



Department
for Transport



Fares and NeTEx Workshop - Scope, Summary Extract

London 6th November, Manchester 7th November, 2018





Use Cases & Requirements determining scope of a UK Fare profile

Requirements are marked:

Needed?

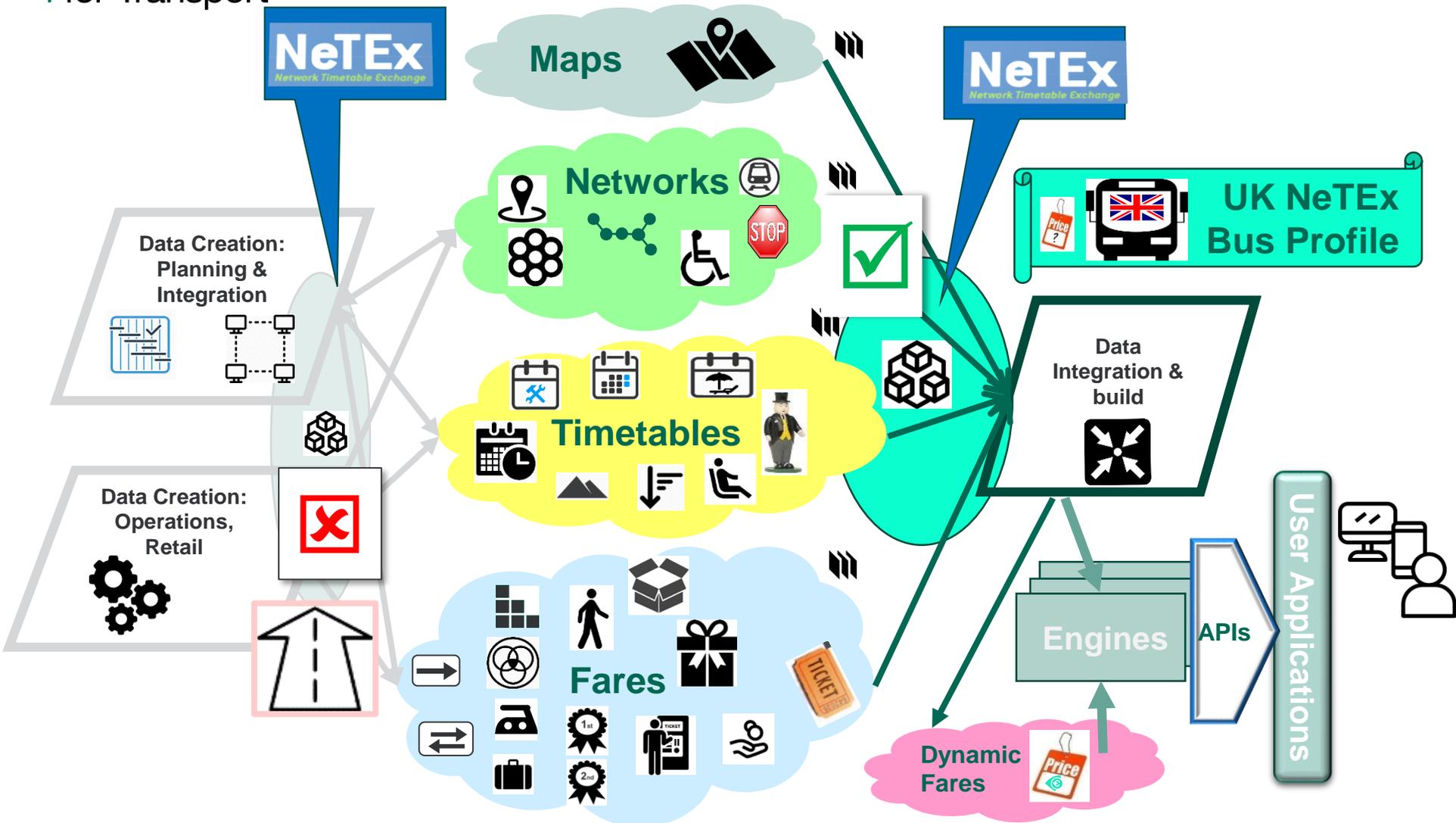
Possible?

Out of current scope /

On Future roadmap? 



Main use case is Fare & Price distribution – i.e. Downstream





#1.2: The Data Distribution Use Case

▶ Provide fare products & fare prices as open data for third party use (in journey planners, etc.)?



- Describe **available fare products** and their eligibility conditions.



- Relate **fare products to network and timetabled journeys** so trip planners can compute fare products and fare prices for trips, show available products for area, etc.



- Allow the **separate exchange of prices** from fare structures & products.



- Expose a **justification of the fare** (Distance, discounts etc)



- Support both **machine readable & human readable** representation of validity parameters.



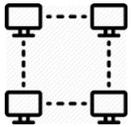
- Include information about how/where products **can be bought**.



- Include fares valid for specific and **multiple operators**.



Profile Scope - #2 Workflows



▶ Data Architectures & Workflows?

- **Distributed Peer to peer** : Operator places data on website.
- **Managed**: An intermediary aggregates and integrates.



▶ Granularity of exchange?

- **Network scope**: Network / Operator / Line / Timetable / Region..
- **Frequency**: (Annual, Monthly, Periodic, when it changes...)
- **Prices**: Exchange separately from Fare Structure?



▶ How does data become available at a UK National Access Point?

- Discovery / Directory / Register?
- Specify Tagging to enable search?



▶ What needs to be included in the data to enable self describing data & validation of the above?

- ▶ Operator, validity conditions, code values, etc.



Profile Scope - #3 Prices?



► What Prices are needed?

1. **Final Prices** for every parameter combination



1. **Base prices + Derivation parameters**
 - PRICING RULE as percentage of another price
 - Need rounding steps and any minimum/maximum limits



2. **Dynamic Prices?**
 - No actual prices are exchanged, instead where to fetch an online price for a given product choice.



3. **Price Groups?**
 - Where Price is common to several elements



Profile scope - #4 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 complex products ↑ ✘



- Coach? (Seat Reservations, luggage, Routing?....)
- Metro / London Underground, PAYG, Capped fares)
- Rail (routing, advance products, etc)





Profile scope - #5 Interoperability?

