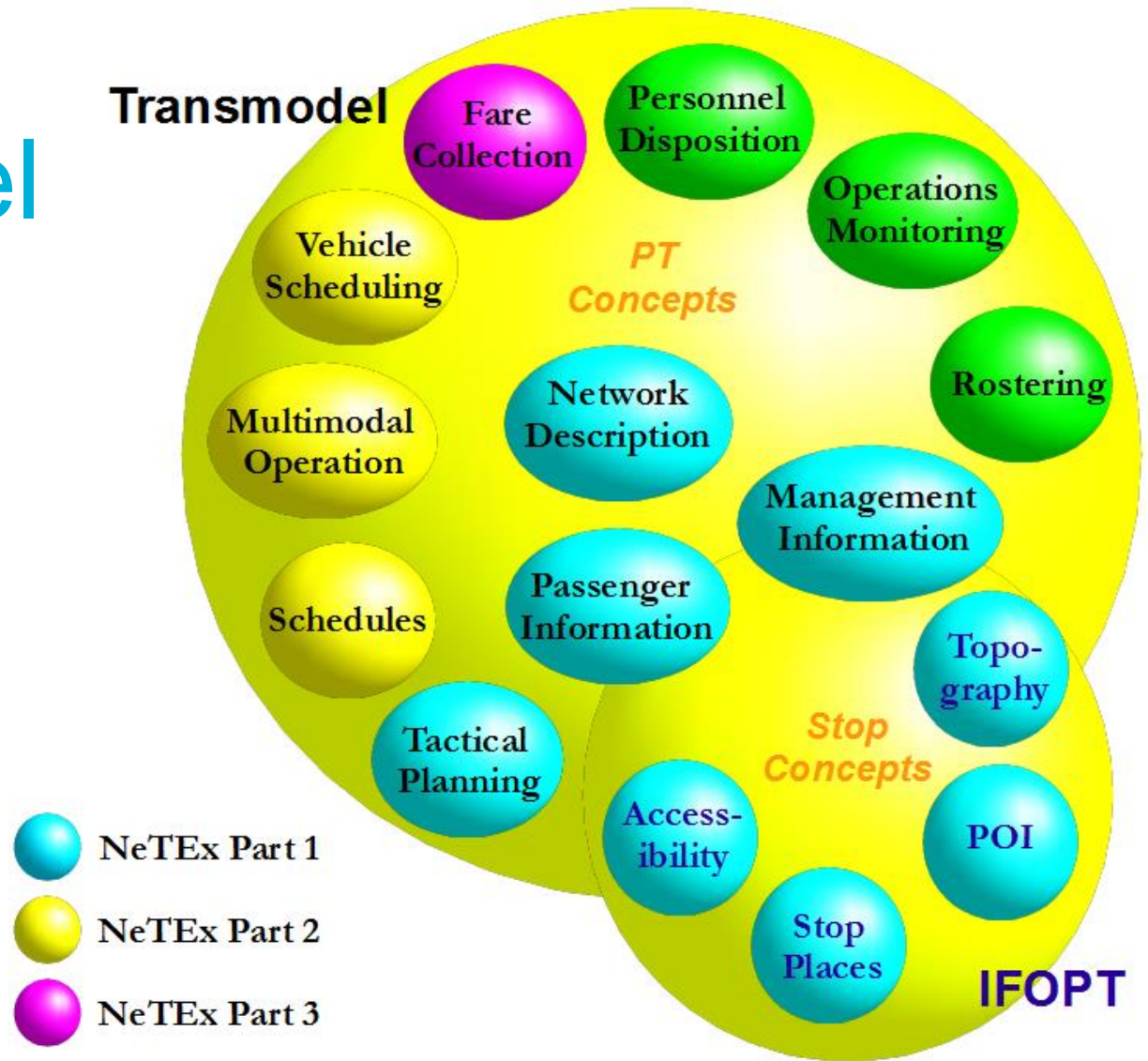


NeTEx

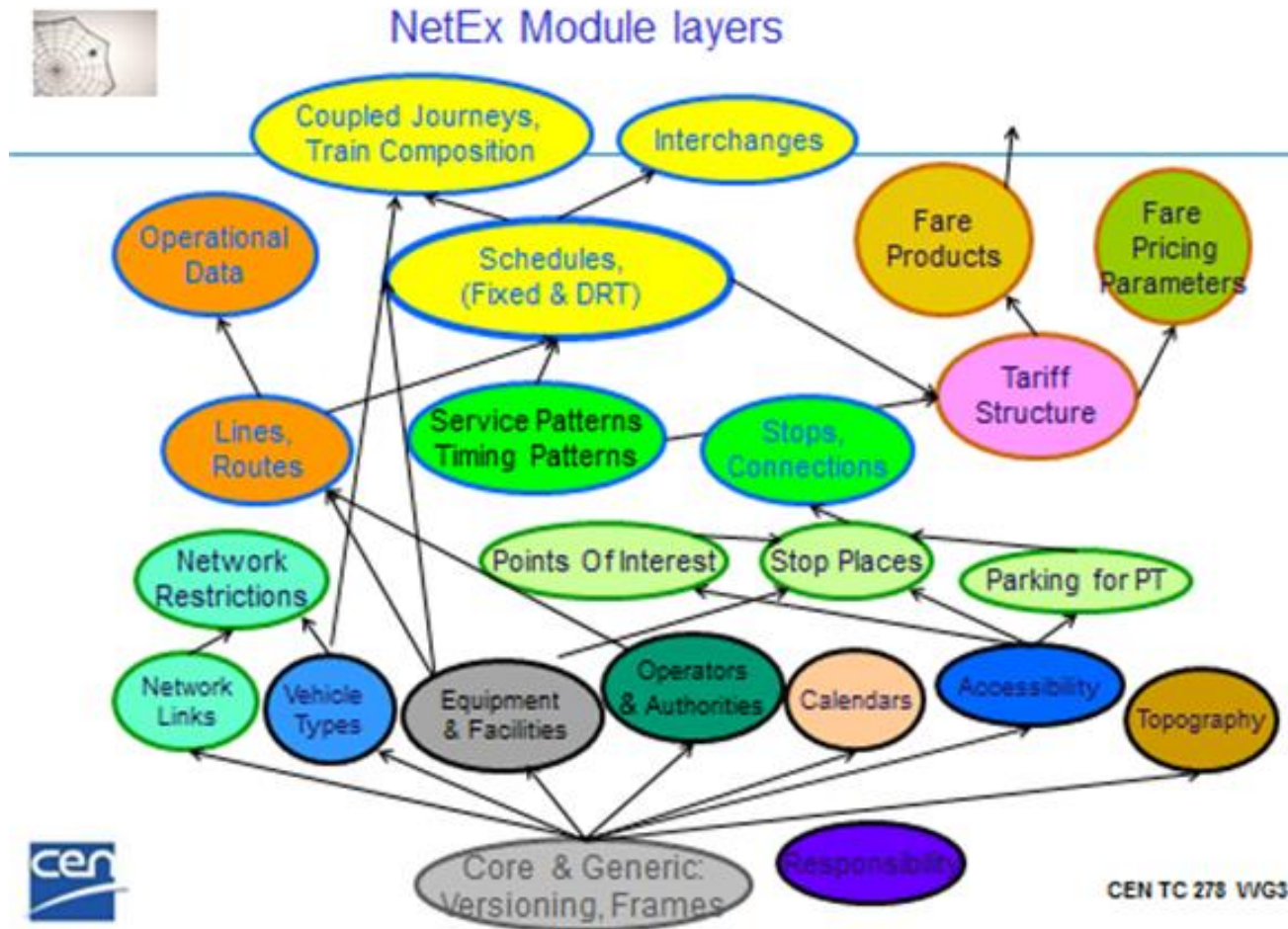
Functional Scope



NeTEx & Transmodel Functional Areas



NeTEx Functional modules



NeTEx Outline Scope: PART 1

- **Part 1 Framework**

- Versions, Version Frames,
- Organisations, Responsibilities, etc.
- Day Types, Service Calendars
- Vehicles, trains, Accessibility

- **Part 1 Public transport Network Topology.**
exchange format

- Infrastructure, infrastructure constraints,
- Stops, Stations, etc Interchanges
- Routes, service patterns, etc.
- Stop Places, Points of Interest, Parking, paths, entrances
- Points of Interest, Parking
- Garages, Crew points, Beacon Points



NeTEx Outline Scope: PART 2

- **Part 2 Scheduled Timetables** exchange format
 - **Basic time related data** (shared by all the domains): journey patterns, journey times, service patterns, operating days, journey interchanges, etc.
 - **Passenger information specific** objects: vehicle journeys, (passing times, Coupled Journeys, Journey Parts, Train Composition
 - Data used specifically in the exchanges between the **scheduling & vehicle monitoring systems** (blocks and related concepts)



NeTEx Outline Scope: PART 3

- **Part 3 Fare information**

multimodal information systems providing planned passenger information

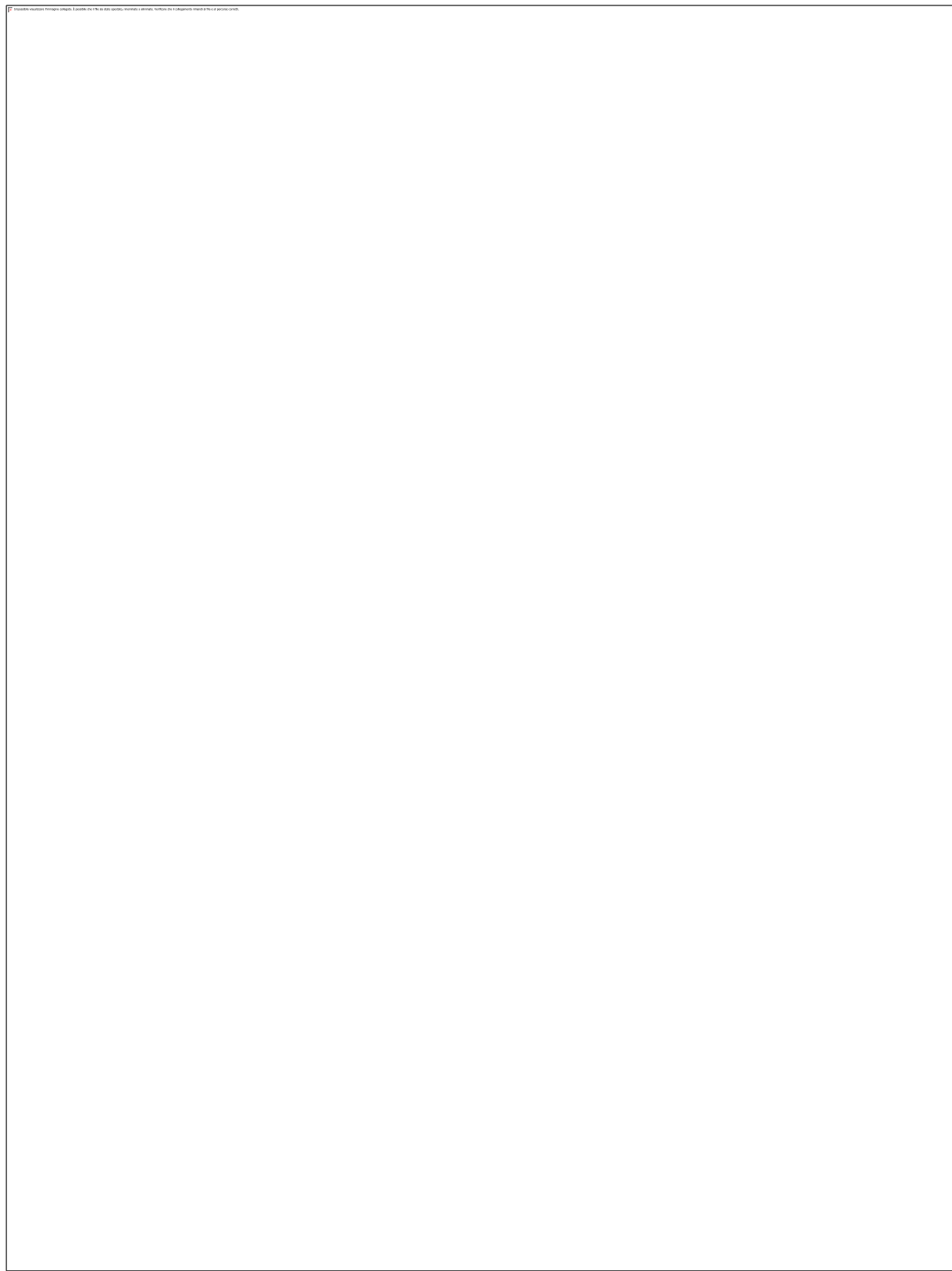
- planned tariff information exchanged between service operators, service operators and product owners (i.e. authorities, etc.)
- Includes
 - Different Tariff Structures (Spatial, Time based, Yield managed)
 - Fare Pricing Parameters
- **Excludes**
 - Management of fare product and applications
 - Certification, registration and identification
 - Purchasing and fulfillment
 - (price calculation)



NeTEx / Fares Scope



Fare scope



NeTEx Fares - Use cases

- Provide information on fare products and their rules and restrictions to passengers
 - Distributing fares information for publication
 - Distributing fares information to online systems
 - Provide information on fare products and their rules and restrictions for a specific journey,
 - Identify time schedules and conditions for the lowest fares
 - Show fare zones on topographical and schematic maps,
 - Exchange of fare information between long distance (i.e. heavy rail) and local public transport
 - Provide a price calculator with up to date fare information
 - Submitting a fare scheme for approval
 - Provisioning of ticket vending machines with fare information
 - Provisioning of ticket checking devices



NeTEx Fares / A very Simplified model



A Classic Fare Matrix

•

Outward (Absolute Fare Price)

Ask Avo	0				
Bath Pla	£0.40	0			
Cam Sq	£0.50	£0.40	0		
Dee Sta	£0.75	£0.75	£0.50	0	
Ely Rds	£1.00	£1.00	£0.75	£0.40	0
	Ask Avo	Bath Pla	Cam Sq	Dee Sta	Ely Rds

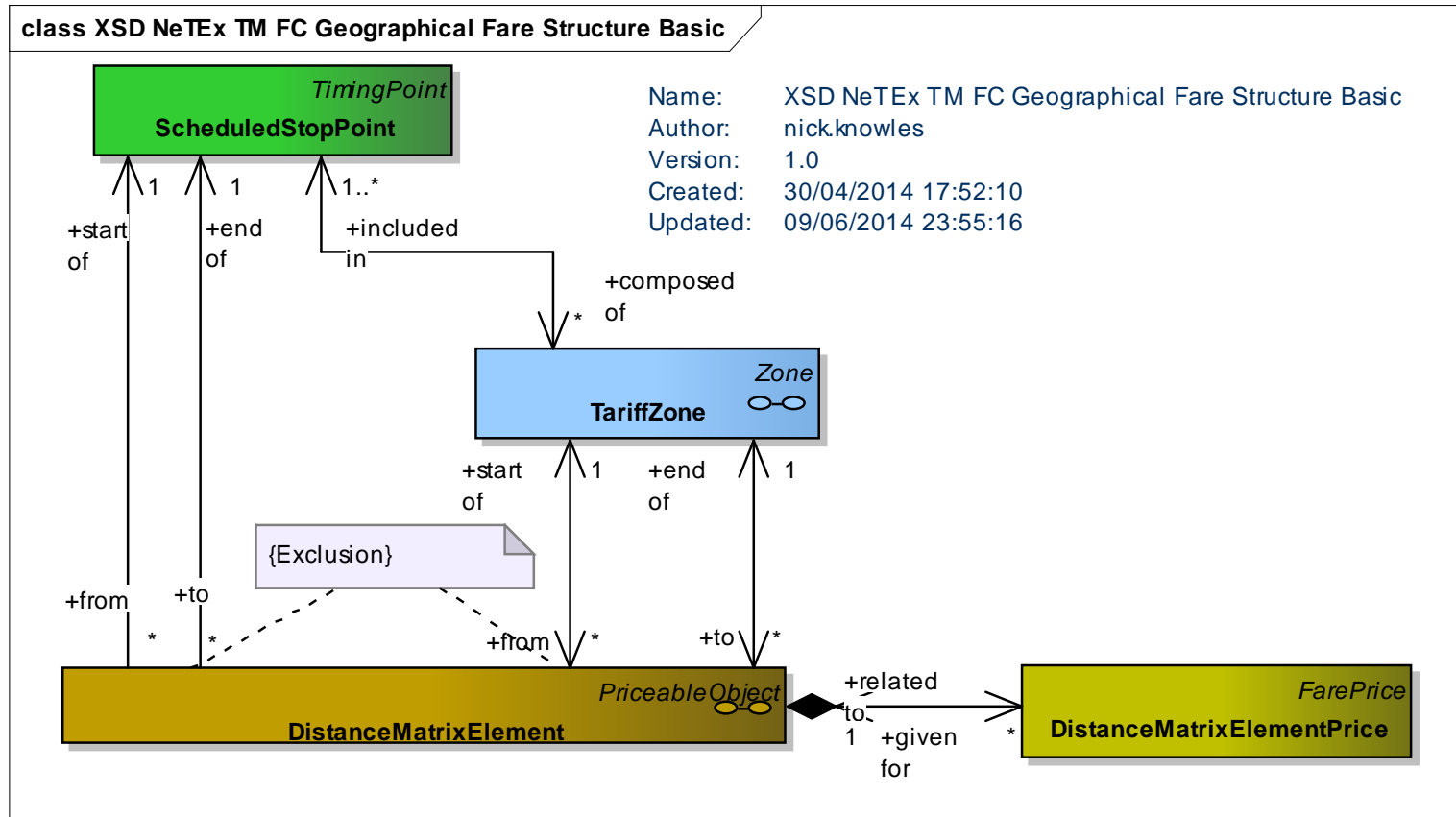
Table 1-2-Example Triangular Fare Table with Absolute Prices

