Department for Transport

BODS NeTEx profile
Consultation

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Background

Bus Open Data

Operators are required to publish their fares and ticketing as open data using the UK NeTEx profile. NeTEx is a new implementation for the UK public transport industry and is a highly flexible modular data standard.

Fares data published to BODS using the UK NeTEx profile came in many different structures with large variations in content, which makes using the data more challenging for data consumers. To address this, BODS is implementing a more restricted profile for both 'simple' and 'complex' fares.

- Greater standardisation of file structures
- Minimum levels of data content to improve details and consistency
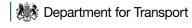- Establish standardised methods of referencing external datasets

Documentation

Version 0.4

The BODS NeTEx profile document is currently version 0.4 following a limited consultation within BODS, ETM suppliers, data standards SME. It is recognised that the documentation is very technical and not very accessible for those unfamiliar with the data.

- The profile document is intended to describe the NeTEx structure and content expected when publishing to BODS
- A simpler 'beginner's guide' type document will be issued with final profile document
- Use cases for specific product types will also be documented to support greater understanding and take up of NeTEx
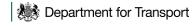
Timeline

Consultation process

The consultation timelines are quite short. A second webinar will be held on February 29th and will have greater focus on issues raised in feedback and questions:

- February 29th – second webinar
- March 6th – closing date for feedback
- March 20th – issue final profile document with amendments
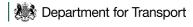- April (date tbc) – final webinar

Other data

Relationship with TransXChange PTI profile and NaPTAN

The UK profile of NeTEx allows basic route and timetable data to be defined but, due to the requirement of operators to provide timetables in a different standard, the data will reference and replicate some approaches used in the TransXChange PTI profile:

- Line ids – BODS NeTEx will leverage unique and persistent ids established for TXC PTI
- Stops – stops are expected to be derived from NaPTAN and use the AtcoCode. Exceptions are to follow the precedent established in TXC PTI
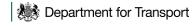
NeTEx structure and content

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File structure

Files published to BODS

NeTEx allows data for a single fare product to be spread across multiple XML files or an indefinite number of fare products to be included in a single file.

The BODS NeTEx profile and the validation rules applied during publication require all elements relevant to a fare product to be contain within a single XML file.

A 'one-file-per-product' dataset structure is the basic assumption of the profile however it is also allowable to included multiple fare products in the same file. This latter option may be preferable in cases where there are large numbers of pass type products.
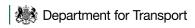
Frames

Frames in BODS NeTEx

NeTEx uses Version Frames as containers to group related other elements together. Not all of the Version Frames allowable within NeTEx are required to define fares so only specific frame types are required in a file published to BODS.

All frame types will sit within a CompositeFrame and should include:

- ResourceFrame: UK_PI_COMMON to contain operator details
- ServiceFrame: UK_PI_NETWORK to contain route and stop details
- FareFrame: UK_PI_FARE_NETWORK to group network elements into entities accessible with fare products (where appropriate)
- FareFrame: UK_PI_FARE_PRODUCT to define the specifics of a fare product
- FareFrame: UK_PI_FARE_PRICE to price fare products

Versioning

Versioning on BODS

NeTEx facilitates versioning at many different levels, from CompositeFrame to individual element groups. Unlike TransXChange, there are no persistent identifiers of a product that can be derived from registrations which makes versioning more difficult.

As such, a basic versioning method is recommended but the best approach to managing your fares is to publish all fare products as a single dataset which is made inactive when a new dataset is published.

- Versions are used at CompositeFrame level and all elements contained within the frame increment with it
- Increments are absolute numbers
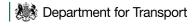- CompositeFrame should also include a Validity Condition date range

Network

Routes and stops

In the BODS NeTEx profile, references to the 'network' specifically mean routes (with their operators) and stops. The requirements for these are reasonably limited but very specific:

- Operators – must reference the same NationalOperatorCode used for TransXChange published on BODS
- Lines – lines within a NeTEx file must reference the Line id of the TransXChange line published on BODS
- Stops – stop within a NeTEx file must reference a stop point in NaPTAN or, where one does not exist, a temporary stops declared in equivalent TransXChange file

Within the 'Fare_Network' FareFrame, stops can be arranged into FareZones for use defining the network access rights of a fare product
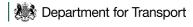
Tariff

Fare Product structure

A Tariff is used to define the variables of a specific fare product structure. These are very flexible in how they can be defined so only certain groups and elements are required for the BODS NeTEx profile

- Validity conditions – when the specific tariff is valid from and to. The latter element is not always known and is not mandatory but should always be used where known
- Pricing structure (e.g. point to point, zonal, etc) – a TariffBasis must always be included
- FareStructureElements – 3 types of FareStructure elements are always required with a file, with others required under certain conditions
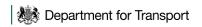
FareStructureElements

Fare Product structure

FareStructureElements can be used to define specific rules and limitations of a fare product. These can be based on geography, bus services, time periods, etc. Each FareStructureElement has a definition of 'type' and 3 types are always required:

- Access – used to define network access granted by the product
- Eligibility – used to define passenger types
- Travel conditions – used to define limitations such as number of uses, etc

Other FareStructureElements are required under certain conditions

- Durations – used to define periods of use for pass product
- Carnet – used to define number of units in any bundled fare product
- Groups – used to define groups of passenger types
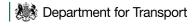
Fare Product

Fare Products

A Fare Product is the purchasable element available to the public that allows them to access the public transport network. It will consist of a series of validable elements, each of which has been defined in the Tariff as items such as FareStructureElement.