▶ Network & Timetable data

- NPTG Localities
- NaPTAN
- TransXChange Line / Journey ids
- NOC Operator codes

▶ A UK Bus CSV representation of Fare Triangles?

- Similar to NaPTAN stop csv
- Basic Tariff Structures:
 - O/Ds, Zones, Stages
- Products
- Tariff Prices
 - O/D x product/user type/ x x price



▶ GTFS Fare Rules Translation?





Representative Examples of UK Bus Fares for a Basic Profile scope

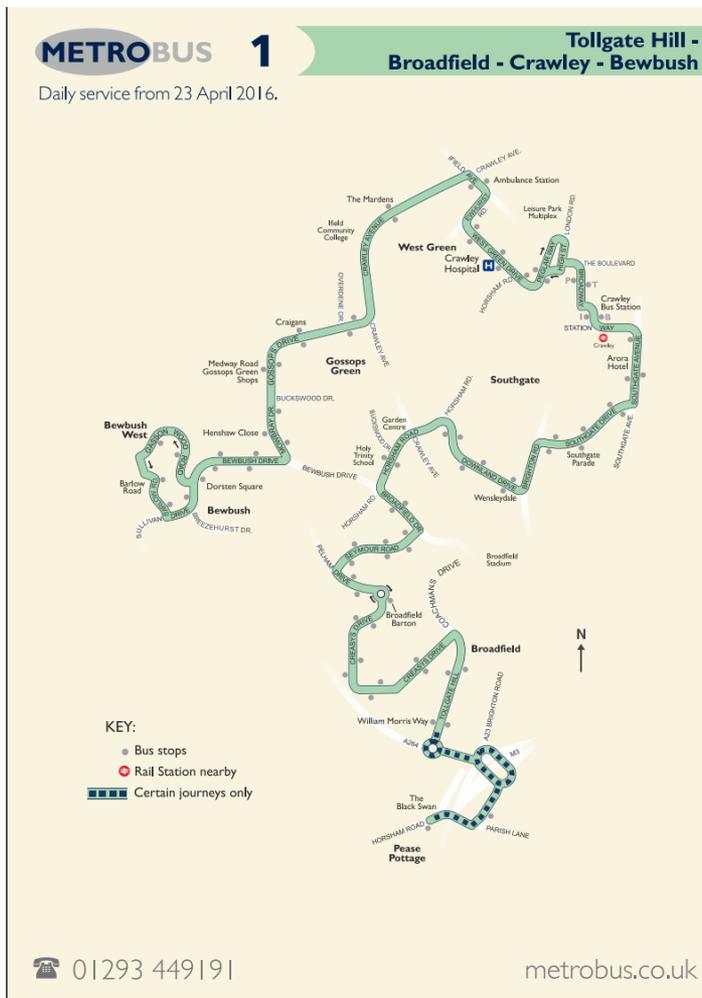
- ❖ Single Trip, Point to Point Tariff Structure
 - Multiple User types
 - Derived prices
- ❖ Period Passes, Zonal Tariff Structure
 - Day, Season
 - Multi channel
- ❖ Multi-trip Carnet, Zonal Tariff Structure
 - Multiple User types
- ❖ Trip, Section Count Zonal Tariff Structure



UK Bus Example: A Point to Point Fare



Metrobus 1 FARE ZONES



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Analysing the Metrobus Line 1 offer

- ▶ Access Rights
 - Zone To Zone : Each zone covers several stops
 - Line: Line 1
 - Operator: Metrobus
- ▶ Products
 - Single product – a single Trip
 - User types: *Adult, Child (5-15) 50%*,
- ▶ Sales Offer packages
 - ▶ Travel Documents: *paper*,
- ▶ Pricing
 - O/D zone x User Profile
- ▶ Other products available – eg day pass, season pass, etc



UK Bus Example: Some Period Passes (Day & Season)