SCHEDULED STOP POINT
or
TARIFF ZONE

DESTINATION MATRIX ELEMENT



NeTEx Point to Point Fare Structure

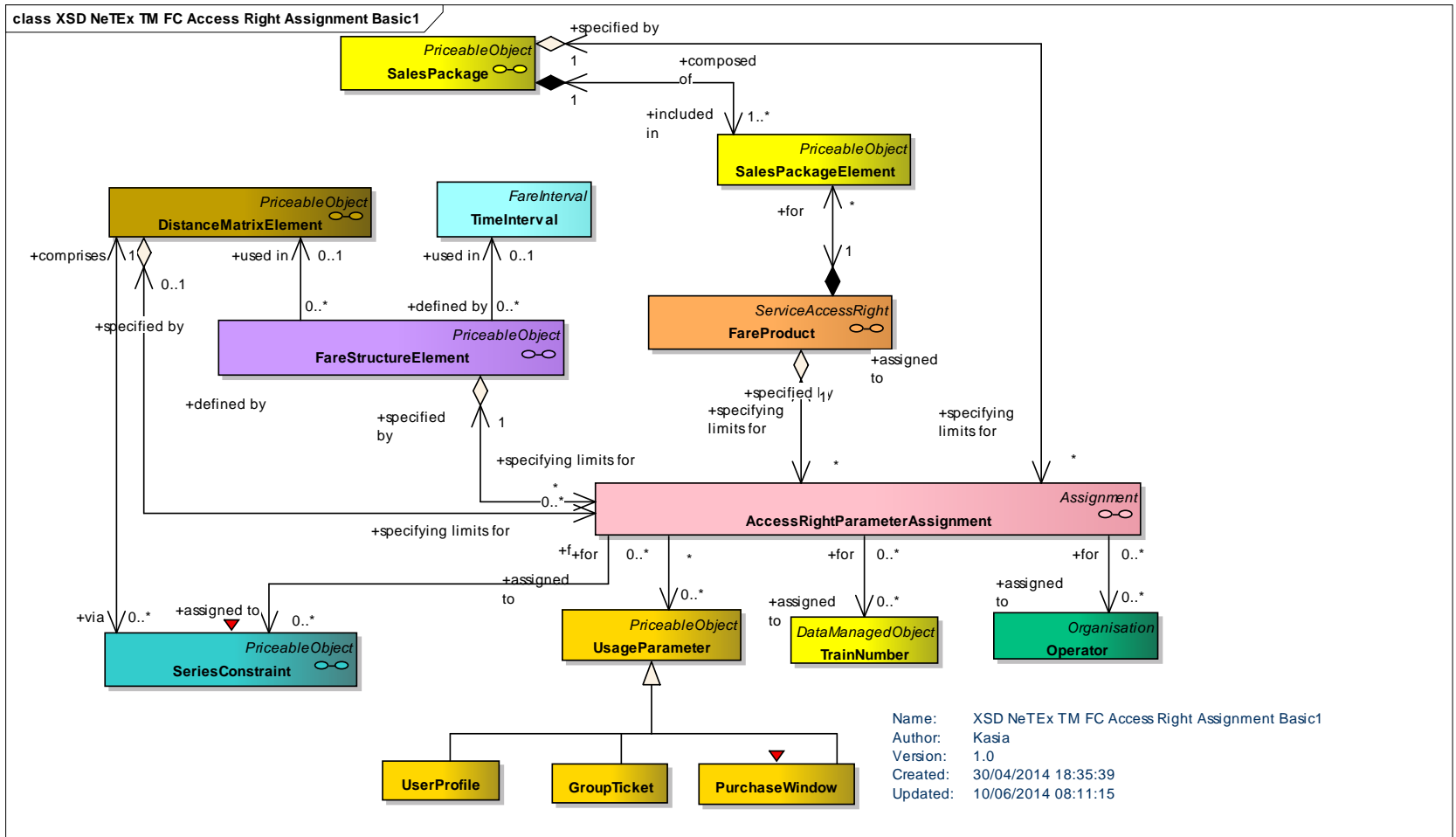


Access rights & Products

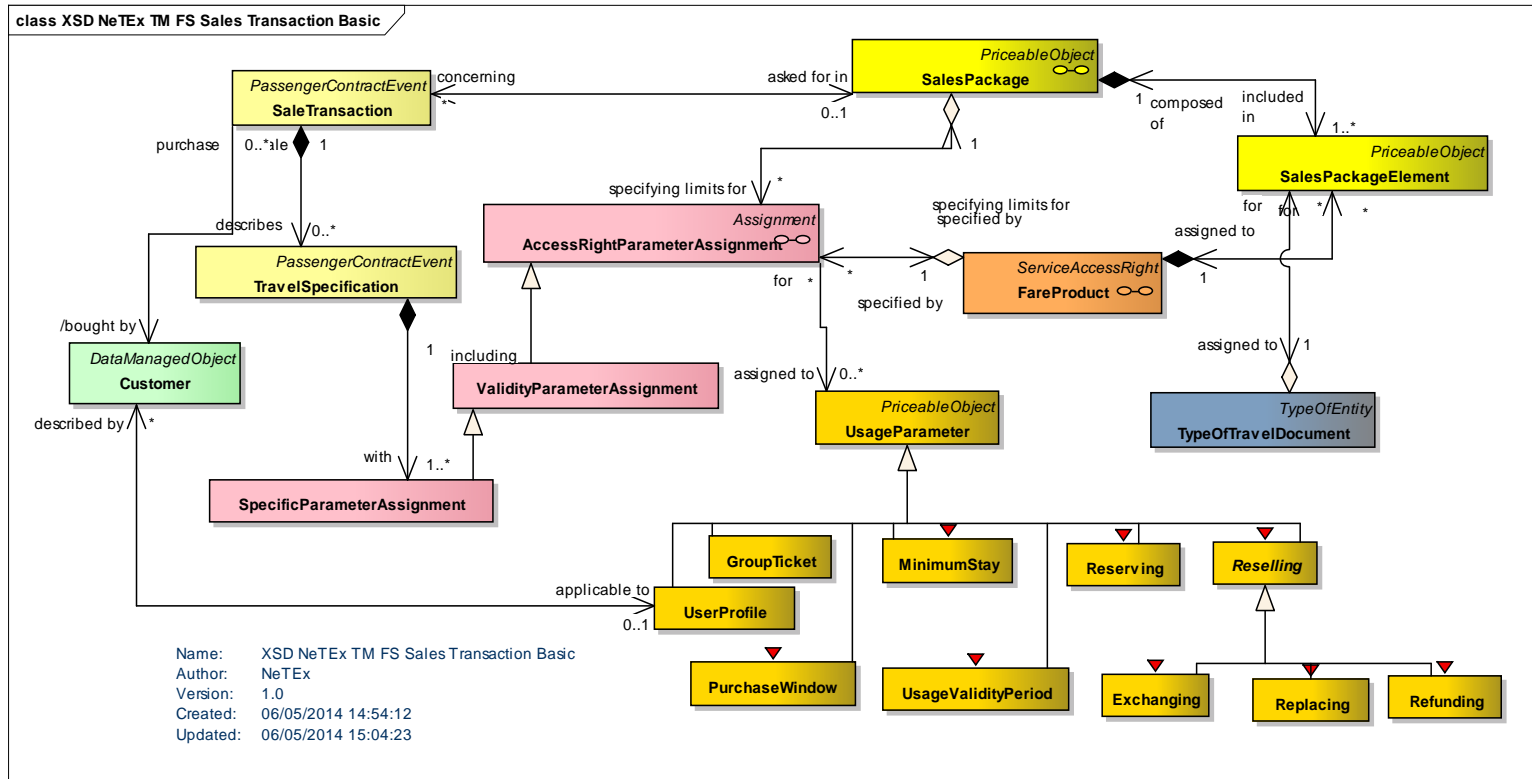
- **ACCESS RIGHT:** right to consumer public transport service, e.g. point to point, route, zone, network, day,
- **FARE PRODUCT;** Set of access rights with additional conditions, “Usage Parameters”, e.g. NRT Fare, Rail card, etc etc
- **SALES PACKAGE:** Named product with additional sales conditions & materialization.



NeTEx Access rights & Products



Travel Specification



The **specific** choice (out of all the possible available **generic** values) actually made on a purchase.

For example a *Child, Single, Off-peak* fare

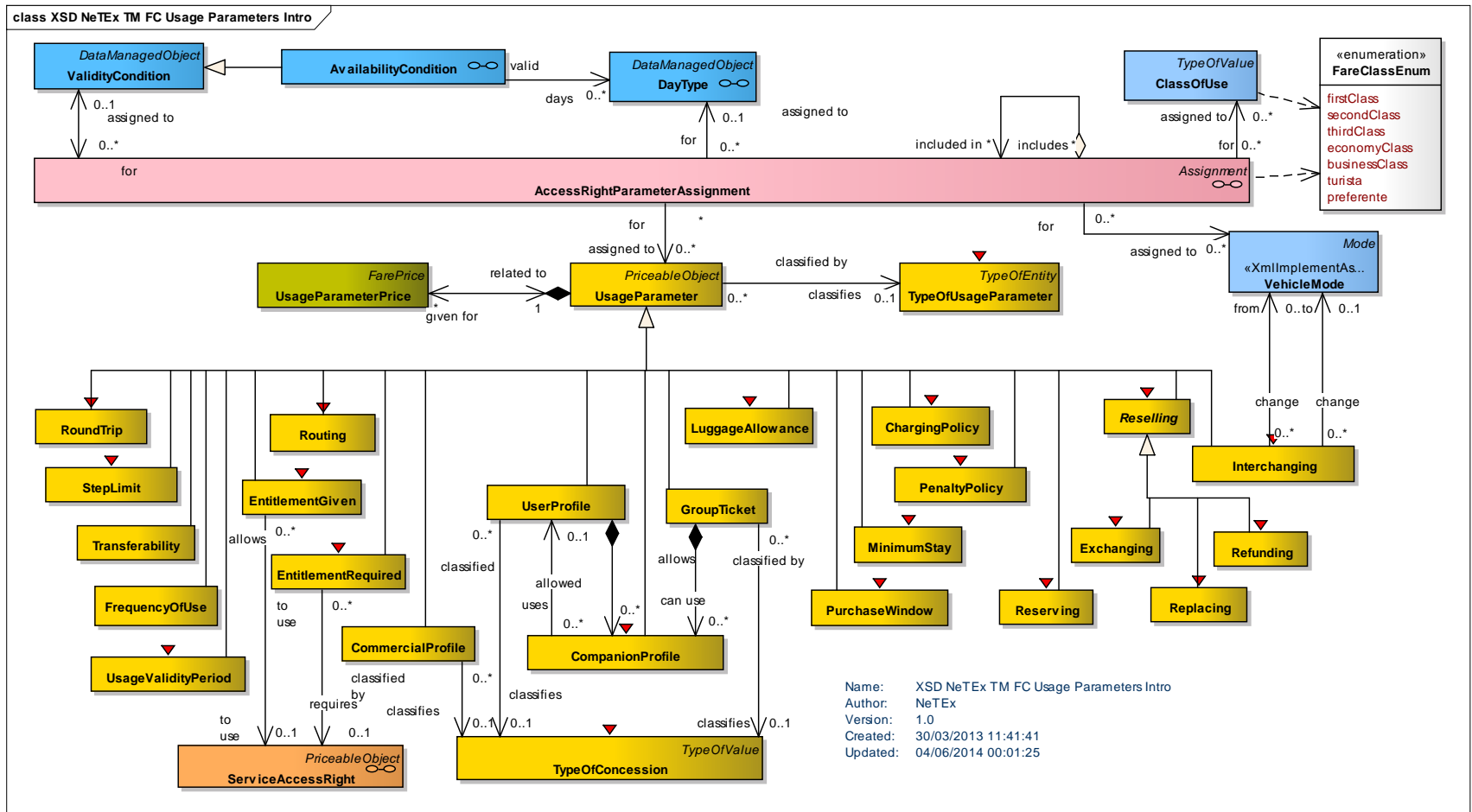


Access rights & Products

- **ACCESS RIGHT:** right to consumer public transport service, e.g. point to point, route, zone, network, day,
- **FARE PRODUCT;** Set of access rights with additional conditions, “Usage Parameters”, e.g. NRT Fare, Rail card, etc etc
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Reusable Usage Parameters



TAP TSI MAPPINGS



Objectives

- How to map B1 (NRT) to NeTEx?
- What are equivalent semantics?
 - Gap Analysis: What extra NeTEx Entities, Attributes, Relationships are needed?
 - What implicit B1 semantics can NeTEx also describe?
 - Where is decomposition needed? (because NeTEx generally separates concerns & normalizes to atomic elements – cf B1 & B2 optimized views)
- How to do it efficiently?
 - Modularisation: which package does it go in?
 - Add extra view entities?



Sources

- TAP TSI B1, B2, B3 Documents
 - 2012.09 V1
 - 2013.03 Updates eg Table L
- TAP TSI 5.1 Document (Rules on using)
- TAP TSI Code lists
- Sample data



Methodology - Technical

- TAP B* Analysis Models in Enterprise Architect
 - Overview & Detail diagrams
- Extend NeTEEx UML Physical Model
- Tap B*/NeTEEx Mapping Table as Spreadsheet
- Extend XML schema to support B*
- Create examples to help validate schema and clarify interpretation
- B* Mapping report
- Model Documentation as part of NeTEEx Part 3 documents



Summary Comments



Summary

- NeTEx can represent B1, B2, B3 content
- Has additional capabilities
- Interpretation is quite complex – but then so are B1, B2, B3.....
- Interoperability is quite possible.



Some Comparison Points

	B1, B2, B3	NeTEx
Technology	Csv files	XML document
Packaging	Separate files, naming convention	Document (s)
Protocol	ftp	ftp and/or SIRI
Consistency	3 separate B1, B2, B3, some common concepts	Unified, reusable conditions
Architecture	Optimised flat files	Normalized reusable component objects
Expressiveness	Limited to agreed concepts	Rich, extensible
Integrity checking	No	Yes
Versioning	Yes	Fine grained, uniform
Responsibility	Supplying RU	Fine grained, uniform



Some disadvantages of NeTEx

- Larger, More complex model, more effort to understand, harder to interpret.
- XML is more verbose
- Slow standards process, multi-stakeholder participation

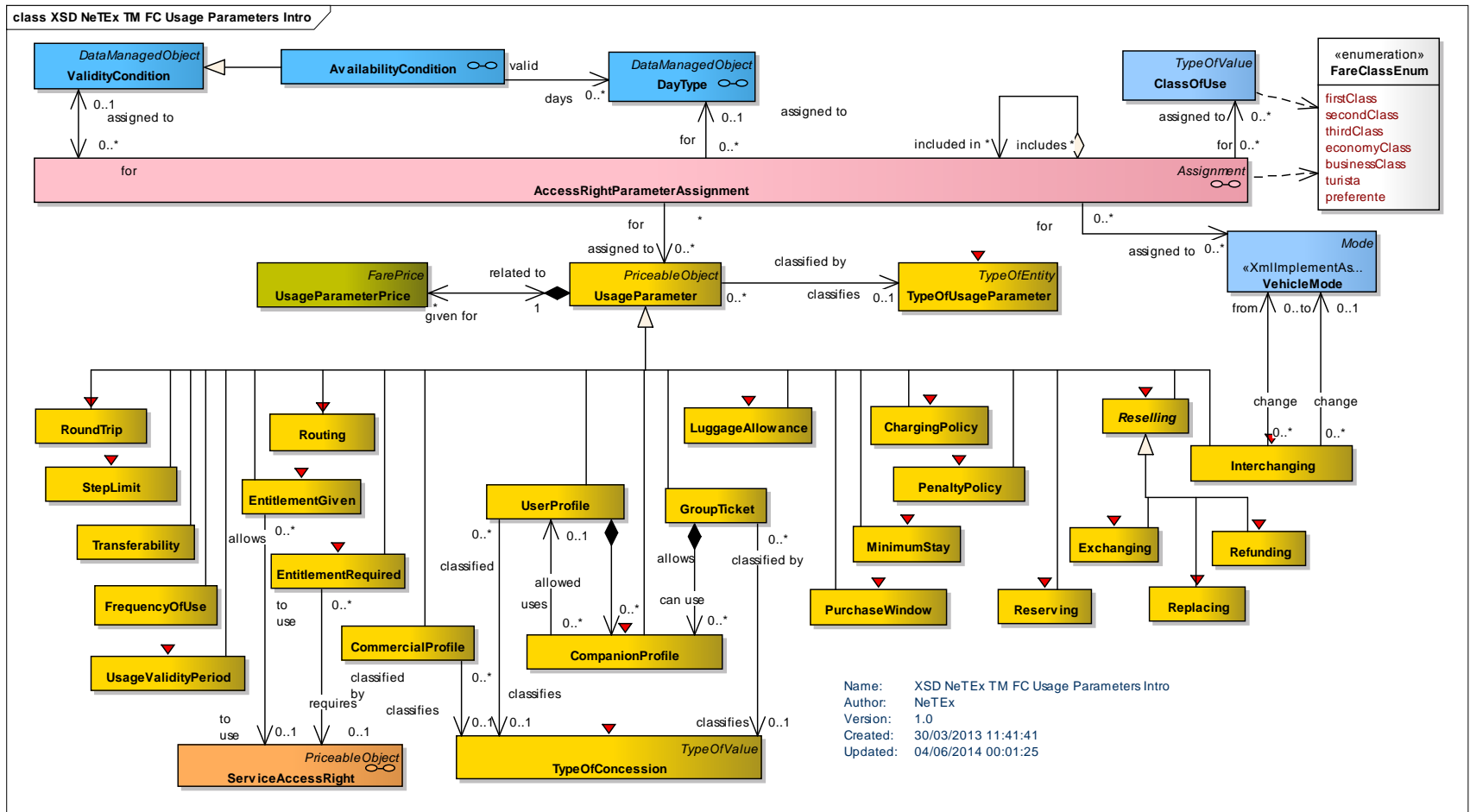


Some Advantages of NeTEx

- More complete
- More extensible
- Greater reuse of components and of design patterns



