TAP/TAF

COMMON REQUIREMENTS FOR PASSENGER AND FREIGHT SERVICE

European Rail Infrastructure Managers EIM
European year of rail 2021

FUNCTIONAL AND TECHNICAL SPECIFICATIONS OF SUBSYSTEM

TRAIN PREPARATION

This basic parameter lays down the train running information and train running forecast. It must prescribe how the dialogue between IM and RU, as well as between RU and station manager, are to be maintained in order to exchange train running information and train running forecasts.

'Train ready' message for all trains: The RU shall send a 'train ready' message to the IM every time a train is ready to access the network for the first time, unless under national rules the infrastructure manager accepts the timetable as a 'train ready' message. Messages shall consist at least of:

- Train and/or path Number,
- Train ready indication, which indicates that the train has been prepared and is ready to run.

'Train Composition message' (only for TAF): this message must be sent from the RU to the next RU and to the IM, defining the composition of the train.

SERVICE DISRUPTION INFORMATION

This basic parameter lays down how service disruption information is handled between the RU and the IM. For the purpose of dealing with passengers' complaints, service disruption data shall be kept available for RUs, ticket vendors and/or authorised public bodies for at least 12 months after such data has expired.

General remarks: he railway undertaking shall inform the IM of the operational status of the trains, as defined in OPE TSI Section 4.2.3.3.2.
If train running is interrupted, the IM shall send a 'train running interrupted' message as specified below.

Train Running Interrupted message for all trains: If train running is interrupted, the IM issues this message to the neighbouring IM and to the RUs.
The main data elements in this message are:

- Path and/or train number (train ID),
- Identification of location based on the next location from the location reference file,
- Start time of interruption,
- Scheduled departure date and time at this location,
- Code denoting the reason for and/or description of interruption.

TRAIN RUNNING INFORMATION AND FORECAST

This basic parameter lays down:

- The manner in which the railway undertaking must inform the infrastructure manager that the train is ready to access the network when train departure tasks as defined in OPE TSI Section 4.2.3.3 have been carried out or when the train number has changed.
- How the IM must, at the appropriate time, send train running information to the RU and the next neighbouring IM involved in the operation of the train.

The train running information serves to provide details of the current status of the train at contractually agreed reporting points.
The train running forecast is used to provide information about the estimated time at contractually agreed forecast points.

Train running information for all trains (only for TAP)
The IM shall send a 'train running information' message to the RU. This process shall be performed as soon as the train reaches contractually agreed Reporting Points at which to deliver train running information. An agreed Reporting Point can be, among others, a handover point, a Station or the final destination of the train.
The message shall consist at least of the following:

- Train and/or path Number (train ID),
- Scheduled time and actual time at agreed Reporting Point,
- Identification of the Reporting Point,
- Status of train at the Reporting Point (arrival, departure, passage, departure from originating station, arrival at final destination).

Train running forecast for all trains (only for TAP)
The IM shall send a 'train running forecast' message to the railway undertaking.
The message must consist at least of:

- train and/or path number (train ID),
- for each agreed forecast point:
- scheduled time and forecast time,
- identification of the agreed forecast point,
- status of train at agreed forecast point (arrival, departure, passage, arrival at final destination).

Train Running Forecast message (only for TAF)
This message must be issued by the IM to the RU, who is running the train, for handover points, interchange points and for the train.

Train Running Information message and Train Delay (only for TAP)
This message must be issued by the IM to the RU running the train upon:

- Departure from departure point, arrival at destination,
- Arrival and departure at handover points, interchange points and at agreed reporting points based on contract

COMMON INTERFACE FOR RU/IM COMMUNICATION

The common interface is mandatory for each actor in order to join the rail interoperability community and has to be able to handle:

- Message formatting of outgoing messages according to the metadata,
- Signing and encryption of outgoing messages,
- Addressing of outgoing messages,
- Authenticity verification of incoming messages,
- Decryption of incoming messages,
- Conformity checks of incoming messages according to the metadata,
- Handling the single common access to the various databases.