SEASON PASS - Metrorider



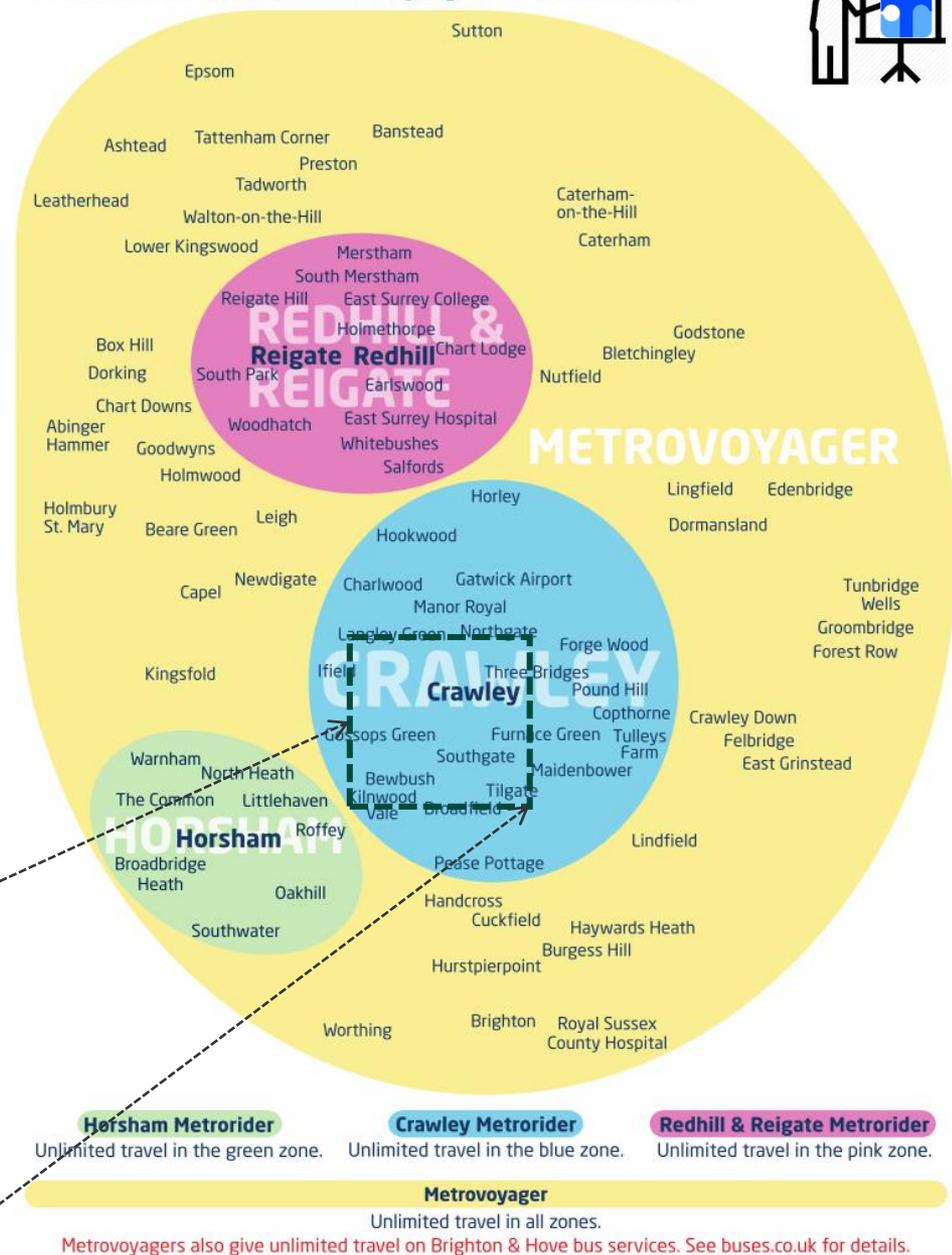
	bought on bus with cash			stored on your mobile phone as m-tickets 									loaded onto our smartcard the key 					Multi Trip				
	1 day	1 week	Evening**	60 minute	1 day	2 day#	3 day#	1 week	4 week	*** Duo	Evening**	1 day	1 week	4 week	13 week	Annual	Evening**	5 journeys	10 journeys	25 journeys	single Journeys grouped onto the key to use one at a time.	
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.																						
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	£11	£21	£50		
Child	£2.70	£11	-	£1.10	£2.35	£4.45	£6.45	£9.75	£32.50	-	-	£2.35	£9.75	£32.50	£79	£290	-	£5.50	£10.50	£25		
Student	-	-	-	-	-	-	-	-	-	-	-	£3.15	£13.50	£44.25	£115.50	£390	-	-	-	-		
Family*	£9	-	-	-	£9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Horsham Metrorider																						
Unlimited travel in the Horsham Metrorider area.																						
# Consecutive days.																						
* All day travel for up to 5 people (minimum of 1 adult & maximum of 2 adults travelling at any one time.)																						
*** For 2 adults, travelling together.																						
Adult	£4.90	£20	-	£2.20	£4.20	£7.90	£11.50	£18	£59	£7.90	-	£4.20	£18	£59	£154	£520	-	£11	£21	£50		
Child	£2.70	£11	-	£1.10	£2.35	£4.45	£6.45	£9.75	£32.50	-	-	£2.35	£9.75	£32.50	£79	£290	-	£5.50	£10.50	£25		
Student	-	-	-	-	-	-	-	-	-	-	-	£3.15	£13.50	£44.25	£115.50	£390	-	-	-	-		
Family*	£9	-	-	-	£9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Redhill & Reigate Metrorider																						
Unlimited travel in the Redhill & Reigate Metrorider area.																						
# Consecutive days.																						
c. Surrey Student card holders can purchase Child rate tickets for cash on the bus, or students can purchase a Child Metrovoyager (on the key only) for longer validity tickets. See below for prices.																						
* All day travel for up to 5 people (minimum of 1 adult & maximum of 2 adults travelling at any one time.)																						
*** For 2 adults, travelling together.																						
Adult	£4.90	£20	-	£2.20	£4.20	£7.90	£11.50	£18	£59	£7.90	-	£4.20	£18	£59	£154	£520	-	£11	£21	£50		
Child	£2.70c	£11c	-	£1.10	£2.35	£4.45	£6.45	£9.75	£32.50	-	-	£2.35	£9.75	£32.50	£79	£290	-	£5.50	£10.50	£25		
Student	-	-	-	-	-	-	-	-	-	-	-	£3.15	£13.50	£44.25	£115.50	£390	-	-	-	-		
Family*	£9	-	-	-	£9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Metrovoyager																						
This ticket bought on the bus gives you unlimited travel on all of our services across our entire network, including both the Crawley, Horsham, and Redhill & Reigate Metrorider areas. Also valid on all Brighton & Hove bus services.																						
# Consecutive days.																						
* All day travel for up to 5 people (minimum of 1 adult & maximum of 2 adults travelling at any one time.)																						
Adult	£7.40	£26	-	£6.70	£12.50	£18.20	£24	£85	-	-	-	£6.70	£24	£85	£250	£870	-	-	-	-		
Child	£4.20	£16.50	-	£3.80	£6.90	£10.10	£15.75	£52	-	-	-	£3.80	£15.75	£52	£153	£610	-	-	-	-		
Student	-	-	-	-	-	-	-	-	-	-	-	£5.05	£18	£63.75	£187.50	£652.50	-	-	-	-		
Family*	£12.50	-	-	£12.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Multi Trip is available in the separate Metrorider areas only.																						

For further fares information including Gatwick Travelcard on the key, and the Haywards Heath Day Saver, and Burgess Hill Day Saver, please see the fares page on our website.

