

## TC 278 WG3 SG9

### Preliminary Work Item Proposal :

### *Network and Timetable Exchange (NeTEx)*

#### **Title**

Development of a service dedicated to the exchange of reference data (network and timetable information) based on Transmodel V5.1 (EN12986), IFOPT (CEN/TS 00278207) and SIRI (CEN/TS 00278181-1 to 5) ) needed to support information exchange of relevance to public transport services for passenger information and AVMS systems.

#### **Proposed scope**

##### Data domains

The main objective of this WI is to determine a data exchange format:

- based on a data model (determined by the European standards: Transmodel, IFOPT, SIRI and by the specific needs for long distance train operation)
- dedicated to the information related to the public transport network topology, the scheduled timetables (that will be called Basic Reference Data).

This information is relevant to support multimodal information systems providing

- planned passenger information
- real-time services described by the SIRI technical specification.

The data exchanges defined are clearly oriented towards passenger information and exchange between transit scheduling systems and AVMS (Automated Vehicle Monitoring Systems).

Additional Reference Data related to stop place and fares (Equipment Reference Data, Fare Reference Data) will be considered in a second stage.

##### Components of the proposed standard

This proposed European Standard will be made up of three parts defining a single European Standard Serie, which provide an complete exchange format for public transport networks and timetable description.

Part 1 is fully standalone, and part 2 and 3 rely on part 1.

**Part 1** is the description of Public transport network topology exchange format.

**Part 2** is the description of Scheduled Timetables exchange format (part 2 is divided in four sub-parts... see below).

**Part 3** is the description of fare information exchange format.

### Transport modes

The following transport modes will be considered : long-distance train, bus, metro, tramway, trolleybus, ferry, coach.

### Compatibility with existing standards and recommendations

The concepts to be considered with a particular attention for long-distance trains are linked to rail operators and related organizations, stations and related equipment, journey coupling and journey parts, planned passing times, timetable versions and validity conditions.

In the case of long distance train the requirements formulated by ERA (European Rail Agency) – TAP/TSI (Telematics Applications for Passenger/ Technical Specification for Interoperability) based on the UIC directives will be taken into account.

As regards the other modes, a formal compatibility will be ensured with TransXChange, VDV 452 and the profile TRIDENT/CHOUETTE (a detailed « mapping » will be provided for each national standard in order to facilitate the adoption of the new standard).

The data exchange will be possible either through dedicated web services, or through data file exchanges, or using the SIRI exchange protocol as described in part 2 of the SIRI documentation.

Therefore, this WI will be based on the following results:

- results of CEN TC278 WG3 SG7 (SIRI) as presented in CEN/TS 00278181 part 1 to 5,
- results of other subgroups of CENTC278 WG3, in particular: SG4-Reference Data Base Model for Public Transport (Transmodel, EN12896), SG6-IFOPT (Identification of Fixed Objects for Public Transport, CEN/TS 00278207),
- national standards, in particular profile CHOUETTE/TRIDENT, TransXchange and VDV 452,
- UIC recommendations and leaflets

### Expected results and deliverables

The data exchange format delivered will be underpinned by the UML data model directly extracted from the reference data models Transmodel V5.1 and IFOPT. It will be implemented in XML as all the other SIRI services.

As regards the data model, some additional information, resulting from the practical requirements expressed and necessary to the schema generation, will be added without biasing the compatibility with the reference models.

The main expected deliverables are as follows :

- Currently used standards/tools/recommendations (profile CHOUETTE/TRIDENT, TransXchange, VDV 452, UIC) requirements
- UML diagrams extracted from Transmodel/IFOPT, describing the multimodal public transport network and scheduled timetables (Basic Reference Data)
- UML diagrams related to Additional Reference Data (ie Flexible services, Frequency defined services)
- new services to access the information in conformity to part 2 of the SIRI documentation (Communication Infrastructure),
- an XSD definition, conform to the UML diagrams and WSDL definition corresponding to the services,
  - Plan to go from UML to XSD
  - Modularisation plan of the UML and XSD
- a detailed mapping between the new services and the currently used standards/tools/recommendations (profile CHOUETTE/TRIDENT, TransXchange, VDV 452, UIC).
- Update of the SIRI Communication Layer (minor updates)
- The NeTEx specification document !