Reusable Usage Parameters



References

- **CEN/TS 16614-1:2014 Public transport - Network and Timetable Exchange (NeTEx) - Part 1:** Public transport network topology exchange format
- **CEN/TS 16614-2:2014 Public transport - Network and Timetable Exchange (NeTEx) - Part 2:** Public transport scheduled timetables exchange format
- **ERA/2012/INTEROP/NP/01s *Study on the standard for the exchange of fare information in the context of connection with other modes of transport (NeTEx Part 3)***
- CEN TC278, Reference Data Model For Public Transport, ENV12896 revised, june 2001,



APPENDIX

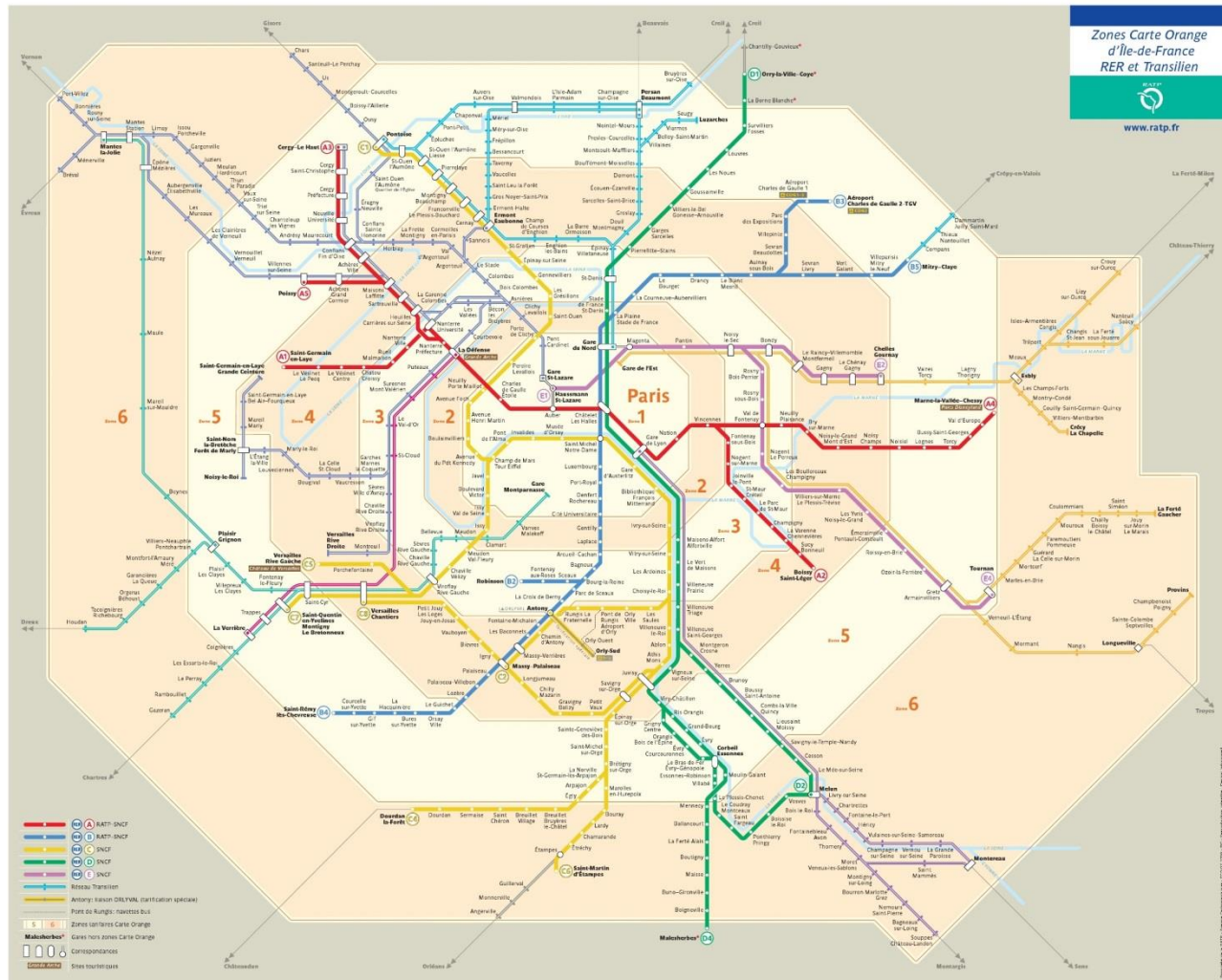
Some examples of the sort of passenger information NeTEx is intended to support.



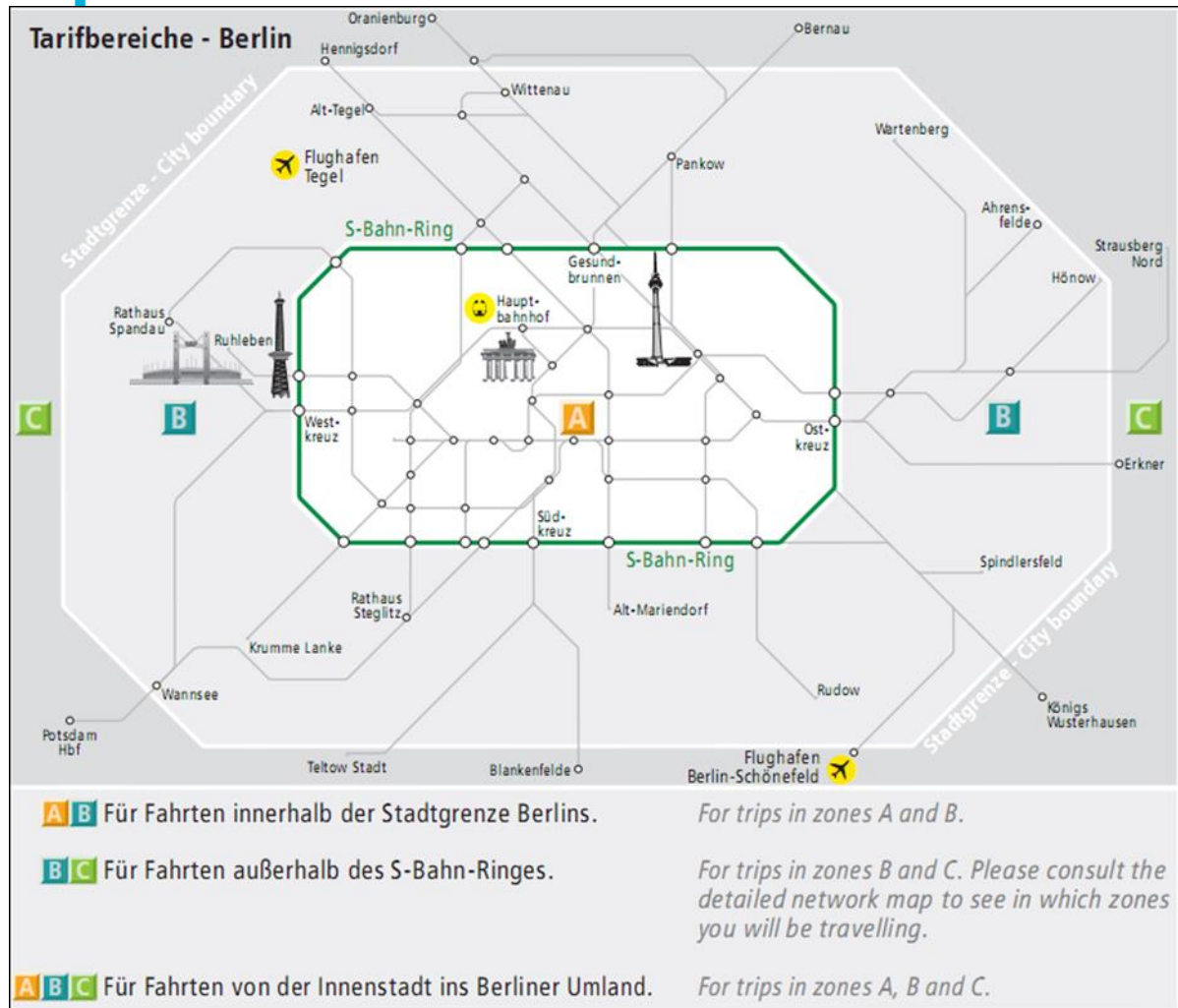
Network

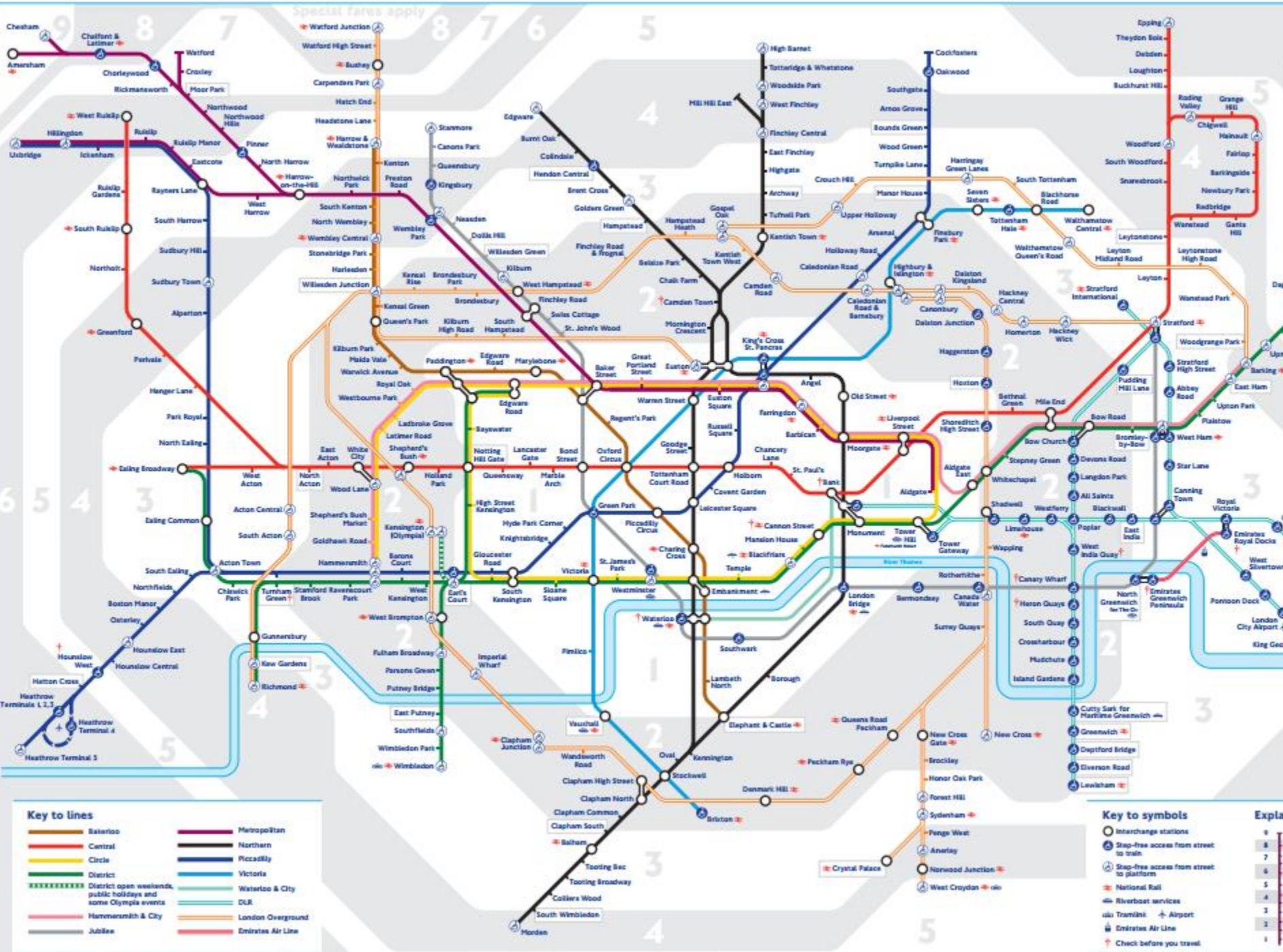


Example - Paris PT & zones



Example - Fare Zones - Berlin





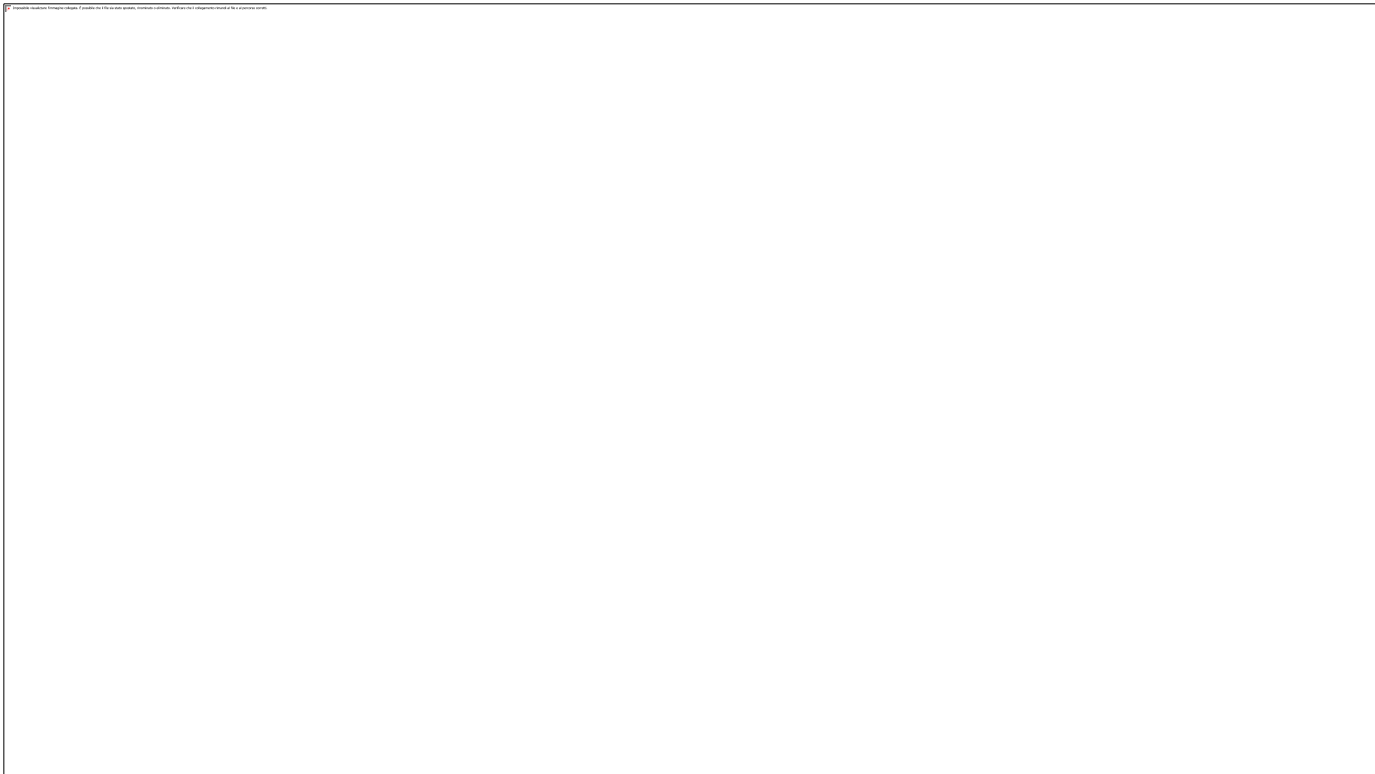
Key to lines

- Bakerloo
- Central
- Circle
- District
- District open weekdays, public holidays and some Olympia events
- Hammersmith & City
- Jubilee
- Metropolitan
- Northern
- Piccadilly
- Victoria
- Waterloo & City
- London Overground
- Emirates Air Line