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Nested Fare Zones - Metrorider & Metrovoyager

Metrorider and Metrovoyager Ticket Zones



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Analysing the Metrorider offer – Period Passes

▶ Access Rights

- ▶ Zones : Single (*Crawley, Horsham, Redhill*) or *All*
- ▶ Durations: *Evening, 1,2,3 Day(s), 1,4 Week(s), Annual*
- ▶ Operator: Metrobus

▶ Products

- ▶ Single product – a period pass within a specified zone
- ▶ User types: *Adult, Child, Student*
- ▶ Group Tickets: *Family, Duo*

▶ Sales Offer packages

- ▶ Travel Documents: *paper, app, smartcard*
- ▶ 12 different combinations : 4 zone choices x 3 ticket choices (*paper, app, smartcard*)
- ▶ Minor variations in available pass durations, User types etc between packages

▶ Pricing

- Zone x Period x [User Profile|Group Ticket] x Sales Package (per Travel Document)



Analysing the Metrorider offer – Carnets

- ▶ Access Rights
 - A single zone (*Crawley, Horsham, Redhill*)
- ▶ Products
 - Single product – a carnet for a specified number of trips
 - Available quantities: *5, 10, 25*
 - User types: *Adult, Child*
 - Use by date
 - Purchase Window: *Before 21:00 on previous day*
- ▶ Sales Offer packages
 - Travel Document: *smartcard only*
 - 3 different combinations : 3 zone choices
- ▶ Pricing
 - Zone x Number of Trips x [User Profile]



UK Bus Example: A Unit Section or “Stage” Fare



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Stage /Section Count Fares



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

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**

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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 Narrowways 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).

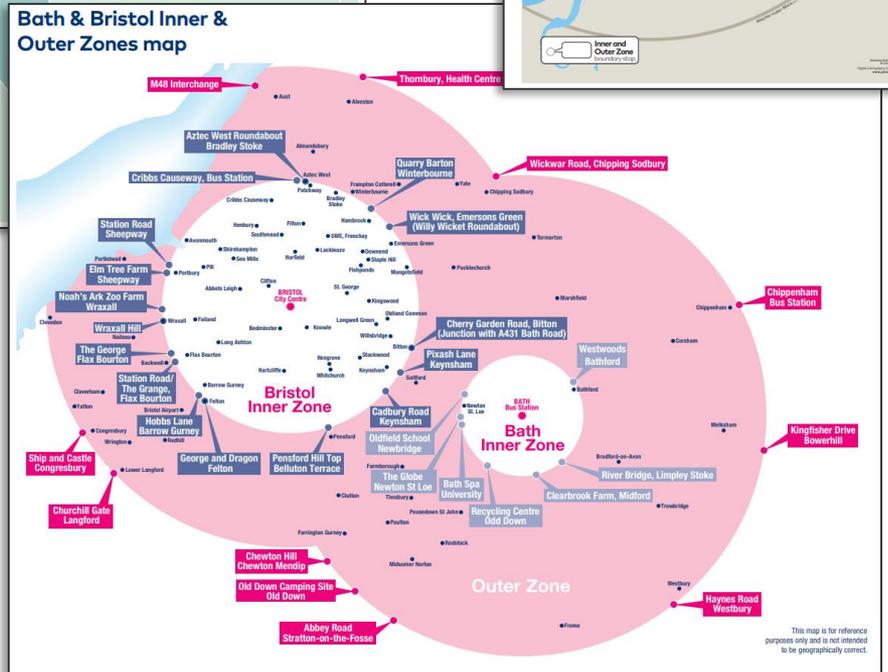
Blackberry Hospital to Downend, The Leap would be £2.50 as you are travelling in four sections (5, 4, 3, 2).



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



Zone Maps



Stage fares

- West of England Zone
- West of England Plus Zone

Zonal

- Bristol Inner Zone
- Bath Inner Zone
- Bath and Bristol outer zone
- Weston-super-Mare Inner Zone



Analysing the First Bristol offer – Section based trip tariff

▶ Access Rights

- Sections : Defined by stages along routes,
- Intervals : 1-3, 4-6, 7-9, 10+ Units (*Notional miles*)
- Operator: *First*
- Zone: First “West of England”

▶ Products

- Single product – a single Trip
- User types: *Adult, Child (5-15) 50%, Student (16-21) 30%*

▶ Sales Offer packages

- ▶ Travel Documents: *paper, app? (“m-ticket”)*

▶ Other products available – eg day pass, season pass

https://www.firstgroup.com/uploads/node_images/Fares%20Guide%20%28May18%29.pdf



A Strawman for the UK Bus Fare Profile



Basic UK Profile



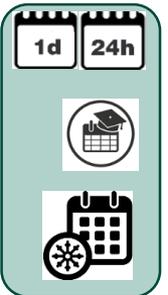
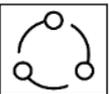
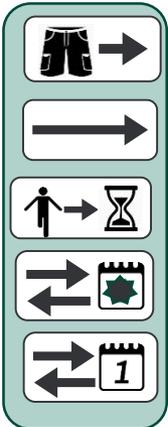
Advanced UK Profile



Exclude / Long term roadmap



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 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	-	-	✓	-	✓	✓
Termtime		-	?	✓	-	-	-	Use during term 1Y
Season pass		✓	✓	✓	-	-	✓	n x D,W,M, 1Y

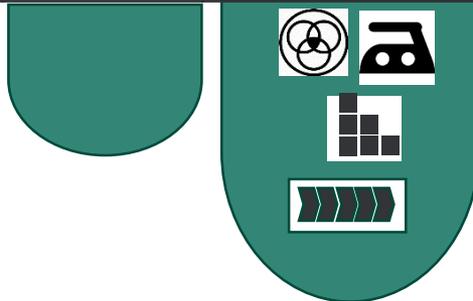
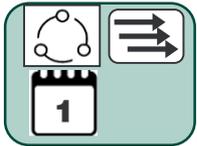
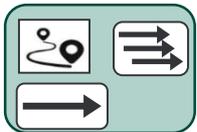




Carnets: Multi-trip / Multi-pass offers



Access rights		Tariff Structures		
Type of Product	FARE PRODUCT (AMOUNT OF PRICE UNIT)	Quantity	Related tariff structure	Temporal Conditions
CARNET	<i>Multi-trip</i>	✓	Any individual Trip	Trips have use-by date Trips can be time limited
	<i>Multi-Day pass</i>	✓	Day Pass	Passes have specified duration Passes have use-by date



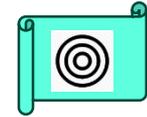
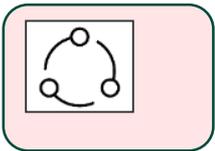


▶ **Trip**

The product gives the right to make a single journey

▶ **Pass**

The product combines access rights to make repeated journeys within a time interval

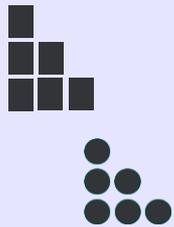




Tariffs - Spatial aspects: Terminology



▶ **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 ZZZ/ P2P.



