Telematics Applications for Passengers TSI TAP

railML® conference

Braunschweig, 26/03/2014

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An agency of the European Union

Content of this presentation

1. **Legal framework**

2. **Technical documents for telematics applications**

3. **Cooperation TAF/TAP TSI and railML®**

4. **Harmonization of selected railML® and TAF/TAP data elements**

The "jargon" used in this PPT

Abbreviation	Title
CEN	European Normalization Committee
CI	Common Interface
EC	European Commission
ERA	European Railway Agency
IM	Infrastructure Manager
LRU	Lead railway undertaking
PRM	Passengers with Reduced Mobility
RISC	Railway Interoperability and Safety Committee
RU	Railway Undertaking
TAF TSI	Telematics Applications for Freight - Technical Specifications for Interoperability
TAP TSI	Telematics Applications for Passengers – Technical Specifications for Interoperability
TD	Technical Document of the European Railway Agency

European Rail Legislation for TAP TSI

The TAP TSI is based on the following legal documents:

• Directive 2008/57/EC on the interoperability of trans-European rail system (Annex II)

• European Rail Passengers' Rights Regulation EC/1371/2007 (Art 10 and Annex II).

→ Above documents are publicly available at the EU web site

http://eur-lex.europa.eu/en/index.htm.

The Technical Specification for Interoperability on "Telematics Applications for Passengers" (TAP TSI) prescribes protocols for the data exchange of

- Timetables,
- Tariffs,
- Reservations, fulfillment
- Information to passengers in station and vehicle area
- Train running information,
- etc

which must be respected by the European rail sector (railways, infrastructure managers, ticket vendors etc.) according to the European Rail Passengers' Rights Regulation EC/1371/2007 and to the Interoperability Directive EC/2008/57.

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Technical Documents of TAP TSI

In Dec 2009 ERA has signed contract with UIC according to which UIC has transferred the underpinning UIC leaflets as ERA Technical Document B.1, B.2, B.3, B.4, B.5, B.6, B.7, B.8, B.9 and B.10.