A ChargingMoment must be included to define when payment for a fare product is made and is therefore used to separate 'tap & go' style products from those paid for at the moment of purchase.

- PreassignedFareProduct – used to express most 'traditional' products
- AmountOfPriceUnitProduct – used to define bundled products

Not a product but nested within Fare Products…..

- CappedDiscountRight – used to define a cap that is applied to fare products when certain levels of consumption are achieved within set time periods
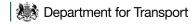
SalesOfferPackage

How it can be bought

A SalesOfferPackage is used to define the purchasing of a Fare Product can must contain a variety of elements:

- DistributionChannel – used to define where a fare product can be bought (on the bus, mobile phone, etc)
- PaymentMethod – used to define how a fare product can be paid for (cash, card, etc)
- TypeOfTravelDocument – used to define what media the fare product is available on (paper ticket, smart card, etc)

Fare Prices

Pricing products

NeTEx allows many different kinds of entities to have prices applied to them ('priceable object') but to ensure a level of simplicity, only certain objects will be priced.

A combination of Fare Product and SalesOfferPackage is generally preferred, except in cases of point-to-point and stage-to-stage products where DistanceMatrixElements are priced.

CappedDiscountRight is also to be priced where caps are applicable to fare products purchased up to a certain level.

Prices should be defined as absolute numbers (e.g. pounds and pence, not derived as percentages of other fares).

Questions

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Feedback so far

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Fare stages

FareZones and stops

The BODS NeTEx profile requires all FareZones to included at least one stop point. The reason for this is that, where this data is used for customer information, prices should reflect where passengers can both board and alight a service. A FareZone without a stop means the inclusion of a price where a passenger cannot do one of those.

It is understood that there are legitimate scenarios where a FareZone may not include a stop, such as there not being a correct entry in NaPTAN, or the complex route structure. This should be addressed through either of the following:

- The FareZone is removed from the data
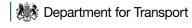- A non-NaPTAN ScheduledStopPoint is temporarily included

Pricing

Pricing products

The BODS NeTEx profile is comparatively 'light touch' when it comes to the FARE_PRICE frame, what objects are being priced and in what structure.

A noted absence is the concept of a 'fare triangle'. The profile does not mandate that sufficient information is included to help data consumers reconstruct a fare table, or how this should be done if being voluntarily submitted.

Should it be mandatory? If not, should the profile define how a fare triangle should be presented?

File structure

'One-file-per-product'

The BODS NeTEx profile does not mandate a specific file structure and only requires that all elements relating to a fare product are contained within the same file. It does allow multiple fare products to be contained in the same file but recommends this is only done for pass type products and a 'one-file-per-product' structure is generally used.

There is potential confusion around 'one-file-per-product': this does not mean that an 'Adult Single' is a fare product but that an 'Adult single' for a specific Line and direction is a fare product. Different methods of sale and passenger types can be included in the same fare product.
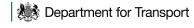
Passenger types

Child/Young person/Young adult

BODS NeTEx profile requires the use of UserType, which has a limited number of allowable values (e.g. Child, YoungPerson). These might not appear to be enough to cover some operators varied offers for 'young person' type tickets (e.g. Under 16s, 16-19, and Under 21s).

Multiple UserProfiles can be added using the same UserType so long as id and Name is used to differentiate. Where appropriate MinimumAge and MaximumAge should be included to aid the differentiation.

Product names

Confusing product names

The BODS NeTEx profile requires that each PreassignedFareProduct, AmountOfPriceUnitProduct and CappedDiscountRight include a Name and should contain a value that is sufficient for customer facing information.

Many fare products are currently being submitted with a Name value in the style of "Cap Ch Rtn PUL", which is not going to be useable for presentation to a passenger.

How can this be solved?

Shadow fares

Incorrect prices

Some of the NeTEx data being published on BODS includes 'shadow fares' that are not purchasable by a passenger and are therefore incorrect prices.

Shadow fares should never be included in data published on BODS – only prices that passengers can pay when purchasing a fare product.

Feedback

Feedback is preferred by email rather than returning a document with comments.

Please send all questions and feedback to steven.penn@kpmg.co.uk