Each instance of the common interface will have access to all the data required according to the TSI within each railway undertaking, infrastructure manager, etc., whether the relevant databases are central or individual. Based on the results of verification of the authenticity of incoming messages, a minimum level of message acknowledgement can be implemented:

- Positive: send ACK;
- Negative: send NACK.

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FUNCTIONAL AND TECHNICAL SPECIFICATIONS OF SUBSYSTEM

HANDLING OF SHORT TERM TIMETABLE DATA FOR TRAINS

This basic parameter lays down how Short notice Path Requests should be handled between the 'Access Party' (AP) and the IM. These requirements are valid for all Short Notice Path Requests.
Each IM is responsible for the suitability of a path on their infrastructure, and the RU is obliged to check the train characteristics against the values given in the details of its contracted path.
The following messages shall comply with the document Schema – messages/datasets catalogue needed for the RU/IM communication of TAP TSI:

- Path Request message: This message is sent to the IM by the AP.
- Path Details message: The IM sends this message with the following main content to the requesting AP in reply to that AP's path request.
- 'Path Not Available' message: The IM sends this message to the requesting AP in reply to the AP's path request in the event of no path being available.
- Path Confirmed message: The requesting AP uses this message to book/confirm the path proposed by the IM.
- Path Details Refused message: The requesting AP uses this message to reject the path details proposed by the relevant IM.
- Path Cancelled message: This message is used by an AP to cancel a path it has booked.
- 'Receipt Confirmation' message: This message is exchanged between IMs and APs when the required response to any of the above messages cannot be made available within 5 minutes.
- 'Booked Path No Longer Available' message: The IM uses this message to let the AP know that a path which has been booked is no longer available.

VARIOUS REFERENCE FILES AND DATABASES

For the operation of passenger trains on the European network, the following reference files must be available and accessible to all service providers IMs, RUs, authorised third parties and station managers). The data must represent the actual status at all times.
Reference files for TAP:

- Reference file of the coding for all infrastructure managers, railway undertakings, station managers, service provider companies,
- Reference file of the coding of locations,
- Reference file of all existing train control systems,
- Reference file of all different locomotive types,
- Reference file of all European maintenance workshops,
- Reference file for European reservation systems,
- Reference file of codes for timetable exchange purposes,
- Reference file of codes for tariff exchange purposes,
- Message-dataset catalogue,
- Directory of code list,
- Any other files and code lists that are needed for the use of the technical document(s) in the annexes (these will be defined during phase one).

Where a reference file is in common use with the TAF TSI, its development and use shall be as close as possible to the implemented TAF TSI in order to achieve optimum synergies.
Reference files for TAF TSI:

- Locally stored and administered: Reference File of the emergency services, correlated to type of hazardous goods.
- Centrally stored and administered:
  - Reference File of the Coding for all IMs, RUs, Service provider companies;
  - Reference File of the Coding for Freight Transport Customers;
  - Reference File of the Coding of Locations (Primary and subsidiary).

Other Databases (only for TAF): To allow for the tracking of train and wagon movements, the following databases, updated at each relevant event in real time, must be installed. Authorised entities such as keepers and fleet managers must have access to the data relevant to fulfil their functions, according to bilateral agreements.

- Wagon and Intermodal Unit Operational Database,
- Trip plan for wagon/Intermodal unit.

For intermodal transport, the data messages containing the identifiers of the loading units will use either a BIC- or an ILU-Code according to ISO 6346 and EN 13044 respectively.

Additional requirements concerning databases: Authentication, Security, ACID, Access control, Tracing, Locking strategy, Multiple access, Reliability, Availability, Maintainability, Safety, Compatibility, Import facility, Export facility, Mandatory fields, Plausibility checks, Response times, Performance aspects, Capacity aspects, Historical data, Back-up strategy, Commercial aspects and Privacy aspects.