- ▶ **Named Zone(s):** The fare gives the right to travel in and between 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, but still ZZZ.



- ▶ **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.





What product options and features need to be included / excluded?

- ❖ User Profiles
- ❖ Group Tickets
- ❖ Travel Conditions
- ❖ Luggage
- ❖ Sales and after sales
- ❖ Product Entitlements

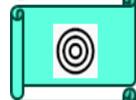




#6.1: UK Bus Fares - User Types?



USER PROFILE	Personal	Discounted	Note
Adult	x	x	Over 16
Infant	x	✓	Babes in arms free
Child	x	✓	c5 – c16 years
Youth	x	✓	c16-18 years
School Pupil	x	✓	At School
Student / Trainee	✓	✓	University, APprentice
Senior	✓	✓	Resident, >60 years
Disabled	✓	✓	Registered disabled
Disabled Companion	✓	✓	With disabled
Job seeker	✓	✓	

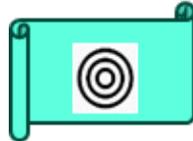




#6.2: UK Bus Fares – Corporate User Types?

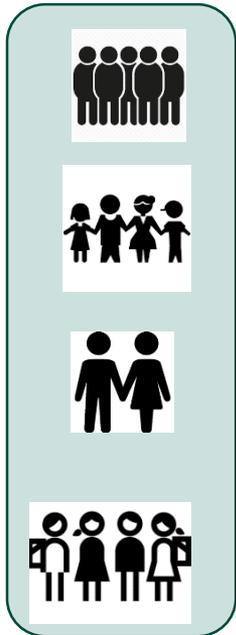


CORPORATE PROFILE	Personal	Discounted	Note
Armed Forces	✓	✓	Registered
Employee Scheme	✓	✓	E.g. Gatwick Airport Staff

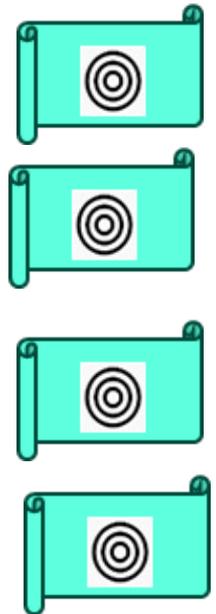




#6.3: UK Bus Profile – Group Ticket Types?



GROUP TICKET	Note
Anyone	2-N Anyone
Family	1-2 Adults + 1-N, Children
Couple / Duo	2 Adults
School Pupils	1-N Adults + 2-N Pupils

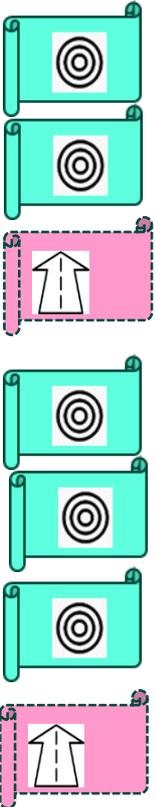
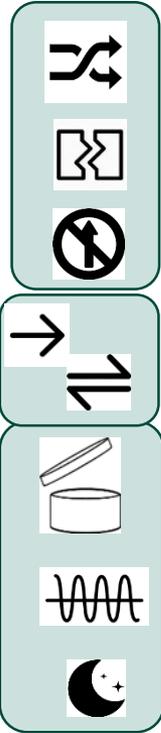




UK BUS Product parameters – Travel Conditions



Condition	Condition	Relevance			Note	USAGE PARAMETER
		Local Trip	Coach Trip	Season Ticket		
TRAVEL HOW	Right to Interchange	✓	✓	X	Trips only	INTERCHANGING
	Right to Break Journey	✓	✓	X	Trips only	INTERCHANGING
	Routing Restrictions	X	?	X		ROUTING
	Round Trip	✓	✓	X	Single, Period Return, Day Trip	ROUND TRIP
TRAVEL WHEN	Usage Validity Period	✓	✓	✓	See discussion of temporal factors	USAGE VALIDITY PERIOD
	Frequency of Use	X	X	✓	e.g. 2 per day, vs unlimited use	FREQUENCY
	Minimum Stay	X	?	X	Excursion products only?	MINIMUM STAY





UK BUS Product parameters – Luggage allowances



► For bus, Passenger information only? No pricing implications

Condition	LUGgAGE ALLOWANCE	Relevance			Note
		Local Trip	Coach Trip	Season Ticket	
Suitc	Pram	✓	✓	X	Trips only
	Wheelchair	✓	✓	X	Trips only
Suitcase	Suitcase	✓	✓	X	Trips only. Might be cahrgable for coach
Animal	Guide dog	✓	✓	✓	See discussion of temporal factors
	Pet	X	X	✓	e.g. 2 per day, vs unlimited use

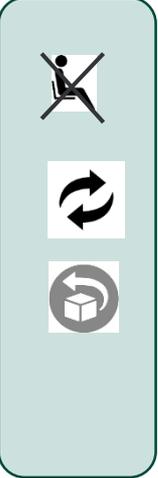




UK BUS Product Parameters – Sales & After-Sales Conditions



Condition	Condition	Relevance			USAGE PARAMETERS
		Local Trip	Coach Trip	Season Ticket	
Presales	Period in which a ticket can be bought.	?	✓	✓	PURCHASE WINDOW
	Period and conditions for reserving a ticket.	X	✓	X	RESERVING
	Can ticket be given to another to use?	✓	✓	✓	TRANSFERABILITY
After Sales	Can reservation be cancelled?	X	✓	X	CANCELLING
	Can you modify travel times or change journey details?	X	✓	X	EXCHANGING
	Can you get all or some money back?	?	✓	✓	REFUNDING
	Can you get a replacement for a lost ticket?	X	✓	✓	REPLACING





