TRANSMODEL: TOWARDS SMARTER PUBLIC TRANSPORT INFORMATION

Public transport services depend increasingly on information systems to ensure reliable, efficient operation and to provide accurate passenger information, widely accessible over multiple channels. These systems are used for a range of specific purposes: setting schedules and timetables, managing vehicle fleets, trip planning, issuing travel documents and receipts, providing real time information on service running, etc.

"**Transmodel**" is the short name for the European Norm "***Public Transport Reference Data Model***" (EN 12896), a data standard that covers many aspects of public transport information and service management. In particular, the standard facilitates interoperability between the information processing systems of transport operators and agencies by using matching definitions, structures and semantics for the data elements used by their various systems. This is of substantial benefit both when connecting different applications within an organisation and when connecting the applications of different interworking organisations (for instance, a public authority and a transport operator).

The coherence of information and precision of terms makes it also possible for different stakeholders to communicate efficiently, as say when setting contracts between public transport operators and authorities.

The most notable benefit, however, is for the Public Transport end-user. Transmodel-based systems allow data from multiple sources to be integrated coherently to provide detailed, reliable information for door-to-door trips made on multiple modes; this can include information about the accessibility features of all components related to the trip, (as well as their real-time status), supporting travel by persons with restricted mobility.

The Transmodel standard provides a framework for defining and agreeing a common data language, and covers the whole area of public transport operations. By making use of this European Standard, and of data models and exchange formats derived from it, it is much easier and cheaper for operators, authorities and software suppliers to work together towards integrated systems. Moreover, the breadth of the standard helps to ensure that future system developments can be accommodated with the minimum of difficulty, for instance extensions for new modes (cycle sharing, carpooling, etc).

Transmodel is modular and has separate parts covering key functions such as Network topology, Scheduling, Operation monitoring, Fare management, Passenger information, Driver management and Management information.

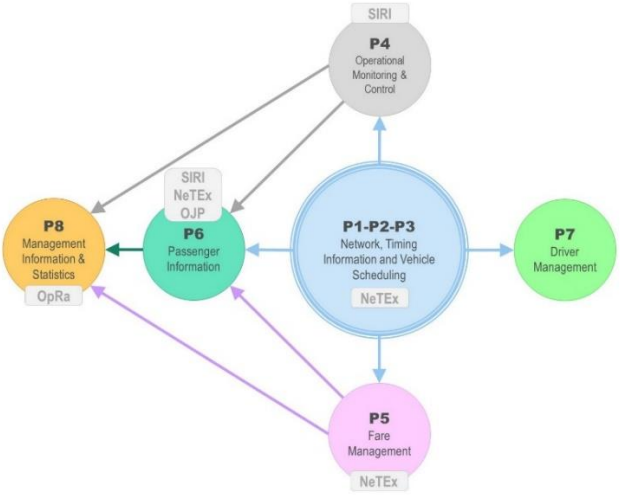

Figure 1. Transmodel parts and links to interface standards

Transmodel has a particular practical value in the context of the European Union's policy objective of encouraging the provision of EU-wide multimodal travel information services, as set out in ITS Directive 2010/40/E, and in particular the recent supplementary Delegated Regulation (EU) 2017/1926, since it gives a precise language and set of concepts in which to state the necessary requirements to make EU-wide multimodal travel information services sufficient and available across borders.

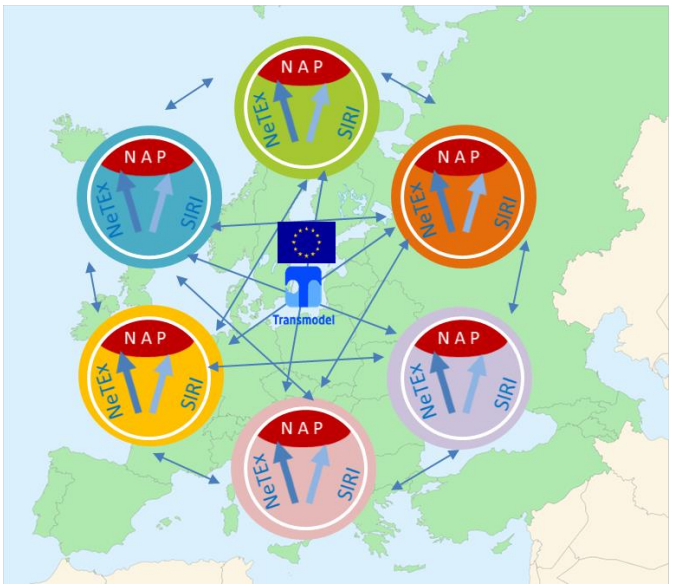

Figure 2. Transmodel providing a common language for data exchanges through the NAPs