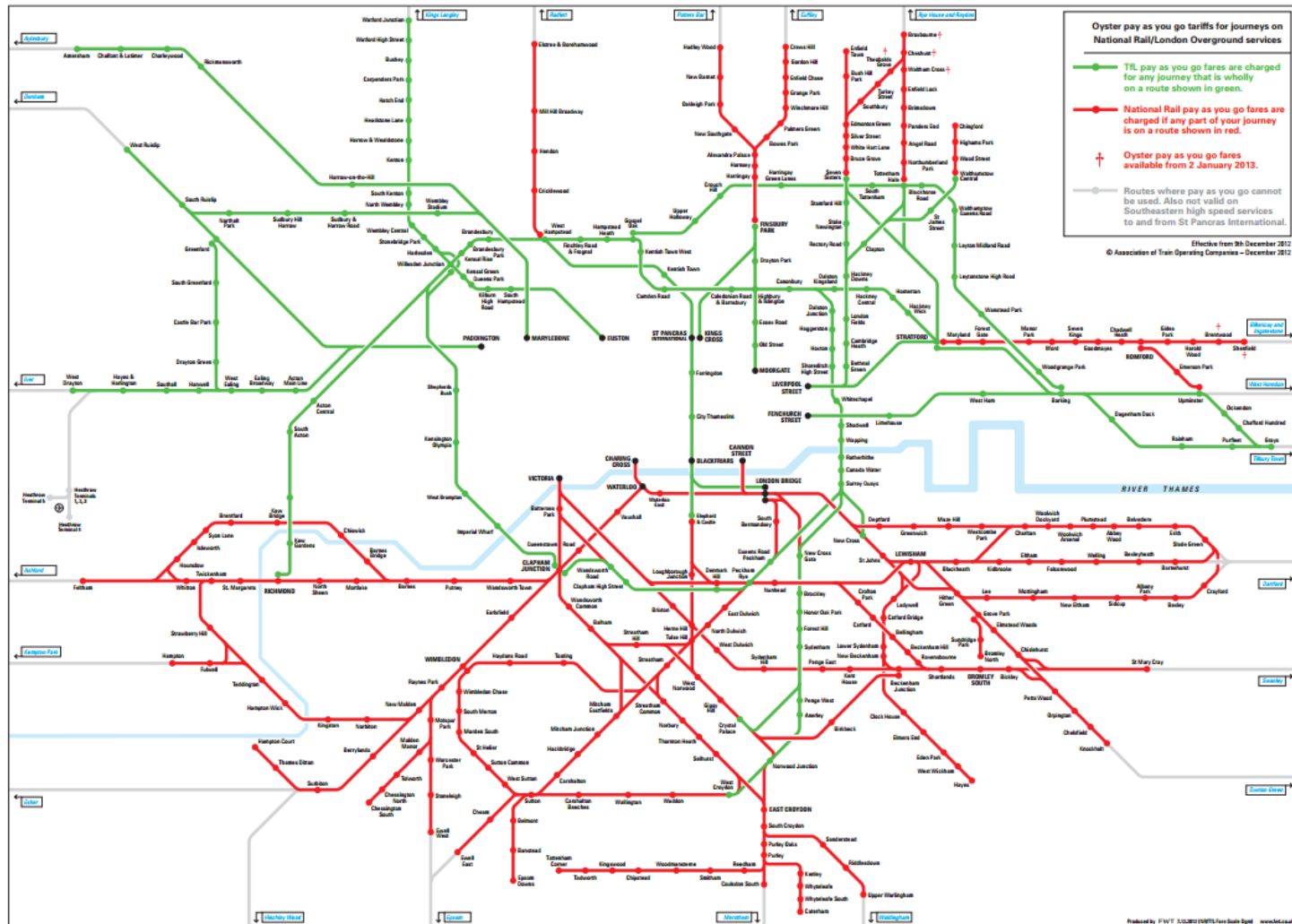
Key to symbols

- Interchange stations
- Step-free access from street to train
- Step-free access from street to platform
- National Rail
- Riverboat services
- Tramlink
- Airport
- Emirates Air Line
- Check before you travel

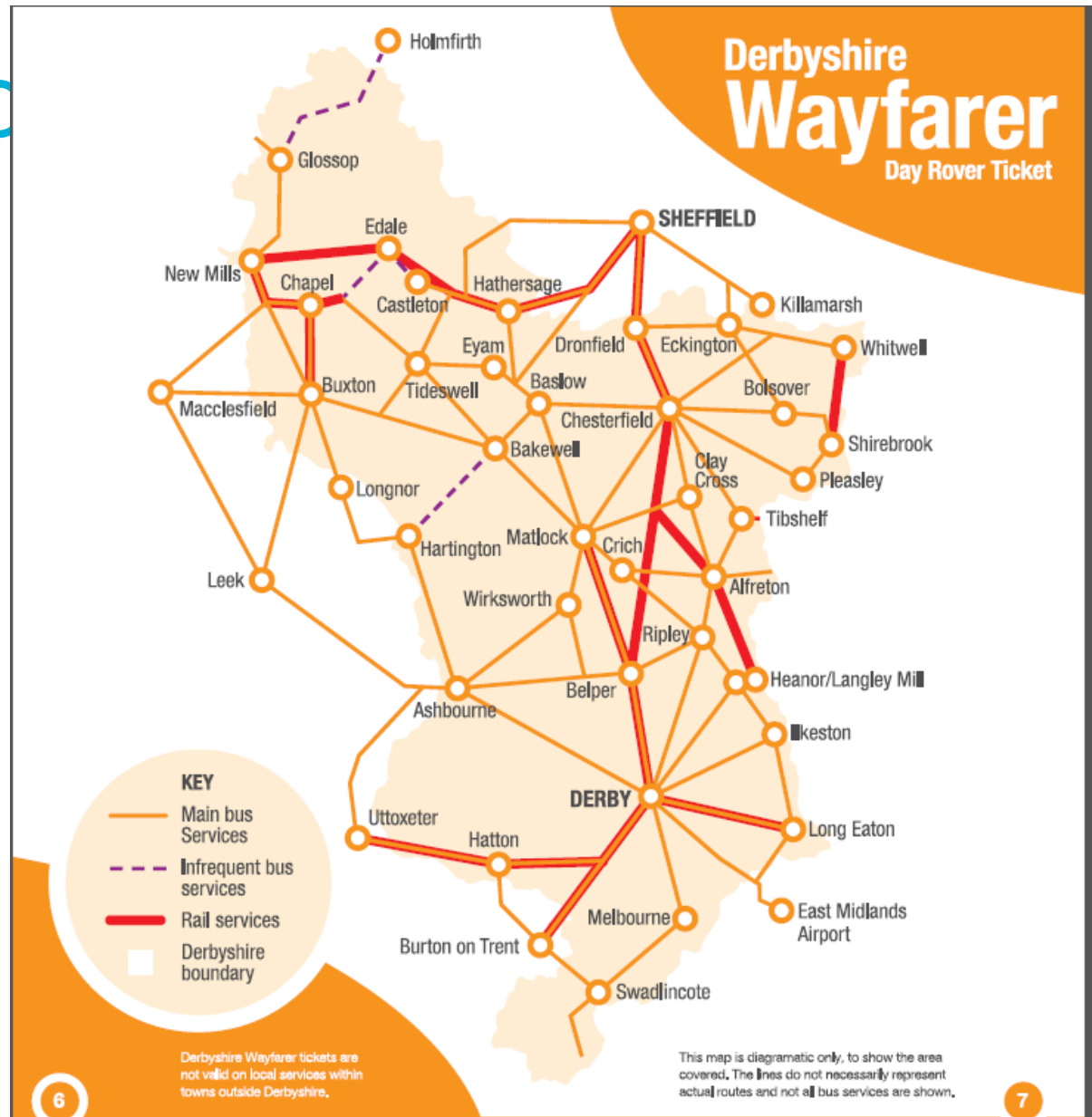
Copenhagen fare zones



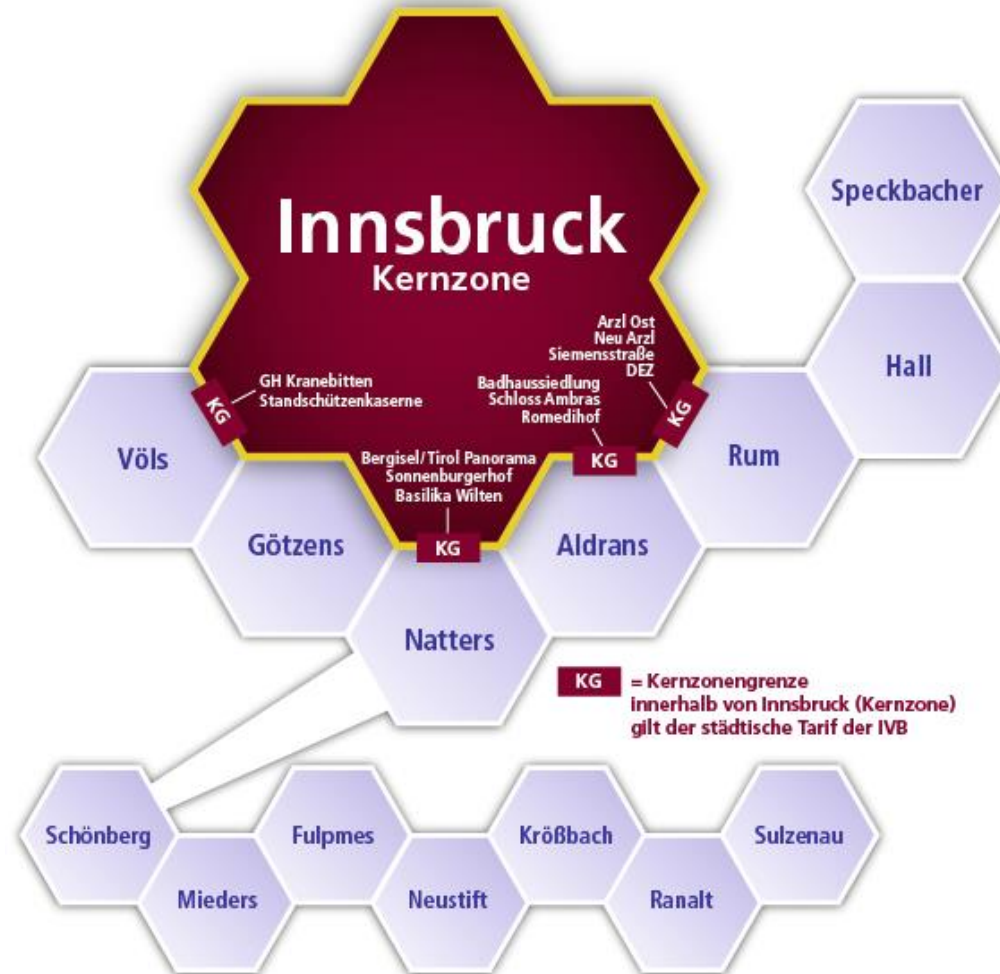
Rail / Metro zoning



Rover proo



More zones



Rail add on zones

- Add on fare zones

PLUSBUS
www.plusbus.info

290 destinations nation-wide

PLUSBUS day ticket & season tickets available ●
PLUSBUS day ticket available ●
London Travelcard or Oyster (TfL ticket type) ★

Information valid from 2 September 2012 to 1 January 2013

PLUSBUS can now be bought online with train tickets from all train company websites and
mytrainticket.co.uk
a together a better experience

National Rail
Britain's train companies working together

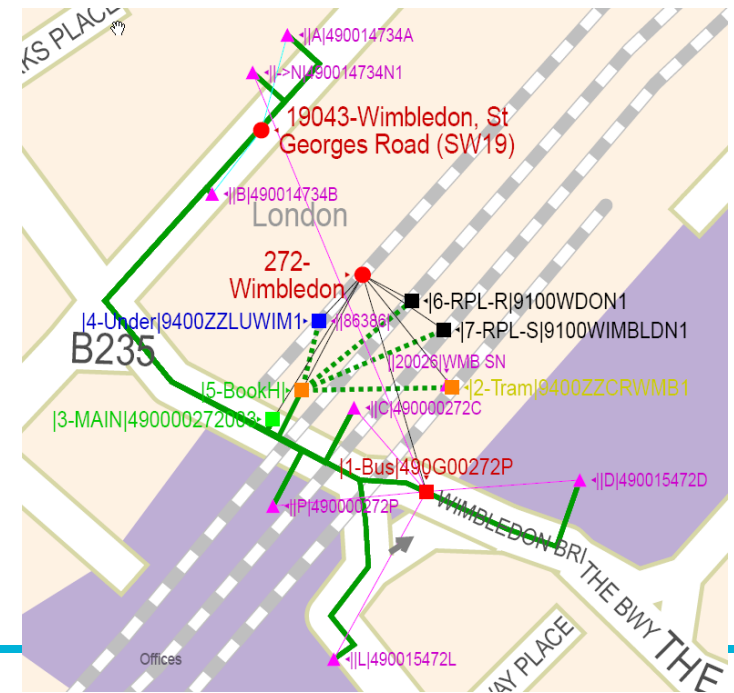
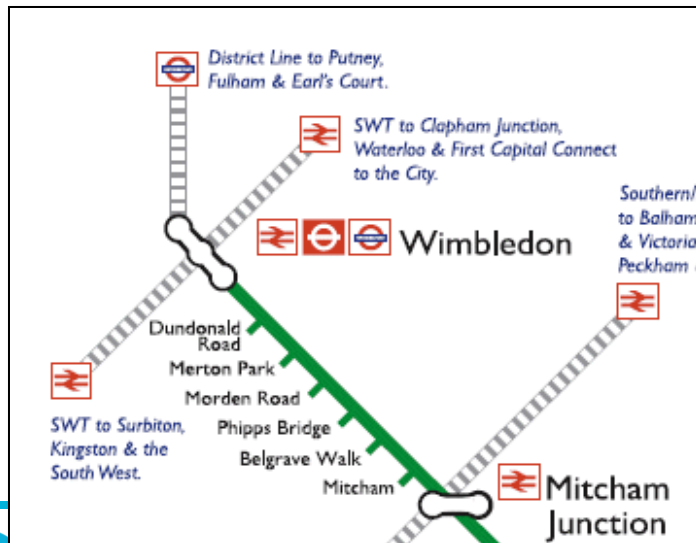
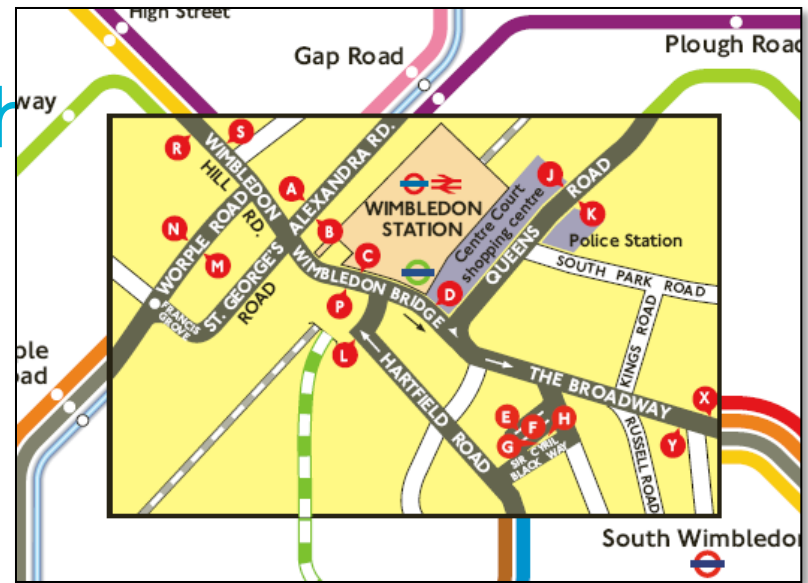
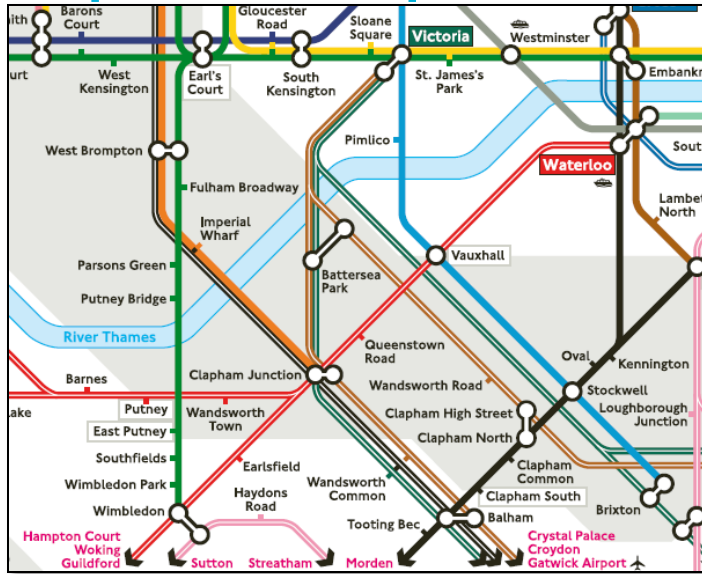
njsk