ERA Technical Document B.30 is derived from the TAF TSI (Telematics Applications for Freight) RU/IM train movement messages.
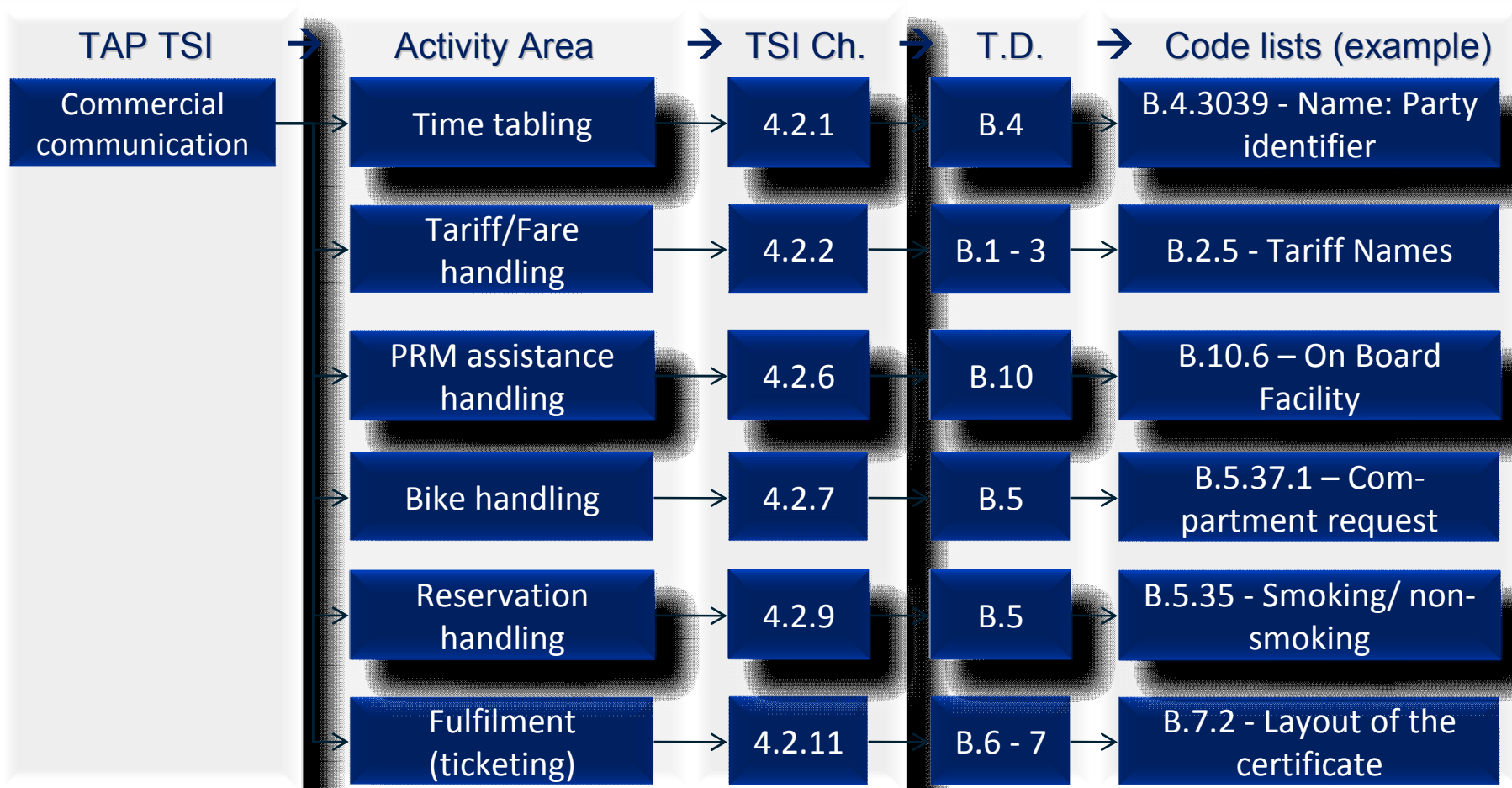
Above ERA Technical Documents (and underpinning ERA TAP Passenger Codelist) are annexes of the TAP TSI, thus, legally binding message interfaces for timetables, tariffs, reservations, fulfilment, and train running information.

All Technical Documents are available at ERA's website at http://www.era.europa.eu/Document-Register/Pages/TAP-TSI.aspx .

The documents are maintained by ERA though a change control management process.

The structure of TAP TSI can be outlined as follows:

TAP TSI →	Activity Area →	TSI Ch. →	T.D. →	Code lists (example)
Commercial communication	Time tabling	4.2.1	B.4	B.4.3039 - Name: Party identifier
	Tariff/Fare handling	4.2.2	B.1 - 3	B.2.5 - Tariff Names
	PRM assistance handling	4.2.6	B.10	B.10.6 – On Board Facility
	Bike handling	4.2.7	B.5	B.5.37.1 – Compartment request
	Reservation handling	4.2.9	B.5	B.5.35 - Smoking/ non-smoking
	Fulfilment (ticketing)	4.2.11	B.6 - 7	B.7.2 - Layout of the certificate

Data formats used in TAP TSI

› No unique data format is used for TAP TSI technical documents. The used data format depends on the technical document:

- EDIFACT (timetabling)

- Fixed length text files (tariff data)

- Binary messages (reservation messages)