UK BUS Product parameters – Luggage allowances



- ▶ For bus, Passenger information only? No pricing implications



Condition	LUGGAGE ALLOWANCE	Relevance			Note
		Local Trip	Coach Trip	Season Ticket	
Suitc	Pram	✓	✓	X	Trips only
	Wheelchair	✓	✓	X	Trips only
Suitcase	Suitcase	✓	✓	X	Trips only. Might be cahrgable for coach
Animal	Guide dog	✓	✓	✓	See discussion of temporal factors
	Pet	X	X	✓	e.g. 2 per day, vs unlimited use

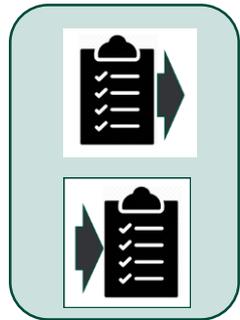




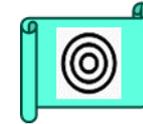
Prerequisites & Dependencies between products



- ▶ How many products and sales offers depend on each other

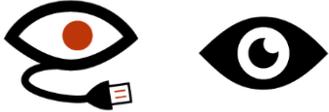


Condition <input checked="" type="checkbox"/>	Note
Entitlement Required	Specifies a prerequisite product
Entitlement Given	Specifies rights to another products



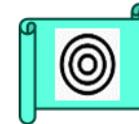
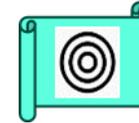


Commercial Conditions



What needs to be Machine readable,
What needs to be Human Readable?

- **Travel Use Conditions**
- **Commercial Conditions**
- **Sales & After Sales Conditions**
- **Commercial Information**
 - Branding,
 - Contact Details for Customer Support





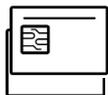
What Sales Offer and distribution features need to be included / excluded?

- ❖ Types of Travel Documents
- ❖ Distribution Channels
- ❖ Payment Methods

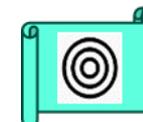




#7.1: UK Bus – Media / Travel Documents?

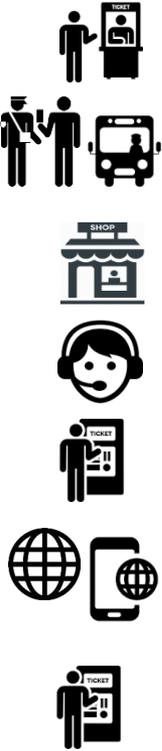


	TYPE OF TRAVEL DOCUMENT	Machine Readable	Human Readable	Note
VISUAL	Paper	Barcode, OCR, ShotCode, etc	✓	From machine or conductor
	E-document/pdf	Barcode, OCR, ShotCode, etc	✓	Self print / store on mobile device
	SMS /MMS	Barcode, OCR, ShotCode, etc	✓	
	Card	OCR	✓	e.g. Travel card
E-PASSIVE	Magstripe	Contact	✓	Ticket Machine / Counter only
	EMV	Contact, NFC	X	Account Based Ticketing has id but no app
E-ACTIVE	SmartCard	Contact, NFC	X	(ABT) Has travel app chip
	Mobile App	NFC, (bluetooth)	✓	ABT Downloadable to smart device

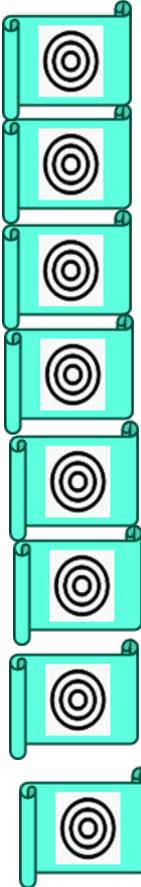




#7.2: UK Bus – Distribution Channels?



	DISTRIBUTION CHANNEL	Fulfilment	Payment	Charging Moment	Note
Staffed	Ticket Office Counter	Immediate (or despatch)	Cash, Card, ePay	Prepaid	All
	On board / Conductor	Immediate	Cash, Card, ePay	Prepaid	Trips, day passes
	Retailer	Despatch	Card, ePay, (bank)	Prepaid	
	Call Centre	Despatch	Card, ePay, (bank)	Prepaid	Travel cards, season passes
Self Service	Ticket Machine	Immediate	Cash, Card, (ePay)	Prepaid	At Stop Also On board
	Online, mobile	Immediate or despatch	Card, ePay	Prepaid	Anywhere
	Electronic	Immediate (or on travel)	Card, ePay	Pre & Post Pay (Pay as you go)	Acquire, top up / purchase etc





#7.3: UK Bus – Payment Methods



	PAYMENT METHOD	Subscription/ Top up	Note
ANONYMOUS  	Cash	x	£
	Cash – Coins only	x	
ELECTRONIC / MOBILE   	EMV Card	✓	Self print / store on mobile device
	ePay	✓	
	SMS	x	
OTHER   	Bank transfer	✓	Use for Season Passes, Auto top up, & Subscriptions
	Cheque	x	Eg. For Season Passes
	Coupon / Voucher	x	E.g. for promotions





Bus – Offer: Fulfilment Methods



Type of method	FULFILMENT METHOD	Note
COLLECT	Collect from driver or conductor	Basic products
	Collect at counter	E.g. for Season passes,
	Collect at Machine	Not all products
	Collect at shop	Basic products
REMOTE DOWNLOAD	Download to device	App or pdf eticket
	Self print	Self print to paper – Coach only?
	email	Online & call centre purchases
	SMS	Online purchases
DESPATCH	Post	E.g. For Season Passes
	Courier	E.g. Online - Extra fee





Further Aspects of Modelling Fares

Prices





Fare Prices



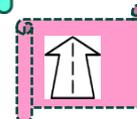
▶ Prices are separate from the tariff elements they price.

