

IMPORTANCE OF DATA STANDARDS FOR EUROPEAN PASSENGER MOBILITY

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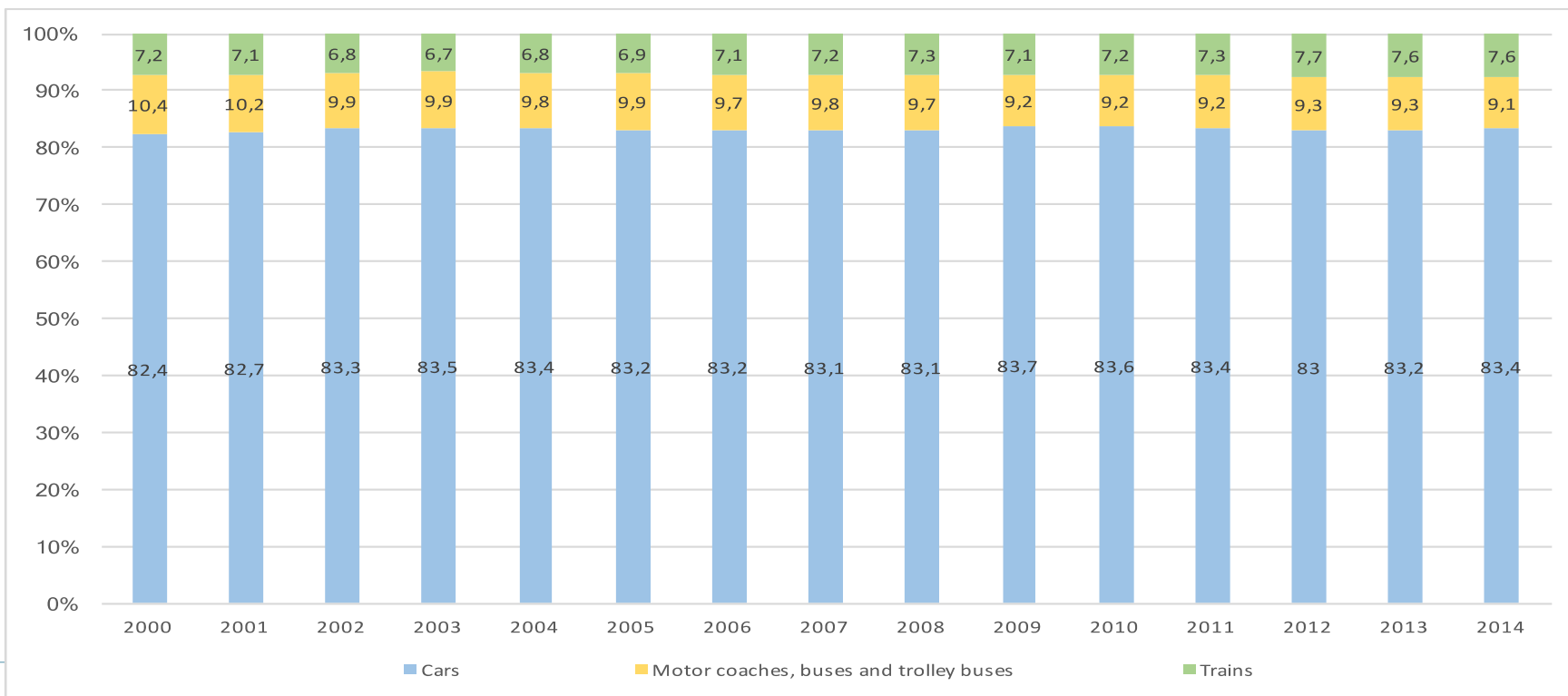
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Passenger mobility

- What is passenger mobility?
 - **Movement of a passenger using any kind and mode of motorized, non-motorized, collective or individual mean of transportation**

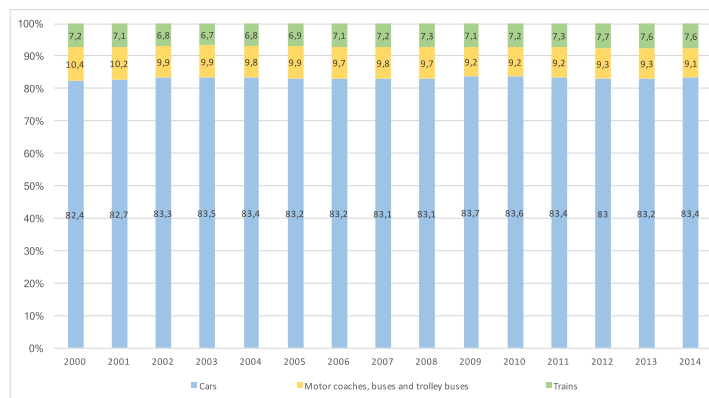
Passenger mobility

- Analysis of the modal split for inland passenger transport for EU-28 in 2014
- percentage share of each mode of transport in total inland transport, expressed in passenger-kilometers
(ref: EUROSTAT, Passenger transport statistics, EUROSTAT Stat. Explain., 2016)