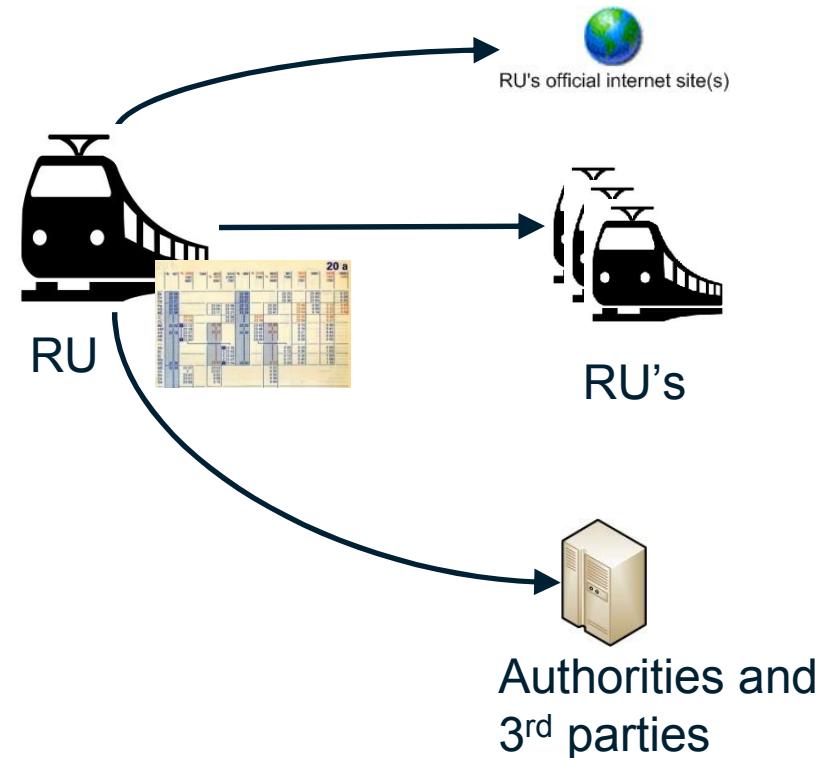- XML-messages (home printed tickets, PRM reservation)

Purpose:

- Exchange of timetable data

Conditions:

- Annual timetables must be published at least two months in advance

- Timetable changes must be published at least 7 days in advance

How:

- File in EDIFACT-format (technical document B.4)

RU's official internet site(s)

RU

RU's

Authorities and 3rd parties

Example:

PRD+00090:::37:::Vauban+0083**0085'

POP+273:2003-12-15/2003-12-20::111111'

PDT++:::50'

SER+9'

POR+008301700:37:12+*0810'

POR+008507000:37:12+1156*1204'

POR+008721202:37:12+1444*1446'

POR+008200100:37:12+1650'

ODI+008507000*008200100+2*4'

SER+26'

EC 90 provides a restaurant (code 9).

The train runs from MILANO (008301700) via BERN (008507000) and STRASBOURG (008721202) to LUXEMBOURG (008200100).

Bicycle transport (code 26) is available only from BERN (stop index 2) to LUXEMBOURG (stop index 4).

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4. **Harmonization of selected railML® and TAF/TAP data elements**

Meeting between railML-coordinators and ERA on 2. December 2013 in Dresden.

The following fields for harmonisation between RailML and TAP TSI were identified:

1. Reference data

      a) Location data

      b) Company codes

2. Timetable – attributes for passengers (e.g. accommodation classes, services)

Outcome:

1. railML timetable coordinator and ERA will develop a proposal for the incorporation of some TAP TSI elements for timetable date into railML®

2. Proposal will be presented in the next railML-conference (Today)

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Reference data – company codes

- TAP TSI: Basically the Code is a numerical, four-position, unstructured code.