Interchanges



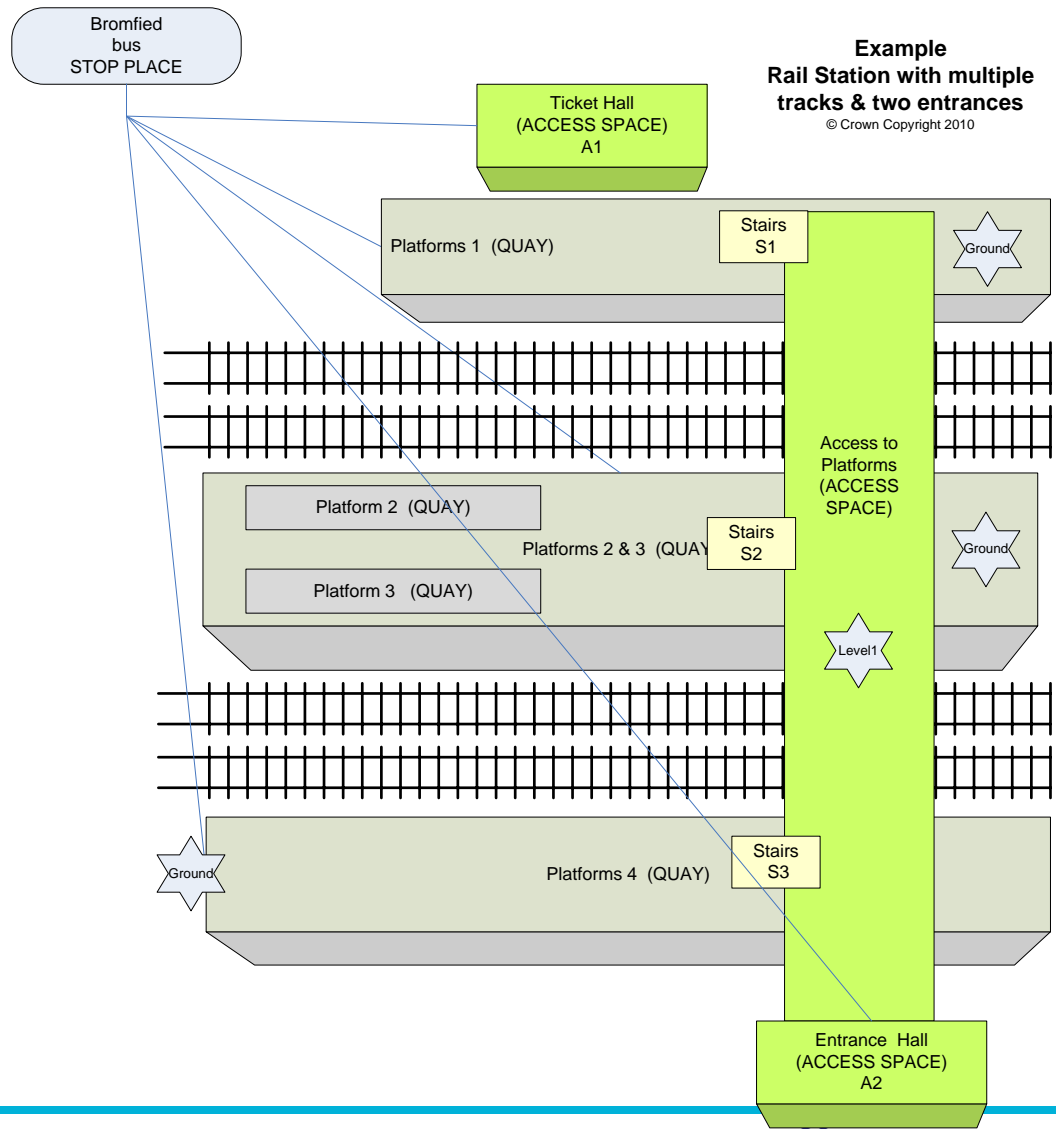
Example Complex Interch



Complex interchanges station

Layout

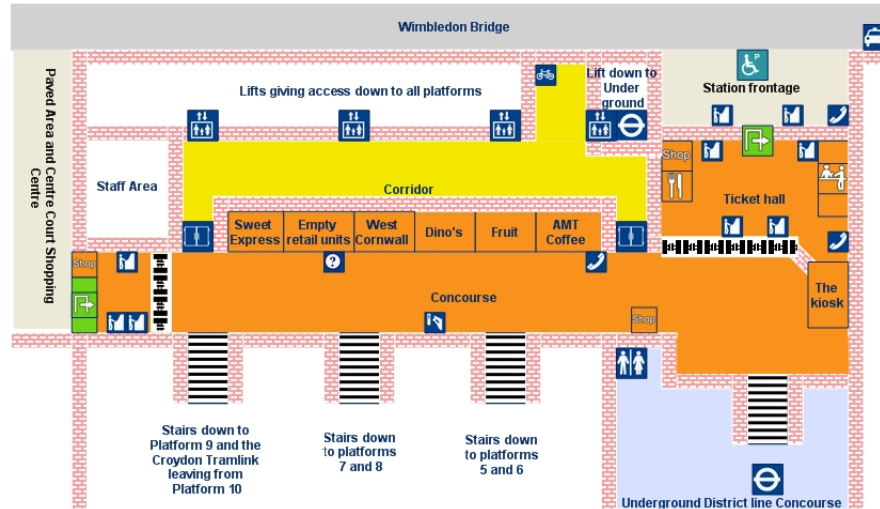
Multiple platforms, & entrances



Example Station map -Wimbledon

Wimbledon Station Plan Ground Floor

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.



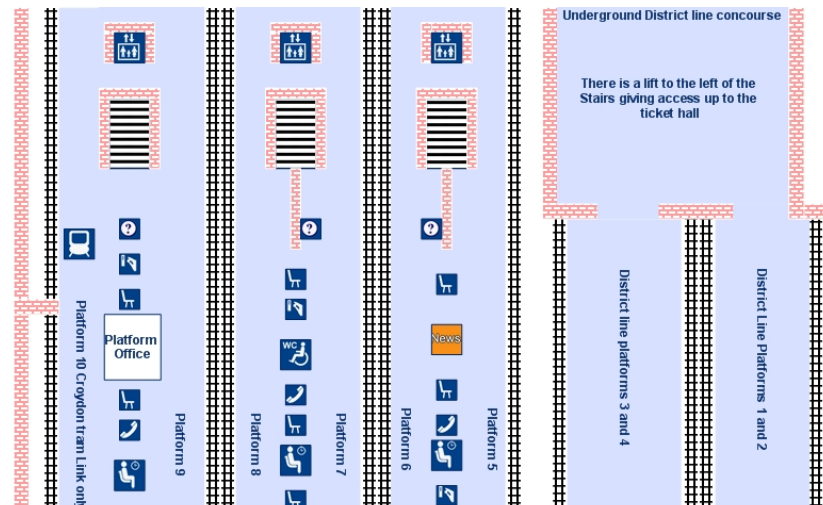
- Platforms 7 and 8 Stairs
- Number of Steps: 13,13
- The steps have handrails.



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

Lower Ground

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.



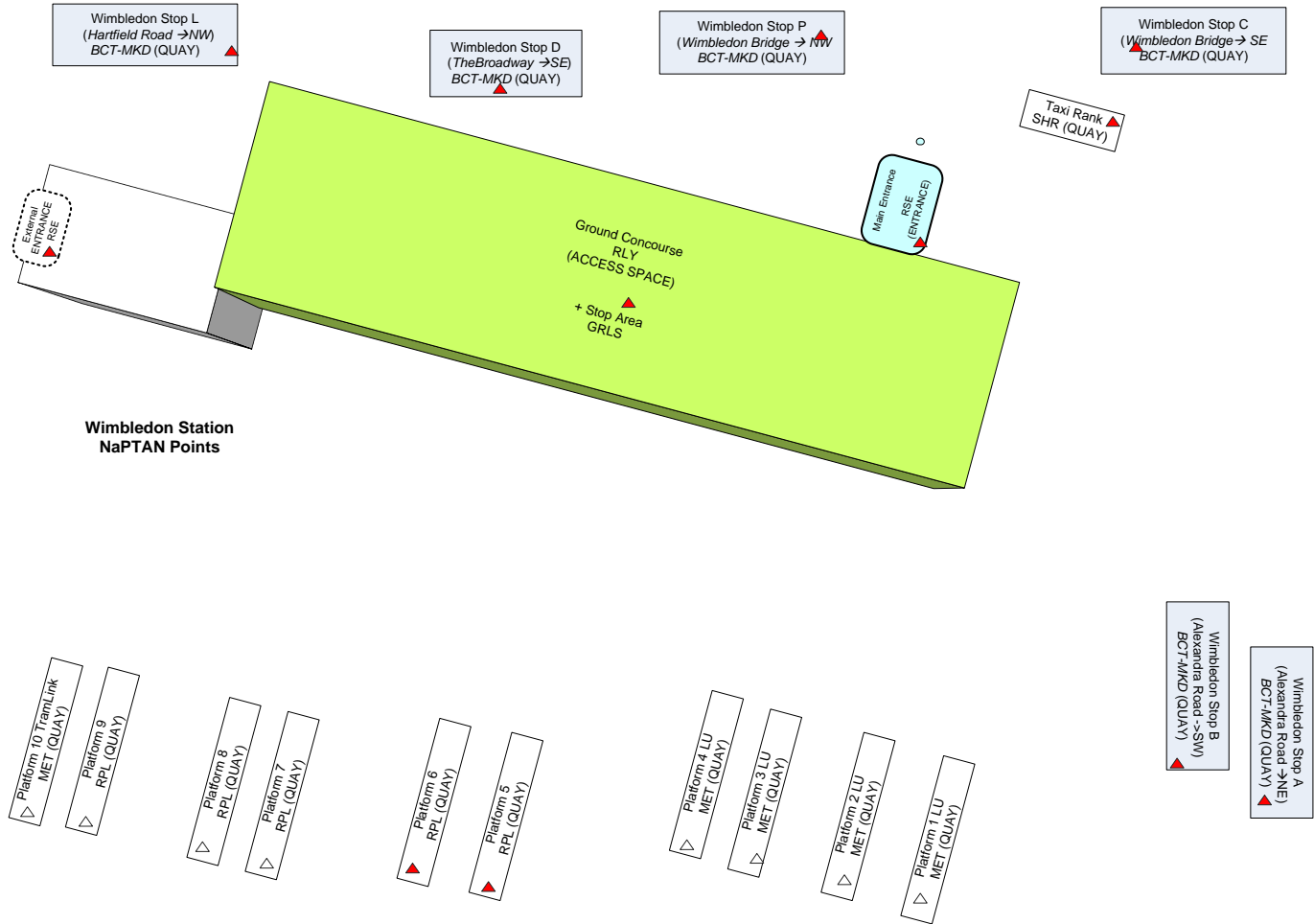
- Lift
- The lift car dimensions are sufficient for a wheelchair user and their companion.
- The lift has audible announcements.
- There is an emergency alarm button in easy reach for all users.



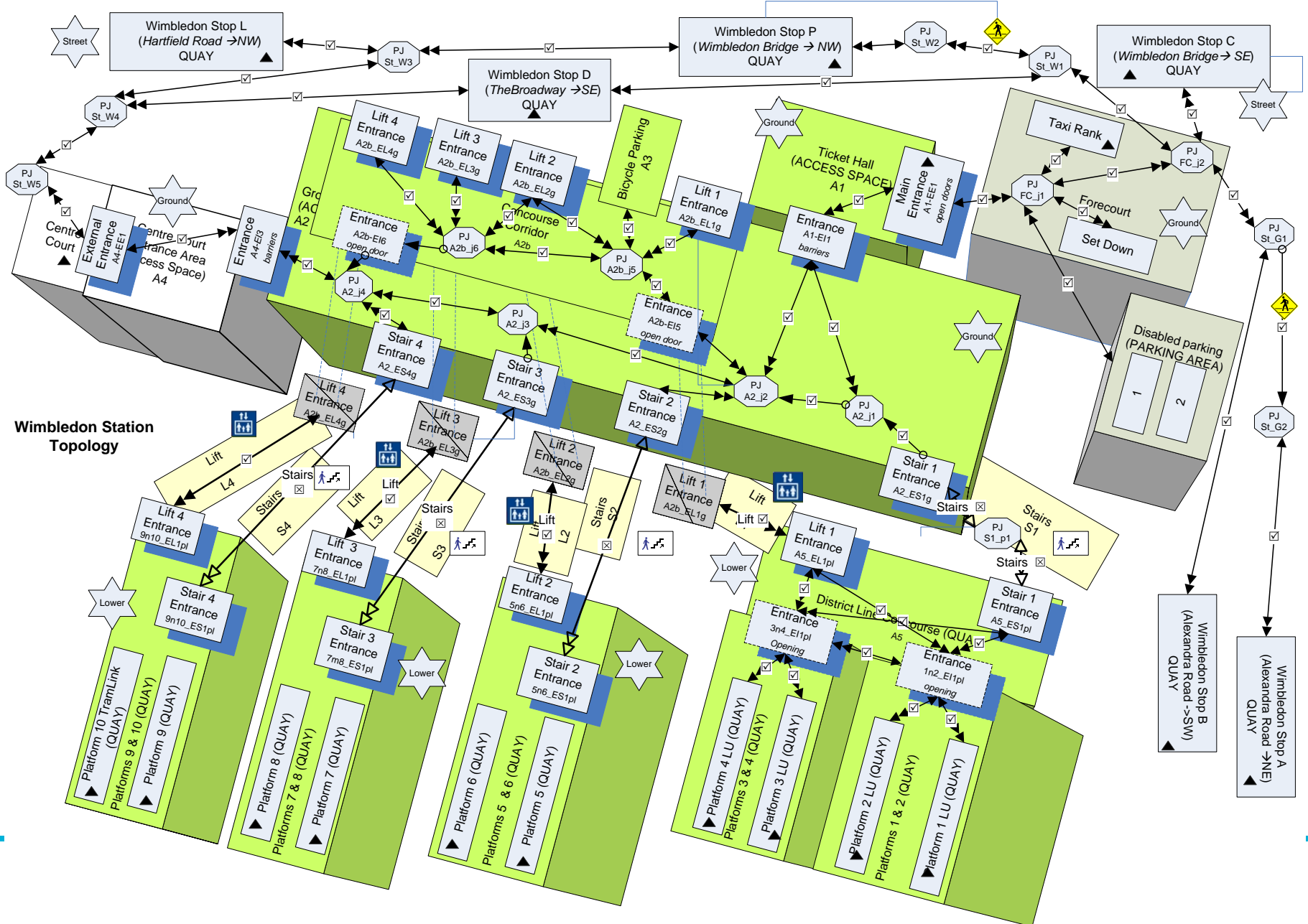
- There are unisex accessible toilet facilities available.
- The main entrance doors of the toilet are not automatic.
- The entrance door to the toilet opens in.
 - The toilets are kept locked.
 - The toilets require a RADAR Key.
- There is an assistance alarm provided.
- There is a large cubicle available.
- There are no baby change facilities available.



Example Entrances & Platforms only



Example Complex Station model



Wimbledon Station Topology

Connection & Transfer Times

• CONNECTION

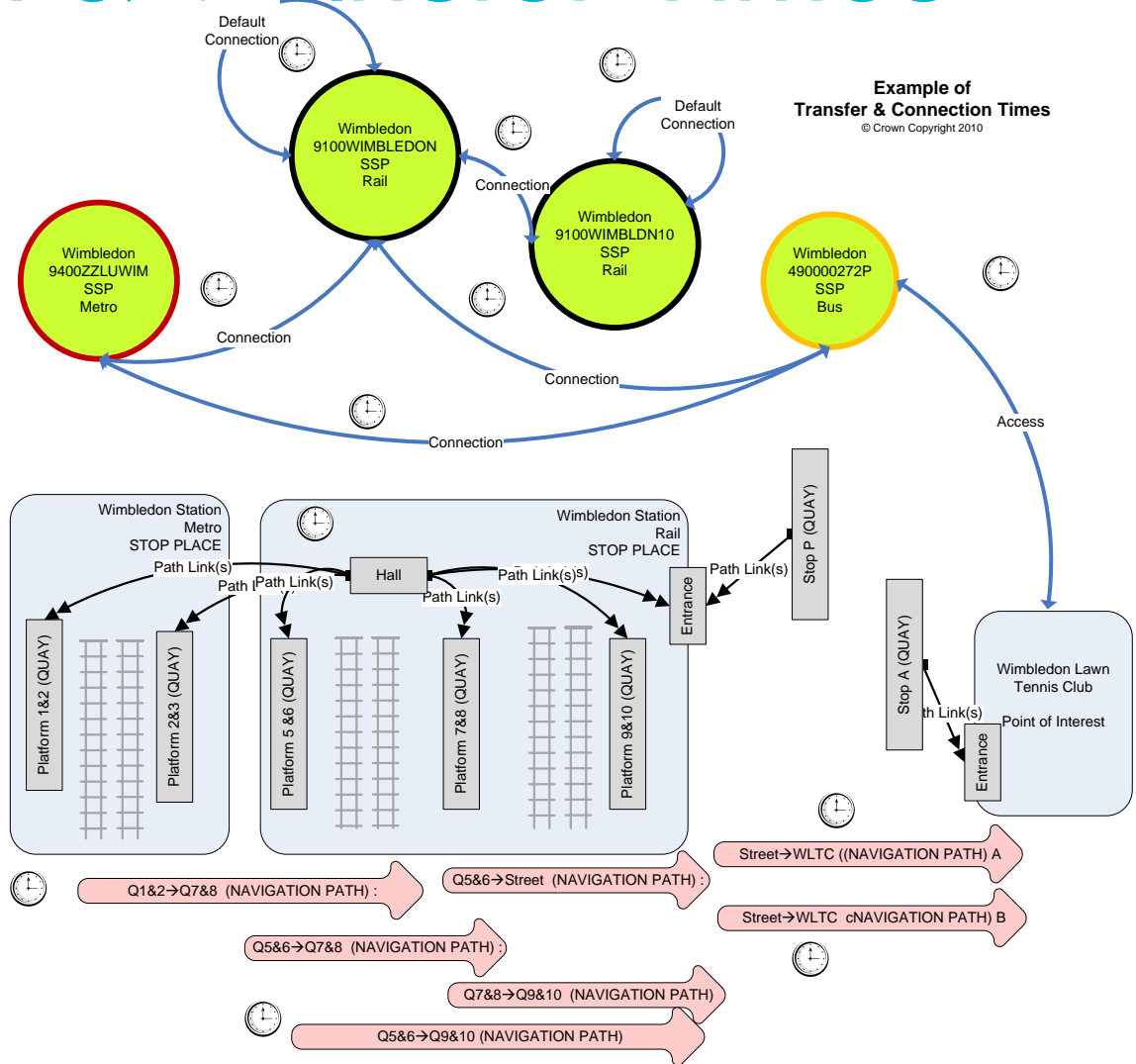
- transfer between SCHEDULED STOP POINT in timetable, with timings & accessibility

• NAVIGATION PATH.