Taking into account the nature of the information considered by NeTEx, information on the work progress and results will be provided to other subgroups of CEN TC278 WG3 working on related topics, in particular SG3 – TI-VIP (Traveller Information-Visually Impaired Persons), SG6 – IFOPT2 (definition of data exchange profiles related e.g. to passenger guidance and trip planning), SG4 – Transmodel, and SG7 – SIRI, in order to avoid duplication of work.

## **Justification**

Reference Data describing the public transport network and timetables are essential for scheduled and real-time information systems. It is important that they can be shared among transport operators, information service providers, trip planners, authorities and other actors in a clear and unambiguous way, in order to give accurate public information.

One of the aim is to define a fully Transmodel V5.1 compliant standard for timetable information exchange. As regards long distance trains, a recent recommendation of the European Rail Agency is although to use Transmodel V5.1 to exchange scheduled timetables with other modes.

Furthermore, new players like Google, Microsoft, Yahoo, Yellow Pages, TeleAtlas, NavteQ, Nokia, Orange, national survey and mapping agencies, etc. require, for instance, the public transport network description and need to be guided to get this information in an efficient way. None of them is in the position, better than the public transport world itself, to provide generic, unambiguous public transport data description. Leaving to them the design of specific interfaces for the exchange of Reference Data for Public Transport would probably lead to the emergence of several incompatible, proprietary and incomplete exchange formats negating years CEN of standardisation.

## **Initial workplan and work organisation**

Work will start by March 2009 and last for 18 to 24 months, with the objective to issue a first document covering parts 1, 2A and 2B (see below) by 2010. Parts 2C, 2D and 3 will be processed in 2011.

The work of SG9 will give priority to a first part related to network topology and scheduled timetables (decision of CENTC278 WG3 plenary meeting from the 14th october 2008). Every part will set up a separate service, coherent with the SIRI structure, to be used in a modular way (thus it will be possible to exchange, for instance, the timetable information only).

These services will cover, as a minimum, the data already identified by the other SIRI services, i.e.:

- stop points, stop places and related information (e.g. stop place components),
- lines (and their direction), service patterns, transport modes, connections, etc
- service journeys, types of service, interchanges,
- timetabled passing times, day types, timetable versions and validity conditions,
- facilities associated to the vehicles (services and equipment),

- facilities related to stop places (services and equipment).

It is envisaged to structure the work as follows :

**Part 1** : Public transport network topology (routes, lines, route points, stop places and their components, stop points, navigation paths and other places linked to the PT network and relevant for passenger information, stop place equipment and services, network version, administrative information, etc.) : basic topology data (shared by all the domains)

**Part 2** : Scheduled timetables (service patterns, service journeys, timetabled passing times, day types, timetable versions, vehicle equipment mainly for mobility issues):

Part 2A : Basic time related data (shared by all the domains): journey patterns, journey times, service patterns, operating days, interchanges, etc. : time related information

Part 2B : Passenger information specific objects: trip patterns, trip duration (for journey planning), passing times, origin/destination places of passenger trips, etc.: additional data related to passenger information functions

Part 2C : Data used specifically in the exchanges between the scheduling and vehicle monitoring systems (additional scheduled data, such as blocks and related concepts) : additional data related to the exchanges scheduling /AVMS

Part 2D : Data used in and/or defined by the vehicle monitoring systems, data linked to vehicle equipment and necessary for passenger information systems (mainly for SIRI): additional data related to the exchanges AVMS/passenger information

**Part 3** : fare information (strictly dedicated to the passenger information) .

The proposed work organization is expressed by the following actions :

- to collect and analyze the national requirements (profile CHOUETTE/TRIDENT, TransXChange , VDV 452),
- to collect the requirements of ERA – TAP/TSI and UIC,
- to produce a data dictionary (based on Transmodel 5.1 and IFOPT, completed if necessary by SIRI specific concepts) and describe basic use cases,
- to produce relevant UML data model extracts from Transmodel 5.1/IFOPT,
- to harmonize the extracted data models and to complete them according to the requirements expressed (e.g. by other domains such as demand responsive systems),
- to produce an XML (XSD) implementation base on the UML data model, accompanied by examples,

- to produce a description of data access services (XML and WSDL),
- to ensure the compatibility with the other SIRI services,
- to produce a documented mapping between the new services and the existing national standards/tools.