- TAF TSI:

```
<xs:simpleType name="CompanyCode">
  <xs:annotation>
    <xs:documentation>Identifies the RU, IM or other company involved in the Rail Transport Chain</xs:documentation>
  </xs:annotation>
  <xs:restriction base="Numeric4-4">
    <xs:minInclusive value="0001"/>
    <xs:maxInclusive value="9999"/>
  </xs:restriction>
</xs:simpleType>
```
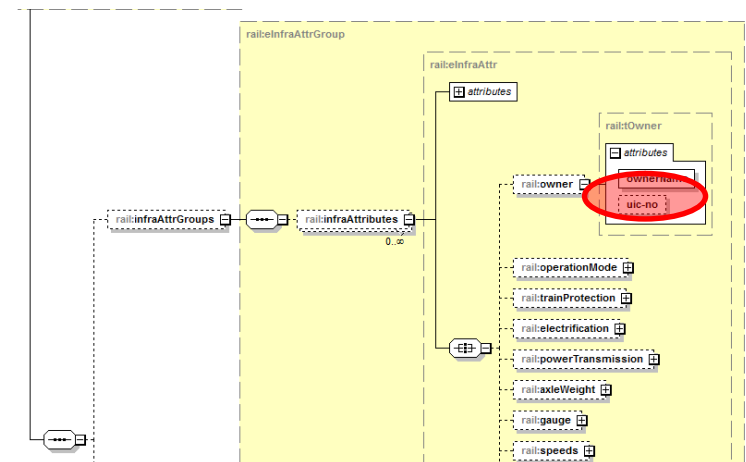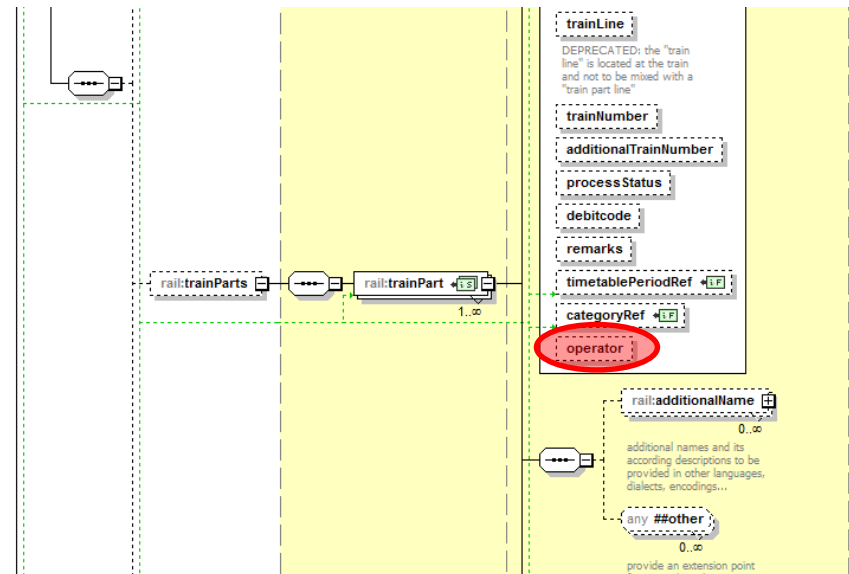
Usage of the company-code in the
railML timetable-scheme:
-Usage of the attribute
trainPart/@operator
-Content: 4-digit company code

Usage of the company-code in the
railML infrastructure-scheme:
-Usage of the attribute
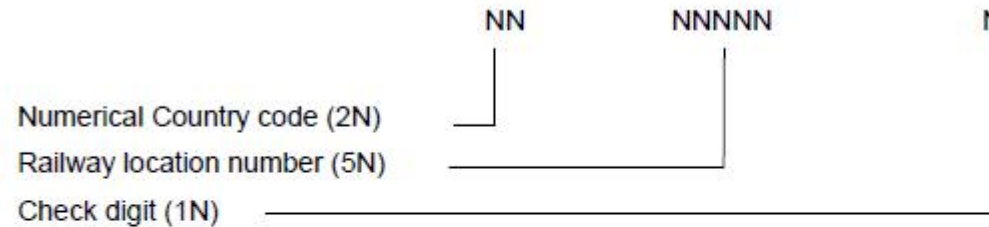infraAttributes/owner/@uic-no
-Content: 4-digit company code

→ No changes in railML necessary!

Reference data - Location codes

- **TAP TSI:**

The Primary Code shall contain eight alphanumeric characters structured as follows:

NN   NNNNN   N

Numerical Country code (2N)

Railway location number (5N)

Check digit (1N)

- The numerical country code is a two digit code identifying the country as defined in paragraph 3.1.
- The railway location number identifies the location within the relevant country with a five-digit code. The code is allocated according to paragraph 4.2.
- The check digit is calculated from the five digits of the railway location number in accordance with the rules specified in Annex A.