Passenger mobility

- Passenger cars accounted for 83.4% of inland passenger transport, with motor coaches, buses and trolley buses (9.1%) and trains (7.6%) both accounting for less than a tenth of all traffic
- All data is based on movements on national territory, regardless of the nationality of the vehicle



Passenger mobility

- relatively stable and slowly increasing use of passenger cars +1% → economic growth in the new EU members
- in (sub)urban areas with developed public transport, passengers replace buses and cars with higher-speed vehicles (aircraft, high-speed trains)
 - decline in use of passenger cars in EU in the period 1990-2014 (.i.e. Belgium 83,3 →76,8)
 - small increase (+0,4%) of use of trains in the period 2000-2014

Passenger mobility

- reciprocal relationship between the use of buses (decline) and trains (increase).
 - direct relationship between limited travel time budget of passengers (<1 hour) and development of flexible and rapid modes of transport
- → without faster infrastructures and performant digital environment the fixed travel time budget will force per capita traffic volume to saturate

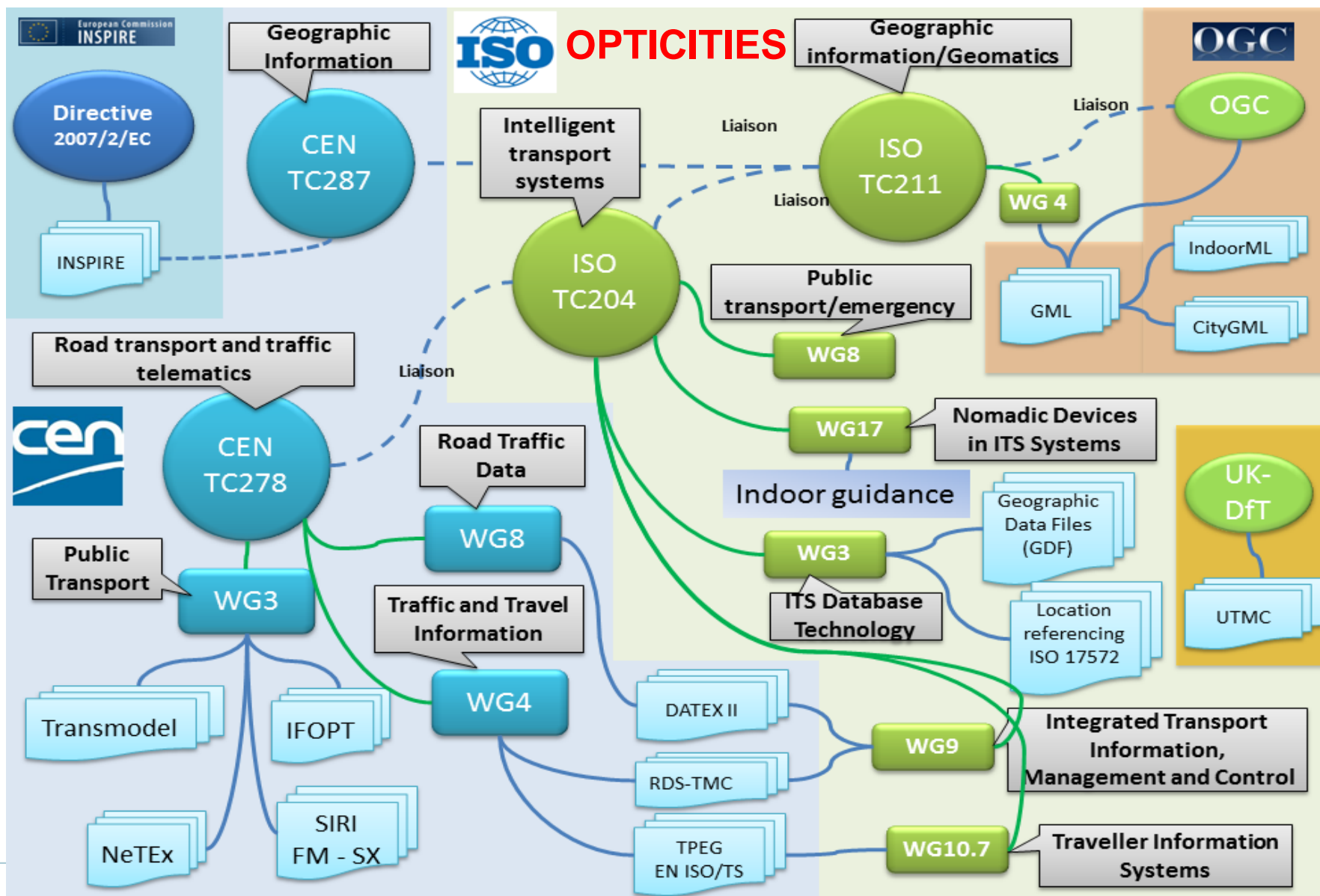
Passenger mobility

- → Increasing demand for passenger (urban, rural) mobility in digital society requires harmonized multimodal travel information services, which must be accurate and available across borders

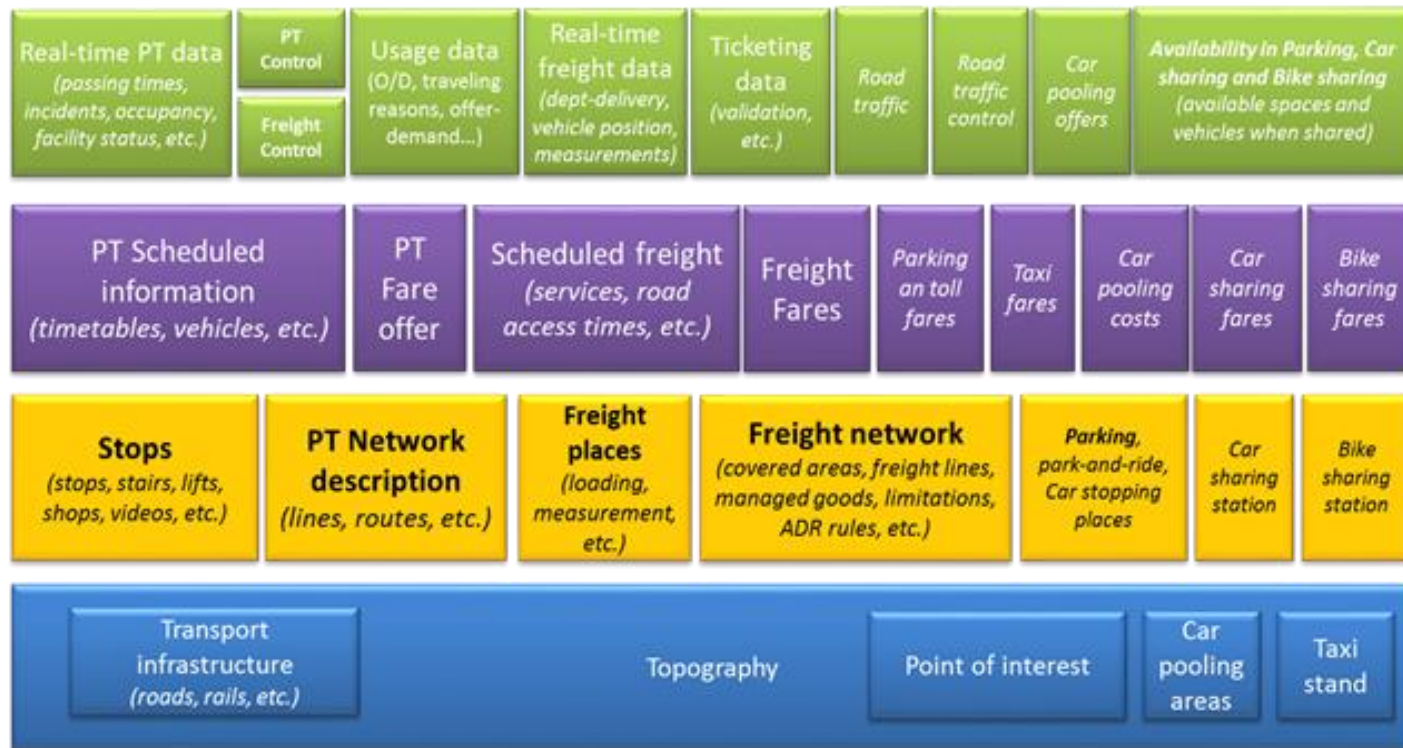
(Trans)national digital interoperability for...