The Regulation sets out a roadmap, with an agreed timeline, for transport authorities, operators, infrastructure managers and other stakeholders to make various types of static travel and traffic data available in designated common formats through "National Access Points". Static scheduled transport service-related data (covering all public transport modes including local public transport, mainline rail, air transport, coach and maritime services including ferry timetables), should be made available for exchange using the CEN standard CEN/TS 16614 "**NeTEx"** (or any machine-readable format fully compatible); NeTEx is an XML data exchange format closely based on the Transmodel reference model, using the same terminology and components. The first milestone, for basic data including multimodal timetables, is in December 2019.

In summary, Transmodel will prove of value to organisations within the public transport industry that specify, acquire and operate information systems and to suppliers who need to design, develop and manage systems for them.

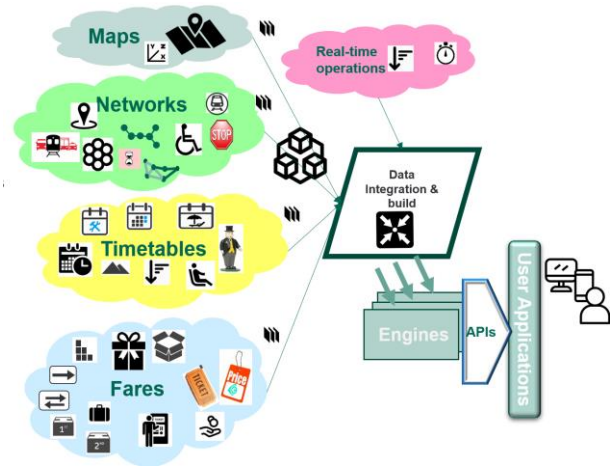

Figure 3. Transmodel facilitating integrated systems design

The Transmodel eco-system, unified by a common semantic model, is surrounded by European standards based on Transmodel principles, but can also be used to establish precise correspondences with legacy, national and international standards in use.

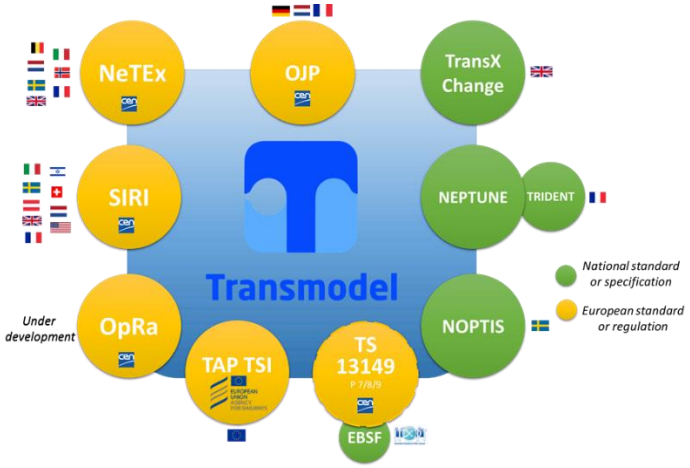

Figure 4. Transmodel eco-system

For all of these potential users, the adoption of Transmodel as a basis for development means that a common language is being used. Thus users can understand and assess the claims of suppliers better, and it is easier for specification developers to align and reuse system components. Over time, common models and open standards can dramatically reduce the cost of integrating systems, significantly improving the affordability of systems and hence their deployment.

For end-users, the uptake of Transmodel as the basis for the application systems, means better mobility and accessibility, both in urban and interurban transport, but also in a wider European environment of cross-border travel. Specific Transmodel based protocols, such the Open API for Distributed Journey Planning, can help to make efficient and reliable information services available across Europe using uniform and coherent data interfaces.

Visit http://www.transmodel-cen.eu

More information is available at the following links:

1. **http://itxpt.org**
2. **SIRI** (Standard Interface for Real-Time Information);
3. **DJP/OJP** (Open API for distributed journey planning);
4. **NeTEx** (Network Timetable Exchange);
5. **OpRa** (Operating Raw Data and statistics exchange).