- ▶ An element may have different prices with different validities.
- ▶ Prices may apply to individual elements or combination of priceable elements

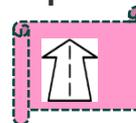


▶ Different type of prices

- Static / Base Prices
- Prices Derived from Base Prices
- Dynamic Prices (pricing service)

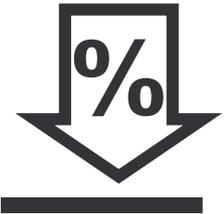
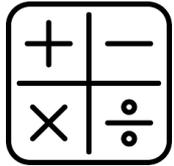


□ Range bands for dynamic prices can be indicated by FARE QUOTA FACTORS





Pricing Rules



▶ Pricing rule

- Any arbitrary named calculation



▶ Discounting rule

- Price is a discount (% or value)



▶ Limiting discounting rule

- Discounts with absolute minima and maxima



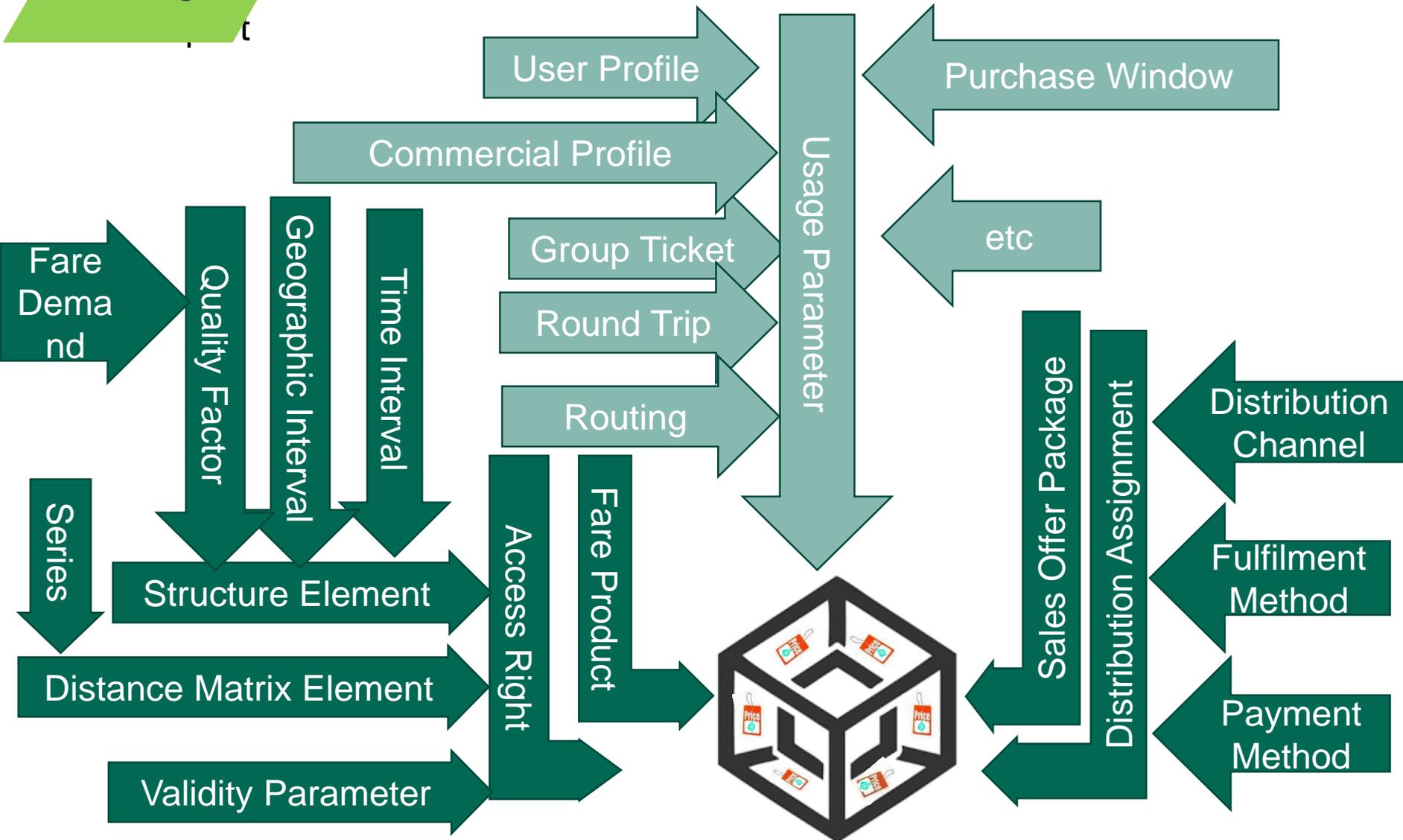
▶ Rounding: Global parameter

- ▶ Round to limit
- ▶ Round in steps



Pricing

Pricing Dimensions





UK Profile General Issues





#8.1 : Data Identifiers



▶ Persistent Unique Identifiers for all components

- Allow for distributed allocation of ids by Operator.
- Operator defines namespace as W3C URI



▶ Use existing where available

▶ Topographic localities

- NPTG

▶ Stops

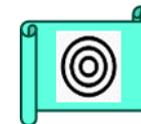
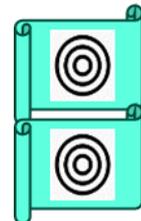
NaPTAN,

▶ Tariff Zones / Fare Stages

- PlusBus : (NPTG Already has)
- Operator Defined Zones : Within NOC?
- Local Authority Defined Zones : Within NPTG Admin code?

▶ Operators

- NOC: Clarify process etc
- LINES /SERVICES



▶ Most components must be unique within Operator:

- ▶ Lines, Timetables/Services, Tariffs, etc

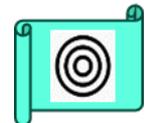
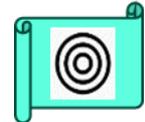
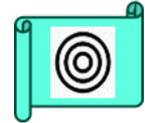
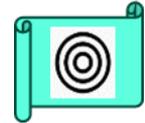


#8.2: Validation



▶ Validation Mechanisms

- ▶ Schema integrity rules
- ▶ Code lists: UK official code sets
- ▶ Additional business rules, tapped by a validator program “NeTEx Publisher”?