- Transfer between points within SITE, with timings and accessibility

• ACCESS

- Transfer between SITES (eg POINT OF INTEREST or STOP PLACE)., with timings & accessibility



Timetables



Timetables

- NeTEx can represent the reusable elements used to derive timetables e.g. JOURNEY PATTERNS, TIMING PATTERNS, TIMING LINKs, TIME DEMAND TYPES (peak , off peak etc) etc
 - Enables advanced passenger information



Timetables - Mainline

- Different Service patterns
- Timing Links vs Service Links
- Different Day Types
- Exceptions
- Footnotes

London ▶ Paris/Brussels



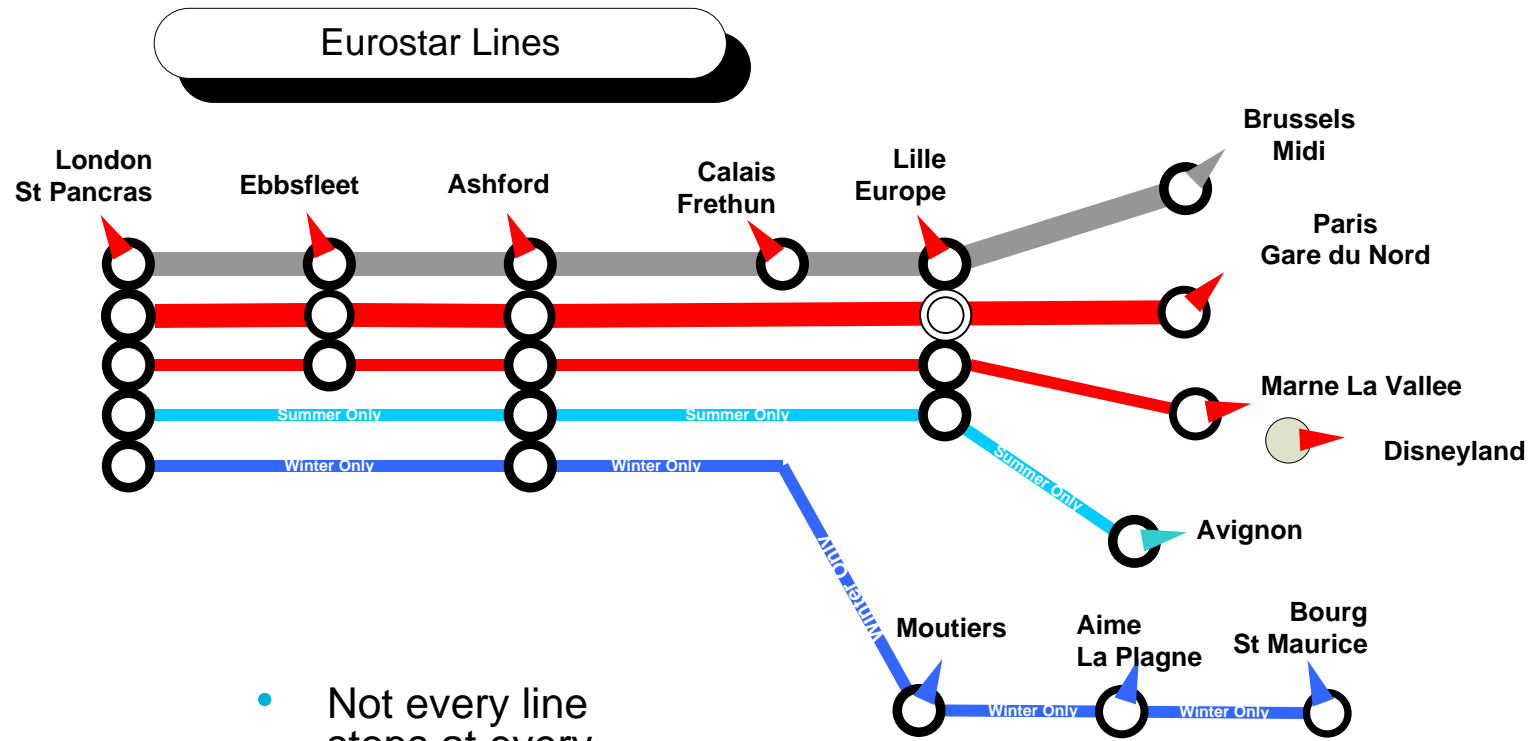
Monday to Friday

Notes

								Train no
1	05:25	05:42	-	-	-	-	08:50	9078
	06:19	06:36	06:58	08:32	09:10	09:42		9108
2	06:12	06:29	06:53	-	-	-	09:54	9002
	06:53	-	07:25	-	-	-	10:17	9004
1	07:22	07:41	-	-	-	-	10:47	9006
	07:34	-	-	-	-	10:27		9112
1	08:02	-	-	-	-	-	11:17	9008
	08:27	08:45	-	-	10:58	11:33		9120
1	08:55	09:12	-	-	-	-	12:17	9012
	09:22	-	09:55	-	-	-	12:47	9014
1	10:25	10:42	-	-	-	-	13:47	9018
	10:57	11:15	-	13:02	13:35	14:12		9126
3	11:32	-	-	-	-	-	14:47	9022
	12:28	12:45	-	-	-	-	15:50	9024
3	12:58	13:15	-	-	15:28	16:05		9132
	14:02	-	-	-	-	-	17:23	9030
3	14:34	-	-	-	16:58	17:33		9138
	15:02	-	-	-	-	-	18:17	9034
3	16:02	-	-	-	-	-	19:17	9038
	16:22	-	16:55	-	-	-	19:47	9040
3	17:04	-	-	-	19:28	20:03		9148
	17:32	-	-	-	-	-	20:47	9044
3	18:02	-	-	-	-	-	21:17	9046
	18:31	-	-	-	-	-	21:47	9048
4	18:34	-	-	20:32	21:02	21:37		9154
	18:34	-	-	20:33	-	21:33		9154
3	19:02	-	-	-	-	-	22:17	9050
	19:34	-	-	-	21:58	22:33		9158
3	20:02	-	-	-	-	-	23:17	9054



Eurostar Routes & Destinations



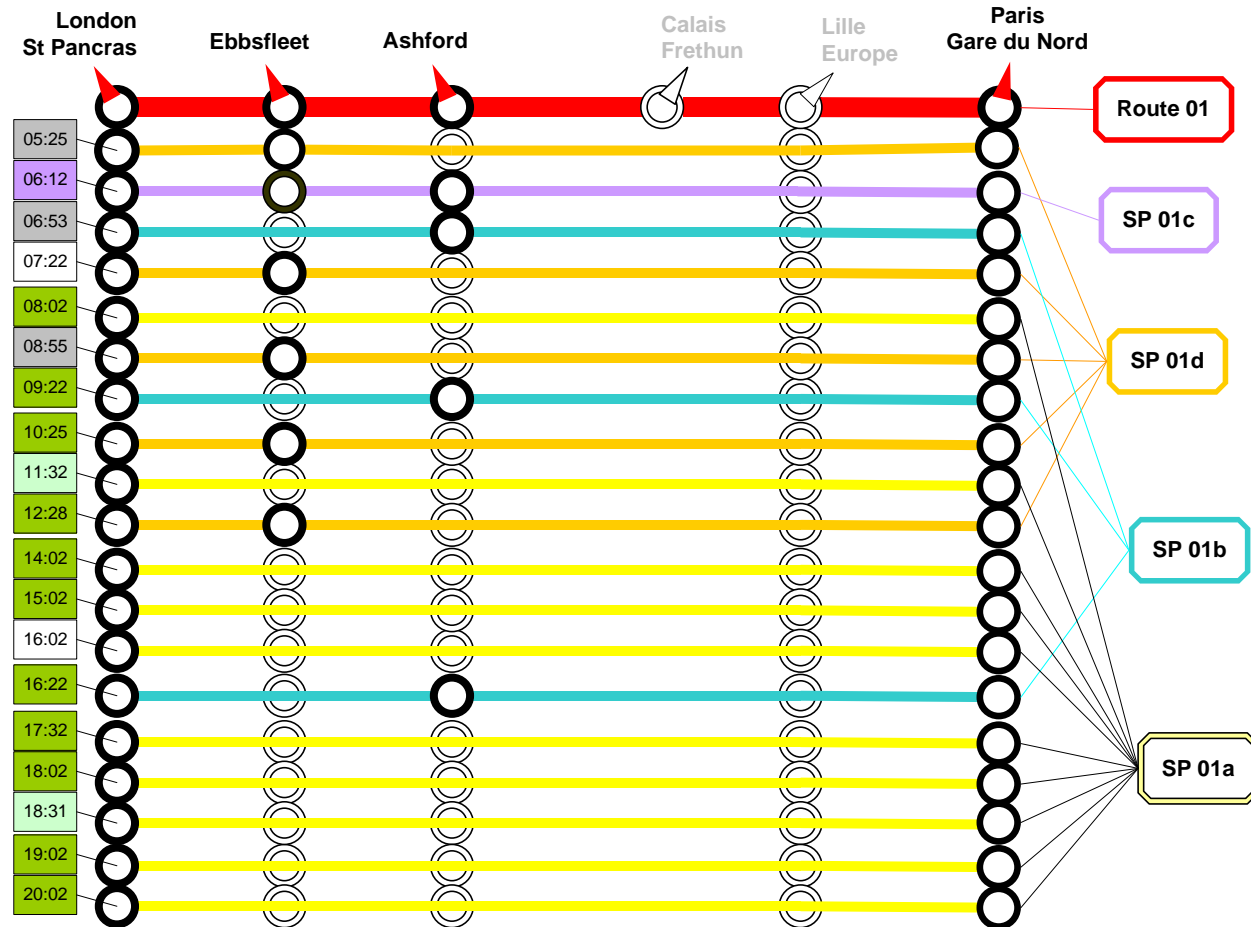
- Not every line stops at every station
- May be different in each direction
 - (eg London Paris Lille)



Journeys & Patterns

Eurostar London-Paris (Route 01 Outbound)
Journeys, Service Patterns & Day Types

- London to Paris Outbound, Weekdays
- 1 Route
 - 2 intermediate stops
 - Two passed Stops
- 4 Service Patterns
- 19 Journeys



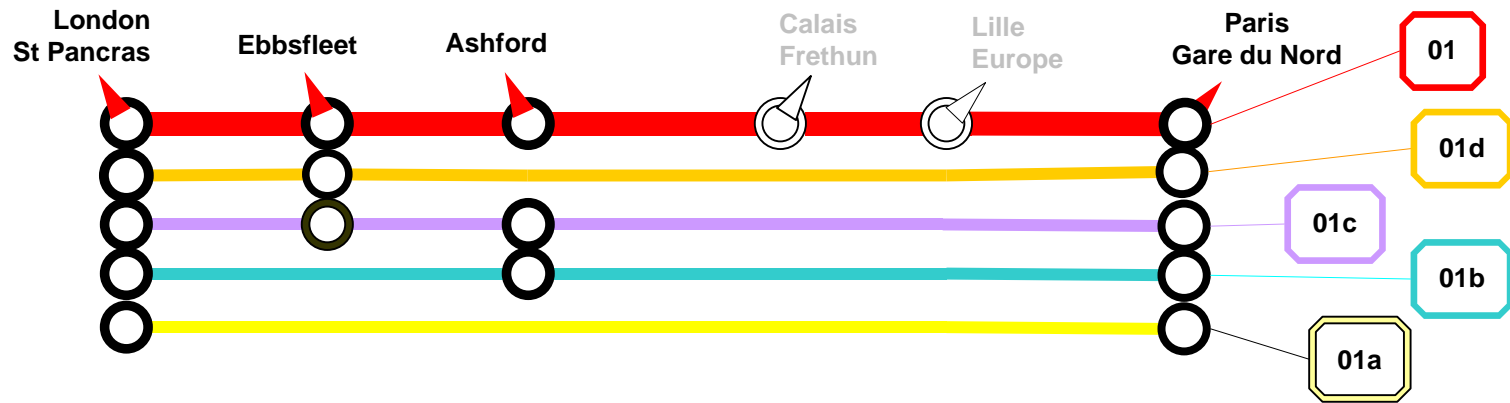
Everyday F1 - Runs Mondays and Fridays only from 4 January to 5 February. Runs Monday to Friday at all other times.

Weekdays only F2 - Runs Tuesday to Thursday from 4 January to 5 February only.



Service Patterns

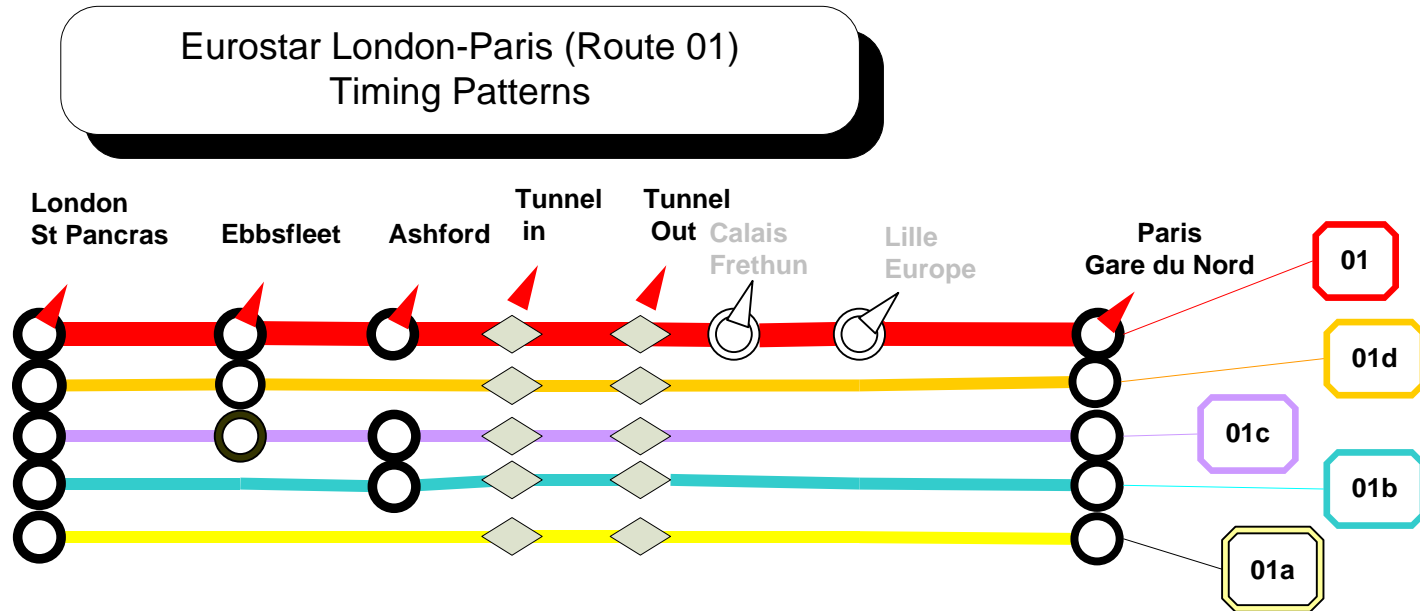
Eurostar London-Paris (Route 01) Service Patterns