OPERATING RULES

DATA QUALITY

For the purposes of data quality assurance, the originator of any TSI message will be responsible for the correctness of the data content of the message at the time when the message is sent. Where the source data for data quality assurance purposes are available from the databases provided as part of the TSI, the data contained within those databases must be used for data quality assurance.
Where the source data for data quality assurance purposes is not supplied by the databases provided as part of this TSI, the originator of the message must carry out the data quality assurance check from their own resources.
Data are of high quality if they are fit for their intended uses, which means that they:

- are error-free
- possess the desired features

The main characteristics of data quality are: Accuracy, Completeness, Consistency, Timeliness.

OPERATING THE CENTRAL REPOSITORY

For the purpose of data quality assurance, the entity operating the Central Repository shall be responsible for the updating and quality of the Metadata and the directory, and also for the administration of the access control. The quality of the Metadata in terms of completeness, consistency, timeliness and accuracy shall enable appropriate functioning for the purposes of the TAP/TAF TSI.

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TELEMATICS APPLICATIONS FOR PASSENGER SERVICE

COMMISSION REGULATION (EU) NO 454/2011
ENTRY INTO FORCE: 05/05/2011

WHAT DOES IT CONCERN TO?

This TSI concerns the telematics applications subsystem and applies to applications for passenger services, including systems providing passengers with information before and during the journey, reservation and payment systems, luggage management and management of connections between trains and with other modes of transport.

ESSENTIAL REQUIREMENTS

- Safety
- Reliability and availability
- Environmental protection
- Technical compatibility

WHAT DOES IT CONTAIN?

- Introduction with the technical, risk, and geographical scopes
- Definitions of the subsystem and of the scope
- Essential requirements
- Characteristics of the subsystem, particularly the functional and technical specifications of the subsystem and of the interfaces
- Interoperability constituents
- Assessment of conformity and/or suitability for use of the constituents and verification of the subsystem
- Implementation

GEOGRAPHICAL SCOPE

The geographical scope of TAP TSI is the trans-European rail system meaning the trans-European conventional and high-speed rail systems as set out in Annex I of Directive 2008/57/EC.

TECHNICAL SCOPE

TAP TSI concerns the element 'applications for passenger services' of the subsystem 'telematics applications' of the trans-European rail system referred to in Article 6(1) of Directive 2008/57/EC. It is included in the functional area of the list in Annex II to Directive 2008/57/EC.

FUNCTIONAL AND TECHNICAL SPECIFICATIONS OF SUBSYSTEM

HANDLING OF INFORMATION PROVISION IN THE STATION AREA

- This basic parameter lays down how the station manager shall provide the customer with train running information within the station area.
- The provisions shall apply only if there has been a renewal, major upgrade or new installation of voice announcements and/or display systems.
- The provisions of this basic parameter shall apply at least in respect of stations at which trains performing international service stop.

THE QUALITY OF THE DATA AND INFORMATION

All those to whom TAP TSI is addressed shall be responsible for making available up-to-date, coherent, accurate and complete data at the appropriate time and in the appropriate format to other RUs, or to IMs, or to a third party. Each actor addressed by TAP TSI shall be responsible for publishing up-to- date, coherent, accurate and complete information at the appropriate time and in the appropriate content to the customers (passengers), or to other actor.

- It shall be ensured that the data or information shared between those basic parameters is used in a coherent manner .
- The actors shall together ensure that the parts of the common data or information provided are up-to-date, coherent, accurate, complete and compatible.
- The quality of data or information provided by the actors for the purposes of TAP TSI shall be such that it enables the actors to issue tickets and achieve a level which makes it possible for the actors a to provide the information as set out in Article 10 of the Regulation on Rail Passengers' Rights and Obligations.

IMPLEMENTATION

Phase one: Detailed IT specifications and master plan

1. To define the data exchange system consisting of common components and of the interconnection of information and communication systems of stakeholders able to fulfil the requirements of this Regulation.
2. To confirm such a system from the viewpoint of technical and economic feasibility.
3. To draw up a roadmap of the activities deemed necessary in order to implement the system, including appropriate milestones for the monitoring of the progress of its implementation by the EC, the ERA, the MS and the stakeholders concerned.