- **TAF TSI:**

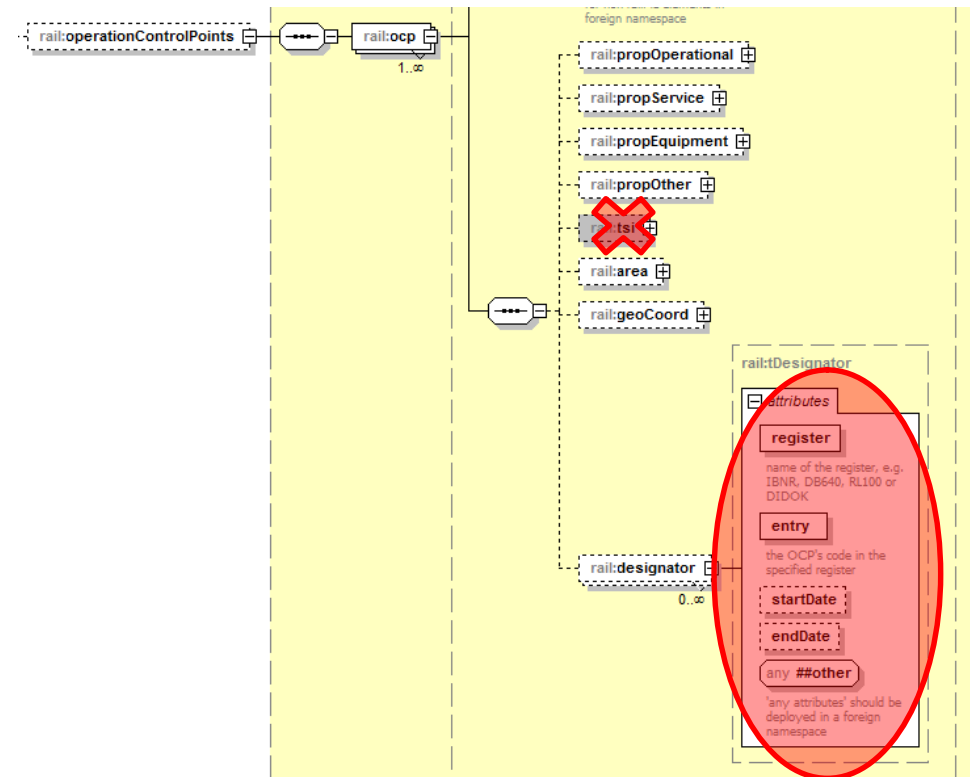|	A1	A2	N3	N4	N5	N6	N7	ID1	ID2	AN10	AN11	AN12	AN13	AN14	AN15	AN16	AN17	AN18	AN19	N1	N2	N3	N4
Code Example	D	E	9	0	3	0	0	0	2	1	2	3	4	5	6	7	8	9	10	3	3	4	5
Data Description	Country Code		LocationPrimaryCode					Location Subsidiary Type Code		LocationSubsidiaryCode										Allocation Company			

infrastructure-scheme:
-Currently usage of the attribute operationalControlPoints/ocp/tsi
-Content: <u>TAP TSI location code</u>
-Already implemented in railML

The following location codes should be taken into account:
-TAF TSI location code (format: country code as ISO-3366-1 + 5 digits)
-Reservation code

Proposal: deleted tsi element as and use designator-element instead

› Problem: Some informations about <u>commercial</u> train attributes are not available in railML:

- Accommodation classes (e.g. 1st, 2nd class)

- Services (e.g. snack trolley)

› Attributes are defined in TAP TSI timetable data and should be made available in railML

→ goal: TAP TSI compliant timetable data can be generated from railML

› ## Attributes in TAP TSI:

Name in TAP TSI	Usage
Facility type description code	Code to describe the facility (e.g. 5 – first class seats)
Characteristic description code	Code to describe the reservation status (e.g. mandatory reservation)
UNITS QUANTITY	Quantity of the provided facilities
Date or time or period text	Period of availability. Format = yyyy-mm-dd/yyyy-mm-dd
Free text value	May be used to specify the availability days, one day by character ("0" = not available, "1" = available), starting from the first day specified in the period of availability (2380).
DAYS OF WEEK SET IDENTIFIER	String data representation of local day(s) of the week (Monday = 1, Tuesday = 2, etc.). Not used if E013/4440 is used to specify the operation days