- **passengers** (journey planning, fare delivery, real-time feedback),
- **public transport authorities** (network topology & access nodes management, timetables registration, concession statistics, reports),
- **public transport operators** (tactical planning, fare collection, operational management, driver scheduling), and
- **network operators** (automated vehicle monitoring)

Standardization for passenger mobility

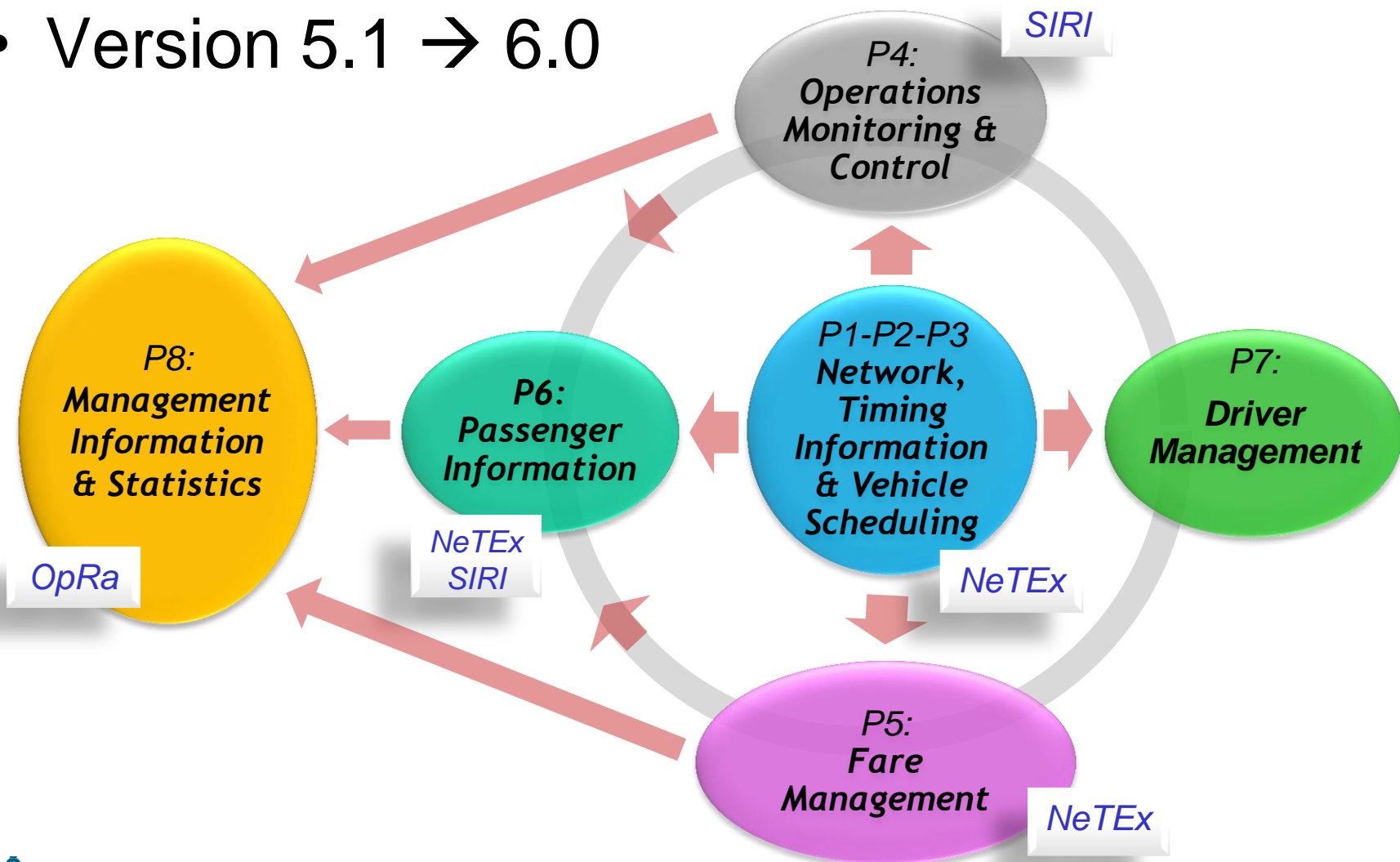


Passenger mobility related categories



TRANSMODEL EN12896 update project

- Version 5.1 → 6.0



TRANSMODEL EN12896 update project

EN 12896-4 Public transport - Reference data model – Part 4 Op.Monitoring & Control

Scope: Conceptual model for data related to the process of control of operations in real time, such as vehicle detecting and monitoring, events & control actions, messaging

EN 12896-5 Public transport - Reference data model – Part 5 Fare Management

Scope: Conceptual data model for fare structure, sales, validation & control of access rights

EN 12896-6 Public transport - Reference data model – Part 6 Passenger Information

Scope: Conceptual data model for planned and real-time information provided to users of public transport for passive and “on-request” information. Concerns also queries and responses for “on-request” information.