▶ How do we check all of the above are met?



#8.3 : Data Management



▶ Granularity

- ▶ Service, Line, Operator, Region, etc
- ▶ Common Tariff Zones, Products, Prices



iD



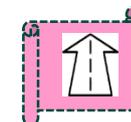
▶ Allocating systematic File names?

- ▶ E.g. Operator_Service_Line_StartValidityDate....



▶ Discovery Processes?

- ▶ Active registration / Passive Indexing



▶ Synchronising Timetable & Tariff updates

▶ Validation tools

- ▶ Schema,
- ▶ Additional Program?, Fare “publisher”? +



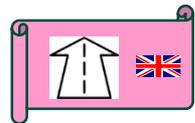
▶ Etc



Tariffs & Products for Later



Advanced UK Profile



Exclude / Long term roadmap



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

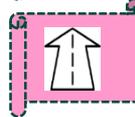
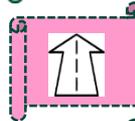




Add-on UK Bus Fare Products Not needed except for Coach?



	FARE PRODUCT	Tariff Structure				Notes
		Flat	Point to point	Named Zones	Peak / Off Peak	
TRIP SUPPLEMENT	Seat Reservation	✓		-	-	If separate ticket needed
	Bicycle	✓	-	✓	✓	If extra ticket needed
	Animal	✓	-	✓	-	Size dependent?
	Excess Luggage	✓	-	-	-	If extra ticket needed
TRIP & PASS ADD ON	Excursion	✓	✓	✓	✓	Window of use
	Special Event	✓	✓	✓	✓	Product Group Event date





Tariffs - Spatial aspects: Exclude for now?



- ▶ **(Linear) Distance.** Fare prices are computed as a direct function of linear distance between stops. (usually actual mileage, but could be a notional “fare distance” or some arbitrary unit distance).
 - May be stepped intervals.
 - Note that distance fares can also be expressed as Z2Z/ P2P fares.
 - Not to be confused with Stage / Section discount which is “unit Distance”.



- ▶ **Elements In Sequence.** Tariff prices vary or are limited according to the sequence of consumption of rights . E.g. Ticket allows Metro ride then bus ride but not bus ride then metro ride



- ▶ **Routing Constraints.** Tariff prices between the same origin and destination vary according to the route taken.
 - Mainly relevant for rail.
 - SERIES CONSTRAINTS Constraints can be described and priced separately





Additional Product Types - terminology



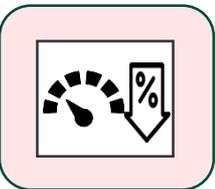
▶ Discount Right

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.





Summary



Key Points: Fares are complex, but not that complex!

- ▶ **We can represent any fare using a set of reusable components**
 - Tariffs can be related to the network using the concept of “Access Rights”
- ▶ **For UK basic Bus fares there are four main Tariff Structures**
 - (a) **P2P / Z2Z**, (b) **Zonal**, (c) **Stage / Section**, (d) **Flat**
 - We can model the elements of each of these on a single page, as shown in the examples
- ▶ **For UK basic Bus fares there are two fundamental product groups**
 - (a) **Trip**, (b) **Period Pass** (Day, Week, Season etc)
- ▶ **For UK basic Bus fares there are a limited number of other parameters needed, many of which can be restricted**
 - E.g. User Types, Group Tickets, Validity Periods, etc.
 - E.g. Type of Travel Document, Distribution Channels, Payment Methods, etc.



Common Framework



Describing Fares with NeTEx



Network Basis

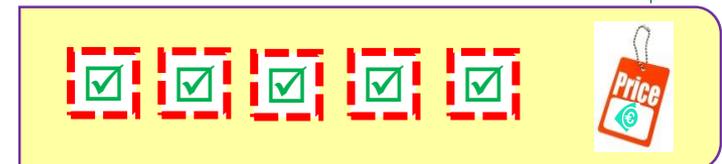
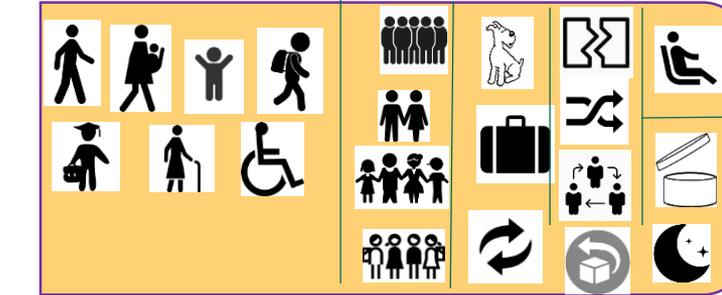
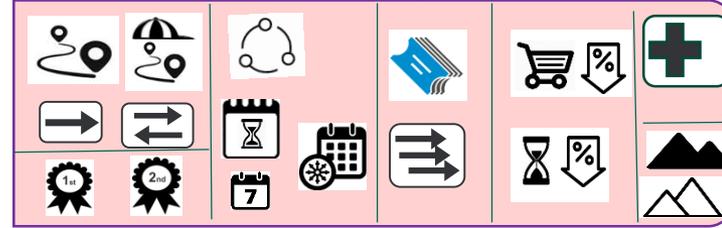
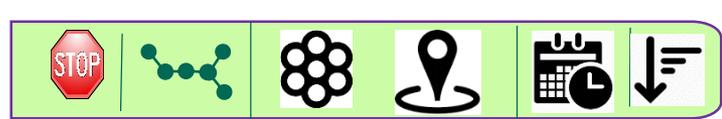
Tariff Structure

Access Rights

Fare Products

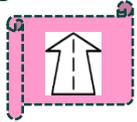
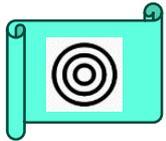
Sales Offer Packages

Travel Specifications & Sales





Questions



▶ Is proposed Basic Profile scope useful?

- Omissions?
- Unnecessary features?
- Basic vs Complex?
- Other comments?



traveline

▶ Please send comments to

- Julie.Williams@traveline.info