- Directional



Timing Patterns



- Not all timing points are Stop points



Run Times & Wait Times

Eurostar London-Paris (Route 01)
Run Times & Wait Times

Compute from
Start time,

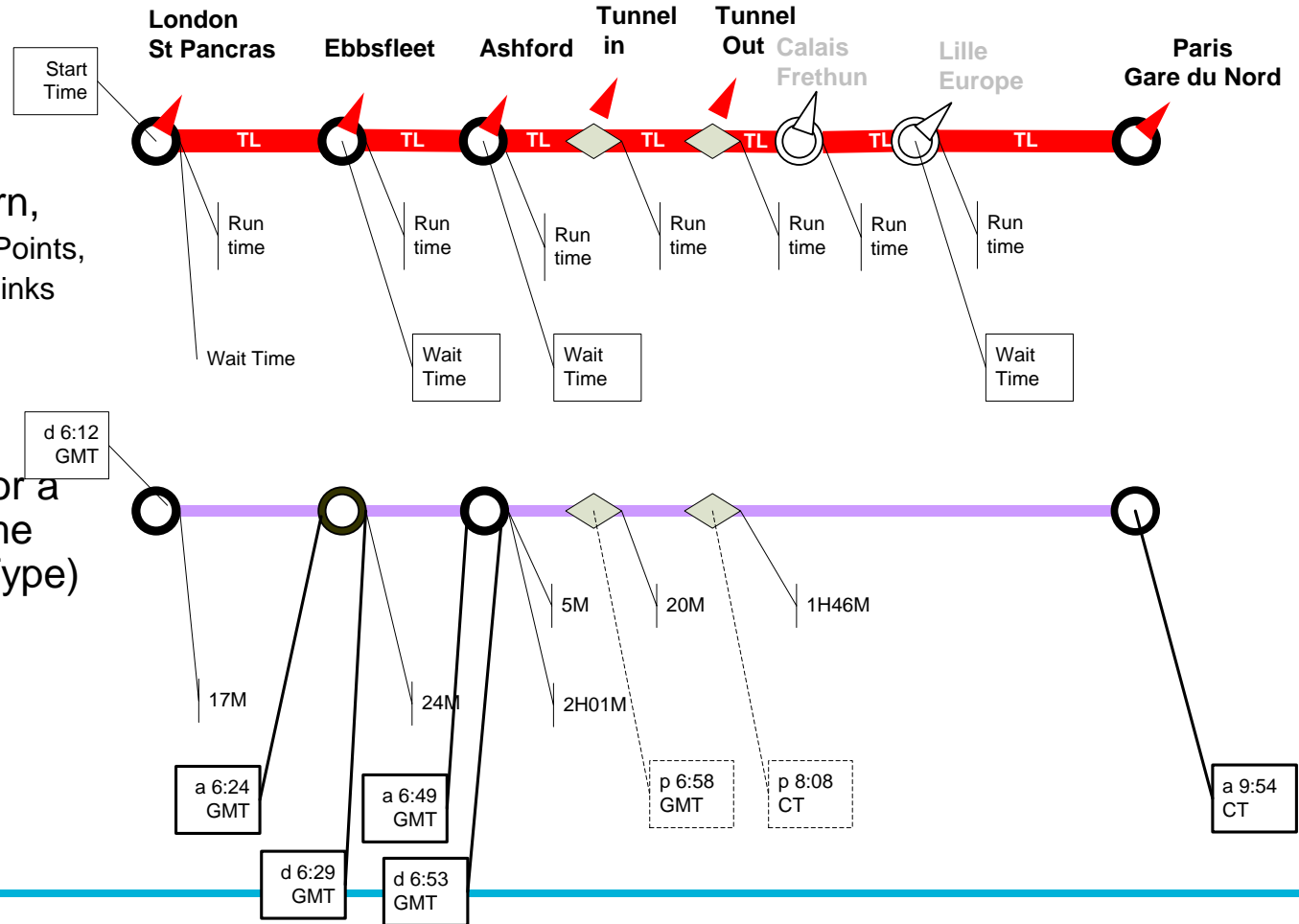
+

Timing pattern,

- Timing Points,
- TimingLinks

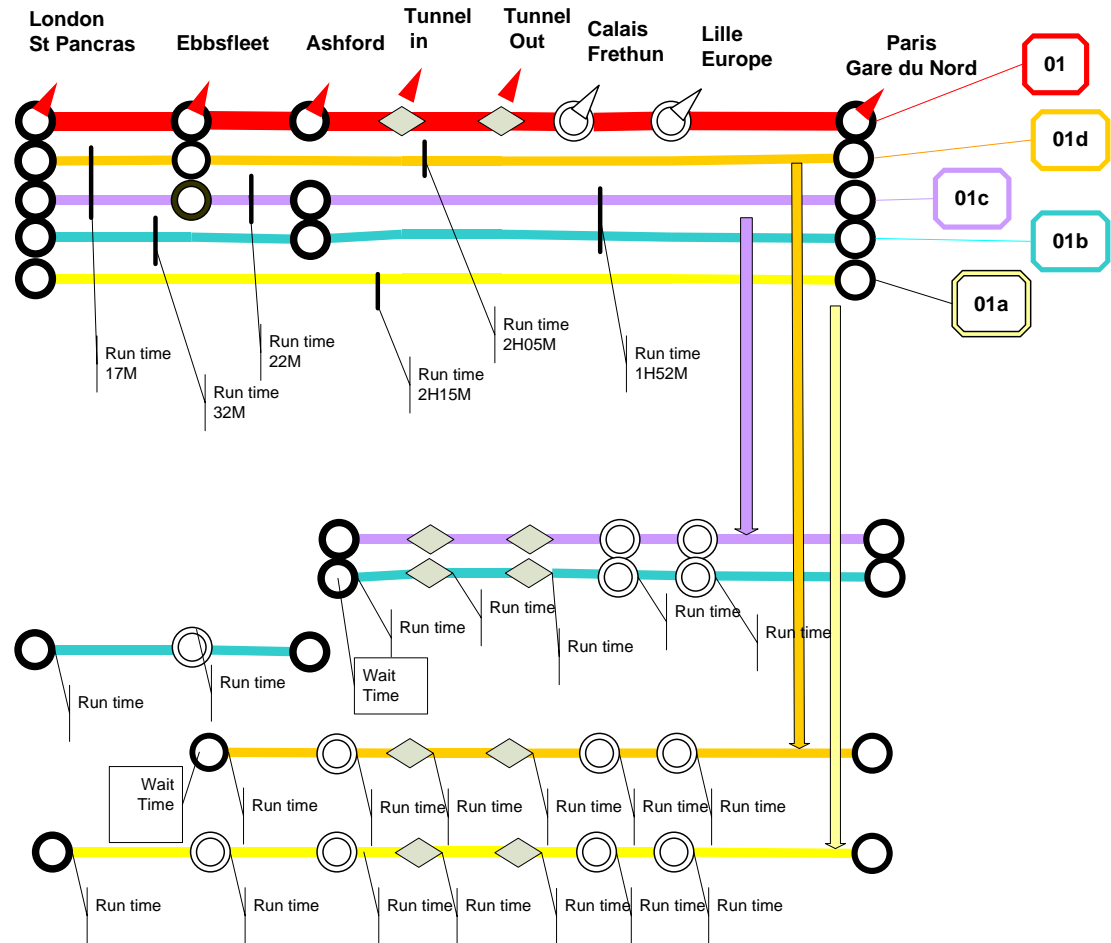
+

Run times (for a
given Time
DemandType)



Timing Link vs Timing Pattern?

Eurostar London-Paris (Route 01)
Timing Patterns



Complex Conditions & Footnotes

- Day Types
- Public Holidays
- Operating periods
- Exceptions



Timetable

Core destinations

from 12 December 2010 to 2 July 2011

KEY

 PARIS  BRUSSELS

NOTES

- 1** Runs Mondays and Fridays only from 4 January to 5 February. Runs Monday to Friday at all other times.
- 2** Runs Tuesday to Thursday from 4 January to 5 February only
- 3** Fridays only
- 4** Does not run on Fridays
- 5** Runs from 9 May onwards
- 6** Runs until 6 May
- 7** Runs from 6 February
- 8** Runs until 5 February
- 9** Saturdays only
- 10** Sundays only
- 11** From 4 January to 5 February only, arrives in London at 09:37

VARIATIONS

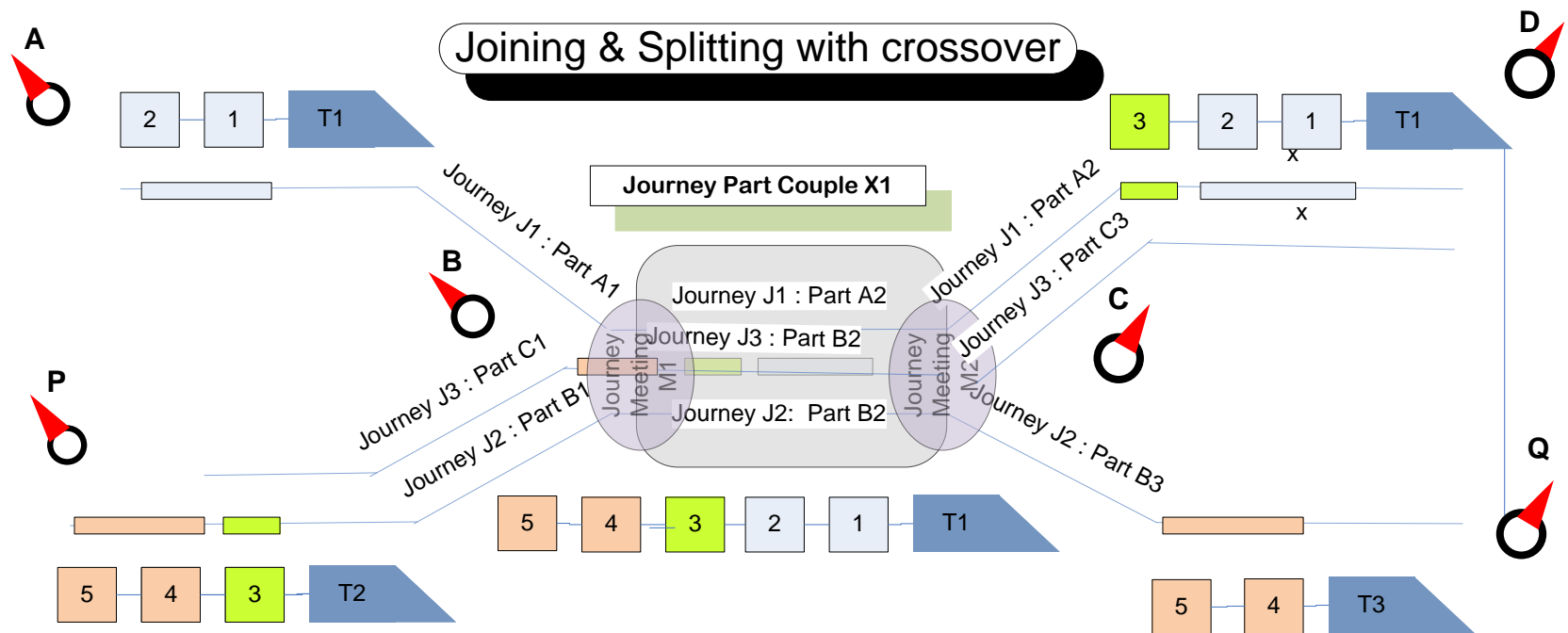
Amended Eurostar services may run on and around Public Holidays and for engineering works. Please check at the time of booking and before travelling. Please note that there are no Eurostar services on Saturday 25 December 2010.

CHECK-IN ADVICE TO TRAVELLERS

- At least 10 minutes before departure for Business Premier travellers and Eurostar™ carte blanche holders.
- At least 30 minutes before departure for all other ticket holders and Eurostar™ carte classique holders.

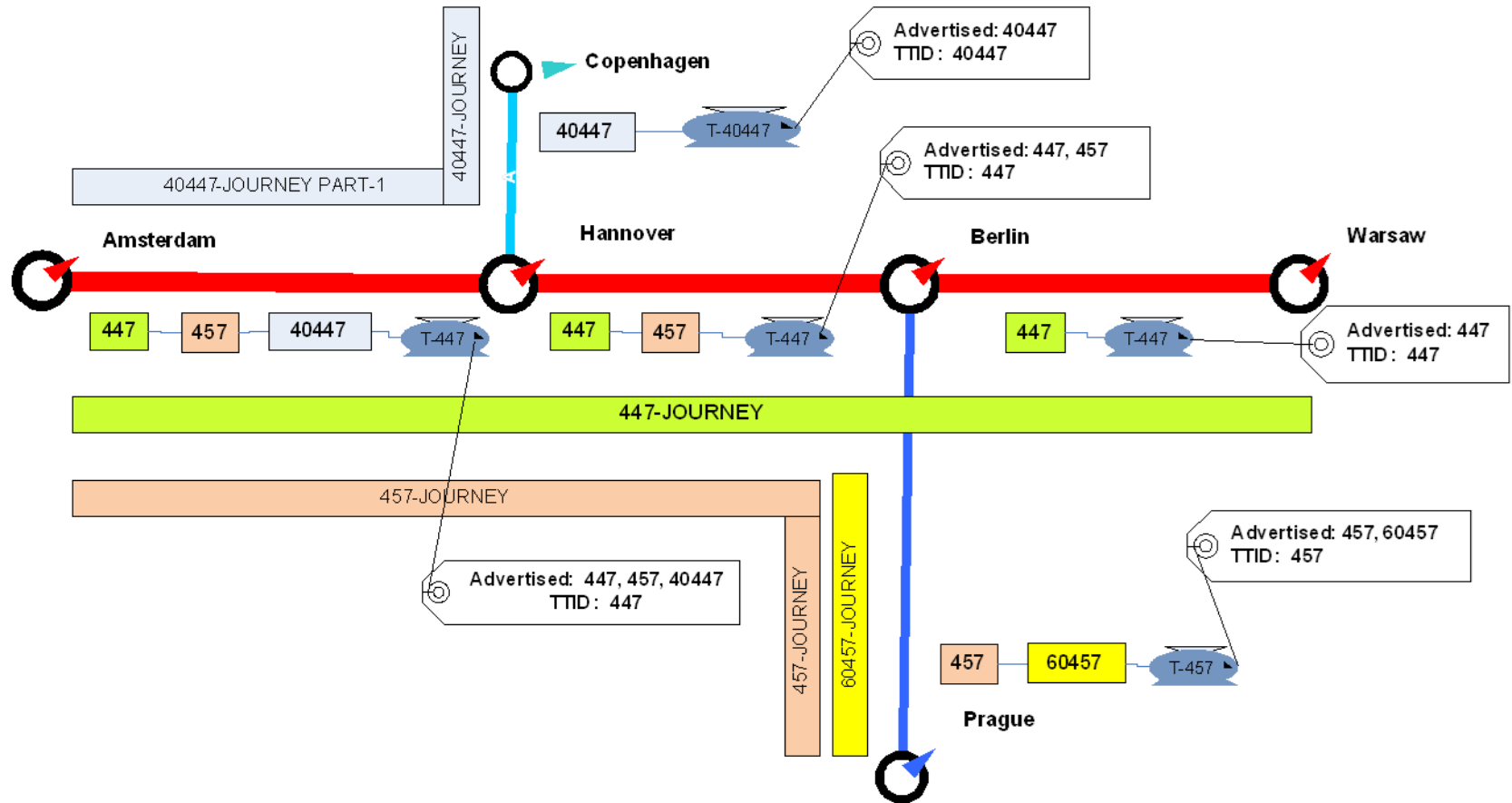


Joining and splitting



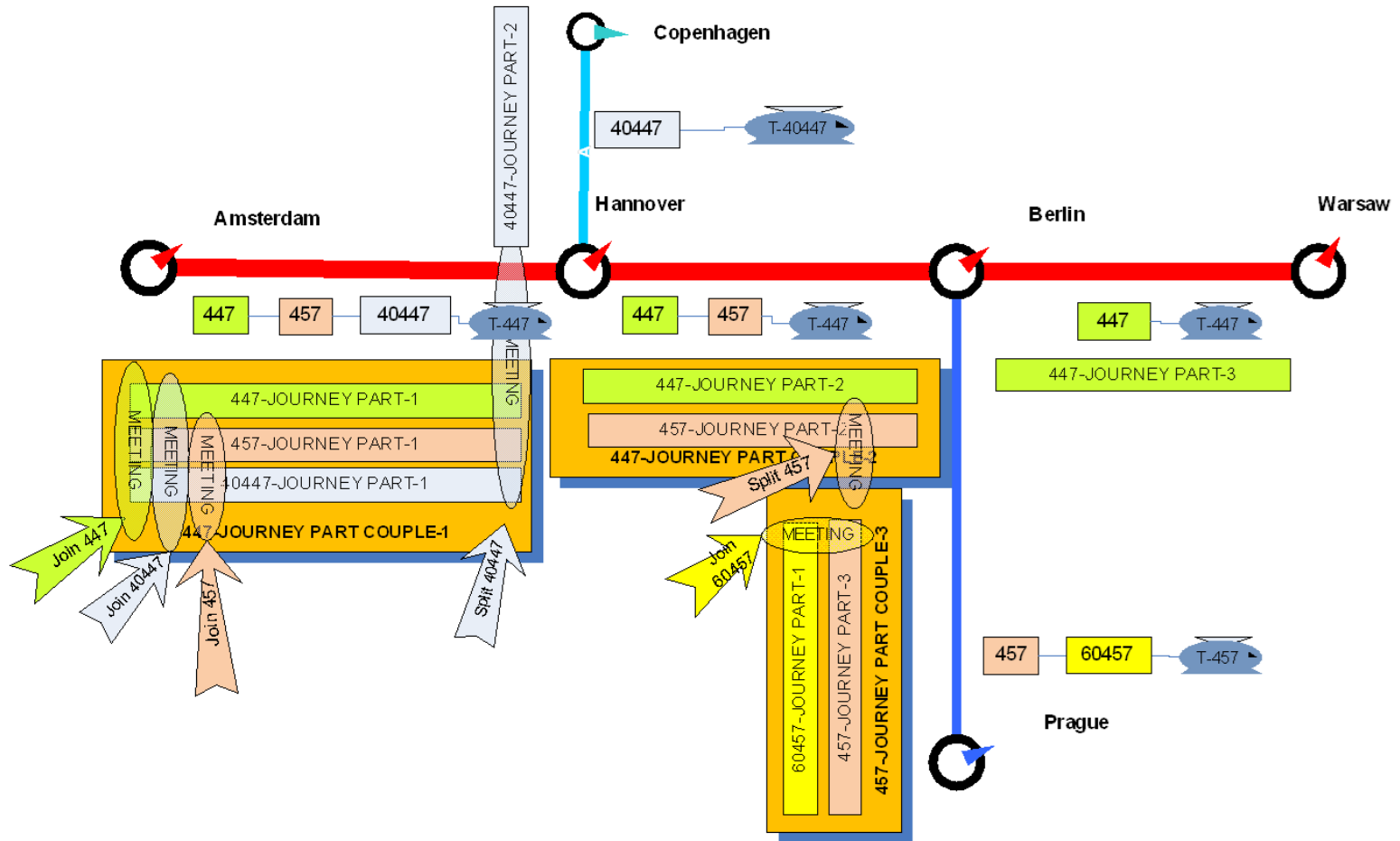
Coupled Journeys and Train Ids

Join Split example : Four SERVICE JOURNEYS , Five TRAIN NUMBERS



Journey parts for couple journeys

Join / Split Example: 6 JOURNEY MEETINGS



Connections & Interchanges

London ↔ Netherlands

For culture, for adventure, for nightlife, head to the Netherlands on direct services from Brussels-Midi/Zuid to Amsterdam and Rotterdam.