Phase two: Development

- Project governance: In order to guarantee the appropriate development of the system the governance structure as described in B.61: TAP Governance, shall be progressively implemented by the actors.
- Master Plan: In order to guarantee the appropriate development of the system all actors concerned shall cooperate and implement the system in full adherence to the master plan as specified TAP Master plan.
- Development of the system: All actors concerned shall cooperate and develop the retail architecture of the system according to the architecture provisions as described in B.60: TAP Retail Architecture.

Phase three: Deployment

All actors concerned shall deploy the system following the amendment of the TAP TSI.

Note: This page summarizes specific TAP requirements for passenger service.
What is a TSI? Is a document that defines the technical and operational standards which must be met by each subsystem or part of subsystem in order to meet the essential requirements and ensure the interoperability of the railway system of the European Union.
For each of those subsystems, the essential requirements need to be specified and the technical specifications determined, particularly in respect of constituents and interfaces, in order to meet those essential requirements. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L0797&from=EN
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In case of doubt please contact tecteam@eimrail.org

TELEMATICS APPLICATIONS FOR FREIGHT SERVICE

COMMISSION REGULATION (EU) NO 1305/2014
ENTRY INTO FORCE: 11/12/2014

WHAT DOES IT CONCERN TO?

This TSI concerns the telematics applications subsystem and applies to applications for freight services, including information systems (real-time monitoring of freight and trains), marshalling and allocation systems, reservation, payment and invoicing systems, management of connections with other modes of transport and production of electronic accompanying documents.

ESSENTIAL REQUIREMENTS

- Safety
- Reliability and availability
- Environmental protection
- Technical compatibility

WHAT DOES IT CONTAIN?

- Introduction with the technical, risk, and geographical scopes
- Definitions of the subsystem and of the scope
- Essential requirements
- Characteristics of the subsystem, particularly the functional and technical specifications of the subsystem and of the interfaces
- Interoperability constituents
- Assessment of conformity and/or suitability for use of the constituents and verification of the subsystem
- Implementation

GEOGRAPHICAL SCOPE

It applies to high-speed lines, conventional lines (both passenger and freight) and all vehicles likely to travel all or part of the Union's network (locomotives and passenger rolling stock, freight wagons and special vehicles, such as on-track machines).

It does not apply to metros, trams and light rail vehicles, privately owned railway infrastructure, infrastructure and vehicles reserved for a strictly local, historical or touristic use.

TECHNICAL SCOPE

TAF TSI concerns the element 'applications for freight services' of the subsystem 'telematics applications' included in the functional area of the list in Annex II to Directive 2008/57/EC.
Its purpose is to ensure the efficient interchange of information by setting the technical framework, to achieve a transport process that is as economically viable as possible. It covers the applications for freight services and the management of connections with other modes of transport which means that it concentrates on the transport services of an RU in addition to the pure operation of trains.
TAF TSI also has an impact on the conditions of use of rail transport by users. In this respect the term users means not only infrastructure managers or railway undertakings but also all other service providers such as wagon companies, intermodal operators and even customers.
TAF TSI shall apply to networks with the following nominal track gauges: 1435 mm, 1520 mm, 1524 mm, 1600 mm and 1668 mm

IMPLEMENTATION

Phase one: Detailed IT specifications and master plan
The functional requirement specifications which shall be used as basis for above technical architecture during the development and deployment of the computerised system are in the appendices A to F listed in Appendix I to TAF Regulation.
The mandatory master plan from-concept-to-delivery of the computerised system, based on the Strategic European Deployment Plan (SEDP) prepared by the rail sector, includes the core architecture components of the system and the identification of the major activities which shall be executed.

Phase two: Development
RUs, IMs and wagon keepers shall develop and deploy the TAF computerised system in accordance with the provisions of this chapter in the regulation. 2019 TAF TSI implementation status report of the European union agency for railways

Phase three: Deployment
RUs, IMs and wagon keepers shall develop and deploy the TAF computerised system in accordance with the provisions of this chapter in the regulation.

Note: This page summarizes specific TAF requirements for freight service.
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In case of doubt please contact tecteam@eimrail.org