RailML representation of commercial train attributes

› Proposal:

definition	explanation	mandatory	can be repeated	data presentation	validation	matching element	data type
Facility type description code	To provide additional service information, followed by the period and days of operation. The segment allows the definition of a sub-period, or specific days of the weeks for which the facility is available.		Y (up to 99 times)	[AAA]		rail:railml/rail:timetable/rail:trainParts/rail:trainPart/rail:formationTT/rail:passengerUsage/rail:places/@category	tGenericName
Characteristic description code	Reservation information concerning the facility.		N	[AAA]			
UNITS QUANTITY	Number of facilities available in the service.		N	[NNN]		rail:railml/rail:timetable/rail:trainParts/rail:trainPart/rail:formationTT/rail:passengerUsage/rail:places/@count	tCounter
Date or time or period text	Period of availability. Format = yyyy-mm-dd/yyyy-mm-dd		N	String			
Free text value	May be used to specify the availability days, one day by character ("0" = not available, "1" = available), starting from the first day specified in the period of availability (2380).		N	String			
DAYS OF WEEK SET IDENTIFIER	String data representation of local day(s) of the week (Monday = 1, Tuesday = 2, etc.). Not used if E013/4440 is used to specify the operation days		N	[AAA]			

- "Facility" should be coded as enumeration according to TAP TSI

- The existing element tPlaceCategory should be taken into account

- Missing items in railML: reservation, period of availability

› Attributes in TAP TSI:

Name in TAP TSI	Usage
Special service, coded	Code to describe the service (e.g. 24 – Meal included for 1st class passengers)
Time value	Extra service first time or additional first time (format = hhmm).
Time value	Extra service last time or additional last time (format = hhmm).
Characteristic description code	Code to describe the reservation status (e.g. mandatory reservation)
UNITS QUANTITY	Quantity of the provided services
Party name	Company, which is providing the service
Date or time or period text	Period of availability. Format = yyyy-mm-dd/yyyy-mm-dd
Free text value	May be used to specify the availability days, one day by character ("0" = not available, "1" = available), starting from the first day specified in the period of availability (2380).
DAYS OF WEEK SET IDENTIFIER	String data representation of local day(s) of the week (Monday = 1, Tuesday = 2, etc.). Not used if E013/4440 is used to specify the operation days

› Proposal:

definition	explanation	mandatory	can be repeated	data presentation	validation	matching element	data type
Special service, coded	To specify the time, date, location and additional characteristic information related to a service. This segment may be used to specify any extra service available with the travel service during the given period of operation.		Y (up to 99 times)	[AAA]		rail:railml/rail:timetable/rail:trainParts/rail:trainPart/rail:formationTT/rail:passengerUsage/rail:service/@name	tGenericName
Time value	Extra service first time or additional first time (format = hhmm).		N	String			
Time value	Extra service last time or additional last time (format = hhmm).		N	String			
Characteristic description code	Reservation information concerning the facility.		N	[AAA]			
UNITS QUANTITY	Number of facilities available in the service.		N	[NNN]		rail:railml/rail:timetable/rail:trainParts/rail:trainPart/rail:formationTT/rail:passengerUsage/rail:service/@count	tCounter
Party name	Company, which is providing the service		N	String			
Date or time or period text	Period of availability. Format = yyyy-mm-dd/yyyy-mm-dd		N	String			
Free text value	May be used to specify the availability days, one day by character ("0" = not available, "1" = available), starting from the first day specified in the period of availability (2380).		N	String			
DAYS OF WEEK SET IDENTIFIER	String data representation of local day(s) of the week (Monday = 1, Tuesday = 2, etc.). Not used if E013/4440 is used to specify the operation days		N	[AAA]			

- „Special service" should be coded as enumeration according to TAP TSI

- Missing items in railML: reservation, period of availability

› Train with 16 places in first class, including meal, 240 places in second class

```xml
<rail:trainPart id="d2e204" trainNumber="242" processStatus="actual" description="CNL 242" timetablePeriodRef="d2e69" categoryRef="d2e124">
    <rail:formationTT formationRef="d2e47">
        <rail:passengerUsage>
            <!-- 16 places in first class -->
            <rail:places category="seatingFirstClass" count="16"/>
            <!-- 240 places in second class -->
            <rail:places category="seatingSecondClass" count="240"/>
            <!-- 16 places with Meal included for 1st class passengers -->
            <rail:service name="MealIncludedForFirstClassPassengers" count="16" />
        </rail:passengerUsage>
    </rail:formationTT>
```

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