	LONDON	EBBSFLEET	ASHFORD	BRUSSELS arr	BRUSSELS dep	ANTWERPEN	ROTTERDAM	SCHIPHOL (AIRPORT) →	AMSTERDAM		AMSTERDAM	SCHIPHOL (AIRPORT) →	ROTTERDAM	ANTWERPEN	BRUSSELS	BRUSSELS	ASHFORD	EBBSFLEET	LONDON	
Notes																				
1	07:57	-	08:28	11:08	11:50	12:29	13:01	13:27	13:43		3	06:16	06:31	06:58	07:30	08:10	09:29	-	-	10:26
2	08:27	08:45	-	11:33	11:50	12:29	13:01	13:27	13:43		2	06:16	06:31	06:58	07:30	08:10	09:59	-	-	10:56
3	08:57	09:15	-	12:08	12:50	13:29	14:01	14:27	14:43		1	08:16	08:31	08:58	09:30	10:10	11:29	-	-	12:26

London ↔ North west France

	LONDON	EBBSFLEET	ASHFORD	LILLE EUROPE arr	LILLE EUROPE dep	LE MANS	ANGERS	NANTES	RENNES
Notes									
1	08:27	08:45	-	10:58	12:10	14:50	15:39*	16:20*	16:07*
2	08:57	09:15	-	11:28	12:05	14:50	15:39	16:20	-
3	08:57	09:15	-	11:33	12:10	14:50	15:39*	16:20*	16:07*
4	10:57	11:15	-	13:35	14:47	17:19	18:07*	18:46*	18:35*
5	14:34	-	-	16:58	17:28	20:05	20:54*	21:31*	21:25*
6	17:04	-	-	19:28	20:14	22:50	23:29*	00:07*	00:10*

	RENNES	NANTES	ANGERS	LE MANS	LILLE EUROPE arr	LILLE EUROPE dep	ASHFORD	EBBSFLEET	LONDON
Notes									
1	06:10*	06:04*	06:43*	07:31	10:08	10:32	-	-	10:56
2	06:10*	06:04*	06:43*	07:31	10:08	12:02	-	-	12:26
2	09:25*	09:26*	10:05*	10:53	13:40	14:25	-	14:45	15:03
1	09:25*	09:26*	10:05*	10:53	13:40	15:02	-	-	15:26
3	09:25*	09:26*	10:05*	10:53	13:40	15:32	-	-	15:56
3	11:00*	11:04*	11:43*	12:29	15:06	15:32	-	-	15:56
1	14:35*	14:35*	15:13*	15:58	18:42	19:23	-	19:45	20:03
3 8	14:35*	14:35*	15:13*	15:58	18:42	19:32	-	19:45	20:03
3 7	14:35*	14:35*	15:13*	15:58	18:42	19:23	-	19:45	20:03

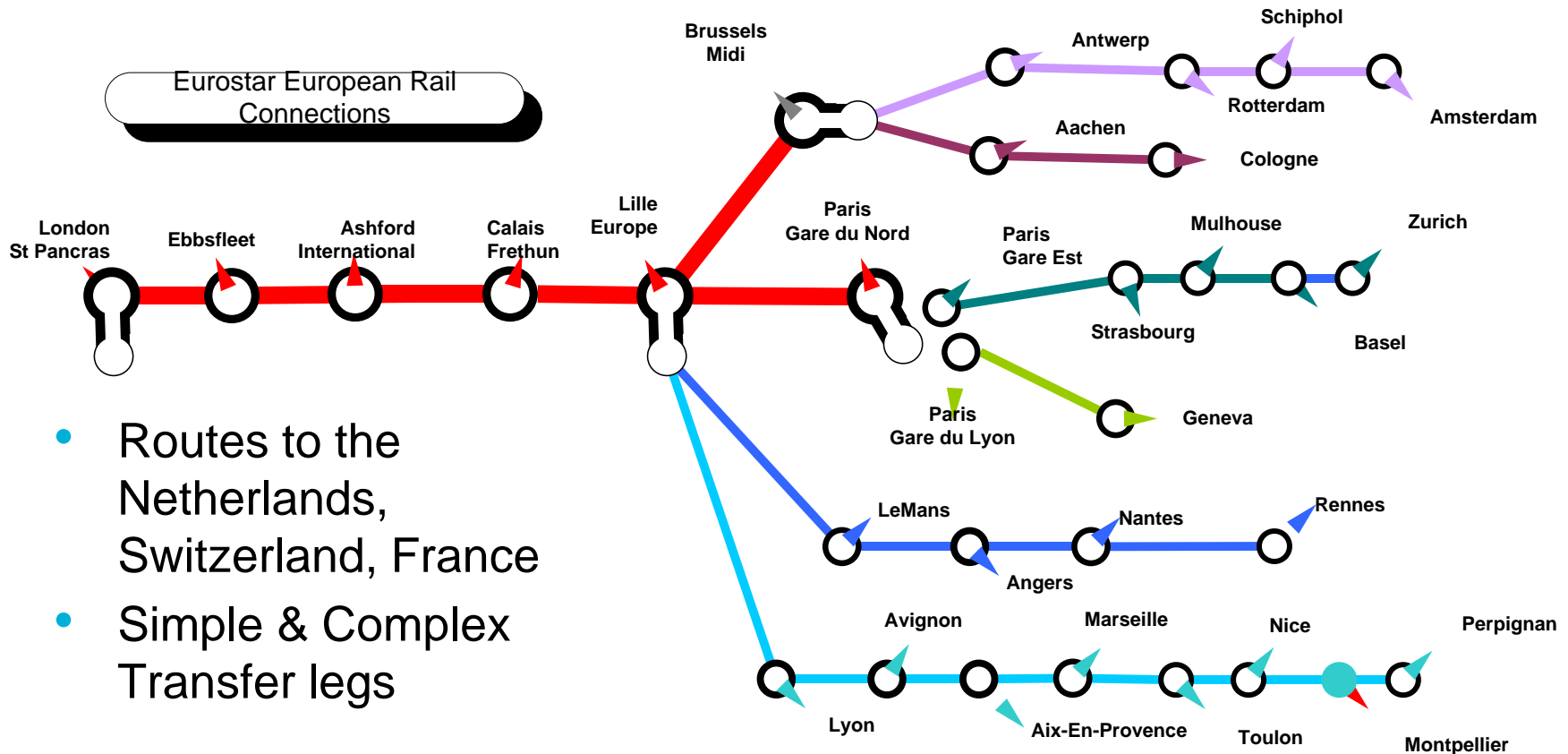
-	13:15	13:33
-	14:45	15:03
-	-	15:26
-	16:45	17:03
7:33	-	18:05
7:33	-	18:05
8:33*	18:45**	19:03
-	19:45	20:03
-	20:45	21:03
-	20:45	21:03
-	21:15	21:33
-	21:15	21:33

	LONDON	EBBSFLEET	ASHFORD	PARIS NORD	PARIS LYON	GENEVA
Notes						
7	05:25	05:42	-	08:50	11:09	14:14
4	06:22	-	-	09:47	11:09	14:14
4	08:02	-	-	11:17	13:09	16:14
	09:22	-	09:55	12:47	15:04	18:14
1	10:25	10:42	-	13:47	16:09	19:25
	12:28	12:45	-	15:50	18:09	21:25
	14:02	-	-	17:23	19:09	22:17
5	15:02	-	-	18:17	20:09	23:25

	GENEVA	PARIS LYON	PARIS NORD	ASHFORD	EBBSFLEET	LONDON
Notes						
1	05:52	09:03	11:13	-	-	12:29
	07:41	10:49	13:04	-	14:15	14:31
	09:41	12:49	15:13	16:06	-	16:37
	13:41	16:49	19:13	-	20:18	20:34
1	14:28	17:45	19:13	-	20:18	20:34
8	15:41	18:49	21:13	-	22:18*	22:34
	16:28	19:45	21:13	-	22:18*	22:34



Eurostar Connections



Fares



Rail Fares with complex conditions

Nom du produit	Trajet	Code	Trainhôtel PAU CASALS (3)								Trainhôtel SALVADOR DALI (4)																			
			Au départ de Barcelone França – Gérone, Figueras – Perpignan à destination de Genève – Lausanne – Fribourg – Bern et Zurich								Au départ de Barcelone França – Gérone – Figueras – Perpignan à destination de Bardonecchia – Torino – Novara et Milano																			
			Single Grande Classe	Double Grande Classe (5)		Single Affaires		Double Affaires (5)		T4 Touriste		Sièges Super inclinables		Single Grande Classe	Double Grande Classe (5)		Single Affaires		Double Affaires (5)		T4 Touriste		Sièges Super inclinables							
S	T		L		N		R	P	A		S	T		L		N		R	P	A										
Adulte	TS	PT00AD	491	421	339	291	409	345	284	243	196	163	-	-	158	140	501	423	338	290	400	341	280	242	194	163	-	-	156	139
Enfant	TS	PT0012	344	295	237	204	286	242	199	171	137	115	-	-	111	98	351	297	237	203	280	239	196	170	136	115	-	-	109	98
Loisir	AR	ND00AD	688	590	474	408	572	484	398	342	274	230	-	-	222	196	702	594	474	406	560	478	392	340	272	230	-	-	218	196
Prem's	TS	PP05AD	-	-	-	-	-	-	-	93	74	-	-	-	-	-	-	-	-	-	-	-	-	-	93	74	-	-	-	-
Mini à deux (prix pour 2)	TS	PP05AD	-	-	378	346	-	-	278	238	-	-	-	-	-	-	-	-	378	346	-	-	278	238	-	-	-	-	-	-
Duo (prix pour 2)	TS	PE07AD	-	-	440	380	-	-	370	316	-	-	322	272	206	182	-	-	440	378	-	-	364	316	-	-	318	278	202	182
Espace Plus (prix pour 4)	TS	PE08AD	-	-	-	-	-	-	-	508	424	-	-	-	-	-	-	-	-	-	-	-	-	-	504	424	-	-	-	-
Jeune	TS	PT0026	344	295	237	204	286	242	199	171	137	115	-	-	111	98	351	297	237	203	280	239	196	170	136	115	-	-	109	98
Senior	TS	PT0060	344	295	237	204	286	242	199	171	137	115	-	-	111	98	351	297	237	203	280	239	196	170	136	115	-	-	109	98
Congrès – Salons	AR	CN20AD	590	506	406	350	490	414	340	292	236	196	-	-	190	168	602	508	406	348	480	410	336	292	232	196	-	-	188	168
Pass	TS	EP00AD	222	222	173	173	179	179	119	119	77	77	-	-	52	52	222	222	173	173	179	179	119	119	77	77	-	-	52	52
Groupe Adulte	TS	GR00AD	-	-	210	177	-	-	176	148	117	98	-	-	-	-	-	-	206	179	-	-	174	147	118	105	-	-	-	-
	AR	GR02AD	-	-	-	338	-	-	-	284	-	172	-	-	-	-	-	-	402	336	-	-	338	278	228	190	-	-	-	-
Guide handicapé	TS	GG99AD	222	222	173	173	179	179	119	119	77	77	-	-	52	52	222	222	173	173	179	179	119	119	77	77	-	-	52	52
FIP Loisir	TS	EM01AD	222	222	173	173	179	179	119	119	77	77	-	-	52	52	222	222	173	173	179	179	119	119	77	77	-	-	52	52
FIP service (6)	TS	CT02AD	222	222	173	173	30	30	20	20	10	10	-	-	-	-	222	222	173	173	30	30	20	20	10	10	-	-	-	-
Enfant partageant un lit	TS	PE0112	60	60	60	60	60	60	60	60	60	60	-	-	-	-	60	60	60	60	60	60	60	60	60	60	-	-	-	-
Animaux domestiques	TS	CH50CH	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

1) Trainhôtel n°409/407 (quotidien)

2) Trainhôtel n°477/475 (quotidien)

3) Trainhôtel n°11273/273 (circulation le mardi, jeudi et dimanche dans le sens Sud → Nord (Barcelone – Milan et Zurich))

4) Trainhôtel n°11274/274 (circulation le lundi, mercredi et vendredi dans le sens Nord → Sud (Milan et Zurich – Barcelone))

5) La cabine Double Grande Classe et la cabine Double Affaires doivent être utilisées uniquement par deux personnes qui se connaissent (réserver en compartiment « Famille »).

6) Carte FIP + ordre de mission à présenter au poste de vente habilité.

P = Cabine Classe Touriste occupée uniquement par 2 personnes qui se connaissent. Sur Mosaïque+ dans « saisie type de lit », sélectionner T2 et dans « compartiment », sélectionner « Famille ».

S et T = En Classe Single et Double Grande Classe, le dîner, les boissons et le petit-déjeuner sont inclus.

L et N = En Classe Single et Double « Affaires », le petit déjeuner est inclus.

R = En cabine Classe Touriste, compartiment exclusivement dédié aux personnes du même sexe (Homme ou Dame) et devient mixte lorsque 2, 3 ou 4 personnes voyagent ensemble ; la cabine est entièrement réservée et devient dans ce cas compartiment « Famille ».

IMPORTANT !

Lors d'une vente, pour toute difficulté liée à HERMES, veuillez contacter l'Assistance Gares au 30 40 50 ou 01 56 79 61 50.

Le Trainhôtel est une offre internationale et il est interdit de descendre du train en dehors de sa gare de destination.

La réservation est ouverte à J-3 mois et jusqu'au départ du Trainhôtel. La réservation reste obligatoire.



Product Restrictions & Limitations

- Who can Buy, When & Where?
- When & Where (and How) can it be used?
- Machine Readable
 - To find a applicable fares
 - (Check use)
- Human Readable
 - To explain



TICKET TERMS

Please find below a summary of the conditions that apply to your selected ticket(s).








CHEAP DAY	
Train Operator	Most Train Operating Companies
Booking Deadlines	No deadline - walk UP fare
Discounts	Discounts are available for all railcard holders
Refunds	Full refund if wholly unused minus cancellation fee of GBP7.50 if processed online, or if processed at call centre.
Changes To Travel Plans	GBP10.00 admin charge plus upgrade to next appropriate walk up fare.
Conditions	Reservations are not essential but are recommended on certain services. Return journey must be made on same day.
Break Of Journey	Valid for break of journey on outward and return portion of ticket
Availability	Available on most off-peak journeys on any days.
Validity	Only valid for off peak travel on date shown on ticket. Not valid for travel on some Monday to Friday peak services, especially to/from London. Definition of peak period is dependent on route.



In Transmodelese: *“Fare Limitation Parameter”*



Modes & Products

Mode	Travelcard	PAYG	Bus & Tram Pass
 London Underground	✓	✓	✗
 Bus	✓	✓	✓
 Tram	✓	✓	✓
 London Overground	✓	✓	✗
 National Rail	✓	✓	✗
<i>Heathrow Connect</i>	✓	✓	✗
<i>Heathrow Express</i>	✗	✗	✗
<i>Southeastern High Speed</i>	✗	✗	✗
 London River Services	✓	✓	✗
 Emirates Air Line	✓	✓	✗

✓ = Valid.

✗ = Not valid.

✓ = **Heathrow Connect:** Not valid between Hayes and Harlington and Heathrow Airport.

✓ = **River:** PAYG only available on Thames Clipper; Travelcards only provide discount, not valid for travel.

✓ = **Cable car:** Travelcards only provide discount, not valid for travel.

! = must include Zone 3,4,5 or 6



Access rights & Products



Fares for a Metropolis

- Multimodal,
- Complex market segmentation / concessions, conditions
- Multiproduct, including electronic payment
- Complex zones, duration of travel etc

Transport for London

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Tickets > Fares

Tube, DLR and London Underground | National Rail | Single fare finder | Bus and tram | River | Emirates Air Line

Save money with Oyster pay as you go

- Store credit and use it journey by journey
- Never run out of credit with Auto top-up
- Cheaper than cash for single fares

Travelcards

- Travel as much as you like, as often as you like
- Add Travelcards to your Oyster card

Adult | 18+ student | 16-18 | 11-15 | 5-10 | Jobcentre Plus | Bus & Tram | Railcard | Groups

Adult

You need an Oyster card to:

- Use pay as you go and daily price capping
- Buy 7 Day, Monthly and longer period Travelcards

You do not need an Oyster card to pay cash single fares or to buy Day Travelcards.

Zone	Cash	Oyster pay as you go				Travelcards				
		Peak single	Off-peak single	Peak price cap	Off-peak price cap	Day Anytime	Day Off-peak	7 Day	Monthly	Annual
Zone 1 only	£4.50	£2.10	£2.10	£8.40	£7.00	£8.80	£7.30	£30.40	£116.80	£1,216
Zones 1-2	£4.50	£2.80	£2.10	£8.40	£7.00	£8.80	£7.30	£30.40	£116.80	£1,216
Euston - Zone 2*	£4.50	£2.20	£2.10	£8.40	£7.00	£8.80	£7.30	£30.40	£116.80	£1,216
Zones 1-3	£4.50	£3.20	£2.70	£10.60	£7.70	£11.00	£8.00	£35.60	£136.80	£1,424
Euston - Zone 3*	£4.50	£3.00	£2.70	£10.60	£7.70	£11.00	£8.00	£35.60	£136.80	£1,424
Zones 1-4	£5.50	£3.80	£2.70	£10.60	£7.70	£11.00	£8.00	£43.60	£167.50	£1,744
Euston -	£5.50	£3.40	£2.70	£10.60	£7.70	£11.00	£8.00	£43.60	£167.50	£1,744