EN 12896-7 Public transport - Reference data model – Part 7 Driver Management

Scope: Conceptual data model for Driver Scheduling (day-type related driver schedules), Rostering (ordering of driver duties into sequences according to some chosen methods), Personnel Disposition (assignment of logical drivers to physical drivers and recording of driver performance)

EN 12896-8 Public transport - Reference data model – Part 8 Management Information and Statistics

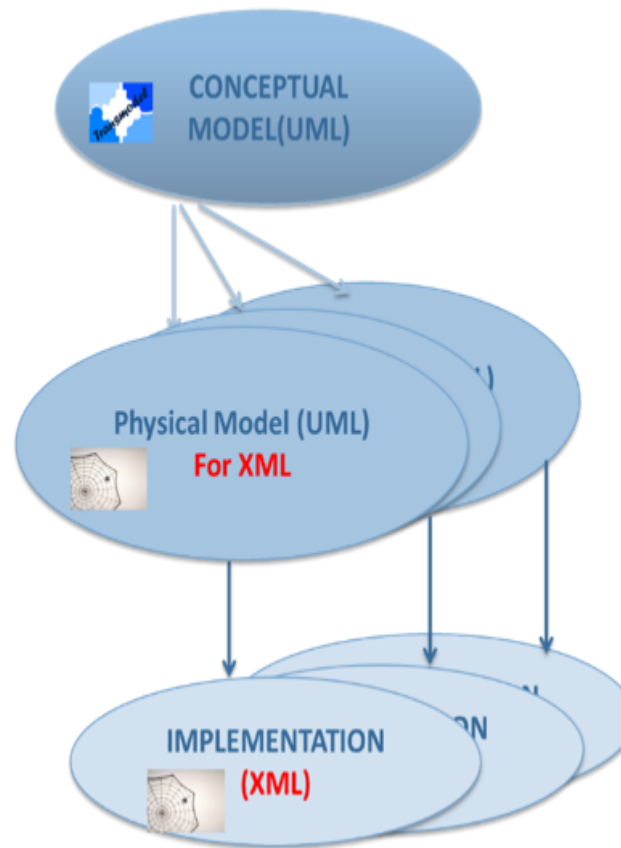
Scope: Conceptual data model for data used for statistics and registered data from which service quality indicators may be derived

TR Public transport - Reference data model – Informative Documentation

TRANSMODEL 6.0 update approach

- Model-driven design and modularity

- Conceptual model is implementation independent (Transmodel)
- Multiple physical models
 - for different target implementations may be derived from one conceptual model NeTeX XML Physical design
- Implementation
 - is derived from physical model NeTeX XML Schema
- **THIS APPROACH ENSURES COHERENCE OF INFORMATION**



TRANSMODEL Implementation examples

- *Usage of PT standards in Italy: Regional Service Centre (CSR) for an integrated Electronic Ticketing System*
 - Piedmont Region central mobility informative and governance system aimed at providing Infomobility services, interoperability and at monitoring and controlling regional mobility. CSR considered all the relations among several involved stakeholders like Local Public Administrations, PTOs and final users
 - BIP project, developed by 5T (Torino), an innovative integrated ticketing system for public transport, railways and virtually all other transport systems

TRANSMODEL Implementation examples

- *CSR-BIP*
 - Local Public Transport (TPL) that stores all planned transport service data;
 - Electronic Ticketing System (SBE) devoted to a fare system and to solve possible clearing disagreements among various operators; it also manages data security;
 - Business intelligence (BI) that is devoted to reporting and Public Administration analysis functions.

TRANSMODEL Implementation examples

- *CSR-BIP* / **BIPEX**
 - To communicate and exchange data with PT operators and Public Administration, CSR–BIP has developed an abstract data model aimed at heterogeneous data migration called **BIPEX**
 - **BIPEX** protocol utilizes
 - Transmodel (CEN TC278 ENV12896),
 - NeTEEx (CEN TC278 TS 16614),
 - SIRI (CEN TC278 TS 15531) tailoring them to project architecture and to Italian reality.

Thank you for your attention



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