COMMISSION REGULATION (EU) No 454/2011

of 5 May 2011

on the technical specification for interoperability relating to the subsystem 'telematics applications for passenger services' of the trans-European rail system

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community [1], and in particular Article 6(1) thereof,

Whereas:

(1) Pursuant to Article 2(e) of Directive 2008/57/EC, the rail system is subdivided into structural and functional subsystems. Each of the subsystems should be covered by a technical specification for interoperability (TSI).

(2) By Decision C(2006) 124 final of 9 February 2007, the Commission gave a mandate to the European Railway Agency (the Agency) to develop technical specifications for interoperability under Directive 2001/16/EC of the European Parliament and of the Council of 19 March 2001 on the interoperability of the trans-European conventional rail system [2]. Under the terms of that mandate, the Agency was requested to draw up the draft TSI related to telematics applications for passengers. It submitted a recommendation on 31 May 2010. This recommendation should be complemented by an additional recommendation following a mandate from the Commission to cover tariffs, ticketing and reservation for domestic journeys. In drafting its recommendation, the Agency should take into account national developments and technical developments in the area of innovative ticketing and intermodality.

(3) Technical specifications for interoperability are specifications adopted in accordance with the Directive 2008/57/EC. The TSI in Annex covers the subsystem relating to telematics applications for passenger services in order to meet the essential requirements and ensure the interoperability of the rail system.

(4) The efficient interconnection of the information and communication systems of the different infrastructure managers and railway undertakings is considered to be important, in particular for the provision of up-to-date information and ticketing services to passengers.

(5) The purpose of this TSI is to define procedures and interfaces between all types of actors to provide information and issue tickets to passengers via widely available technologies. It should include the exchange of information for the following aspects: systems providing passengers with information before and during the journey, reservation and payment systems, luggage management, issuing of tickets via ticket offices, ticket selling machines, on board trains, telephone, Internet or any other widely available information technology, management of connections between trains and with other modes of transport.

(6) The information provided to passengers should be accessible in accordance with the requirements of Commission Decision 2008/164/EC of 21 December 2007 concerning the technical specification for interoperability relating to 'persons with reduced mobility' in the trans-European conventional and high-speed rail system [3].

(7) The provisions of this TSI should not prejudge decisions taken by Member States under Article 2 of Regulation (EC) No 1371/2007 of the European Parliament and of the Council [4].

(8) Detailed specifications are necessary to ensure that this Regulation can be applied. Those specifications define the data exchange system based on common components and on the interconnection of the information and communication systems of the relevant actors. Moreover, a description of the governance for the development, deployment and operation of this system, and a master plan for the development and deployment of this system are necessary as well. These deliverables will be produced during an initial phase of implementation. The TSI therefore needs to be amended at a later stage in order to take these deliverables (detailed specifications, governance and master plan) into account.

[1] OJ L 191, 18.7.2008, p. 1.
[2] OJ L 110, 20.4.2001, p. 1.
[3] OJ L 64, 7.3.2008, p. 72.
[4] OJ L 315, 3.12.2007, p. 14.

(9) In accordance with Article 5(8) of Directive 2008/57/EC, the technical documents published by the Agency that are referred to in this Regulation should be regarded as Annexes to the TSI and should become mandatory from the moment the TSI is applicable.

(10) The measures provided for in this Regulation are in accordance with the opinion of the Committee established in accordance with Article 29(1) of Directive 2008/57/EC,

HAS ADOPTED THIS REGULATION:

Article 1

1. The Technical Specification for Interoperability (hereinafter 'TSI') relating to 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 is set out in Annex I.

2. The TSI shall apply to the element 'applications for passenger services' of the subsystem 'telematics applications' as defined in Section 2.5 of Annex II to Directive 2008/57/EC.

3. With regard to rail passenger services operated from or to third countries, compliance with the requirements of this TSI is subject to the availability of information from actors outside the EU unless bilateral agreements provide information exchange compatible with the TSI.

Article 2

This TSI shall be implemented in three phases:

— a first phase establishing detailed IT specifications, governance and master plan (phase one),

— a second phase concerning the development of the data exchange system (phase two), and

— a final phase concerning the deployment of the data exchange system (phase three).

Article 3

1. The European Railway Agency shall publish on its website the technical documents listed in Annex III and shall keep them up to date. It shall implement a change management process for the technical documents as specified in Section 7.5.2 of Annex I. It shall report to the Commission on the progress of these documents. The Commission shall inform the Member States through the Committee established under Article 29 of Directive 2008/57/EC.

2. The European Railway Agency shall publish on its website the reference files referred to in Section 4.2.19 of Annex I and shall keep them up to date. It shall implement a change management process for such files. It shall report to the Commission on the progress of these documents. The Commission shall inform the Member States through the Committee established under Article 29 of Directive 2008/57/EC.

3. The European Railway Agency shall submit its recommendation on the open points listed in Annex II to this Regulation by 31 March 2012.

Article 4

Railway undertakings, infrastructure managers, station managers, ticket vendors and the Agency shall support the works of phase one as specified in Section 7.2 of Annex I by providing functional and technical information and expertise.

Article 5

The representative bodies from the railway sector acting at European level as defined in Article 3(2) of Regulation (EC) No 881/2004 of the European Parliament and of the Council [1] together with a representative of ticket vendors and a representative of European passengers, shall develop the detailed IT specifications, the governance and the master plan as described in Chapter 7 of Annex I and shall submit them to the Commission not later than 1 year after the publication of this Regulation in the *Official Journal of the European Union*.

Article 6

Member States shall ensure that railway undertakings, infrastructure managers, station managers and ticket vendors are informed of this Regulation.

Article 7

This Regulation shall be amended taking into account the results of phase one as described in Section 7.2 of Annex I.

[1] OJ L 164, 30.4.2004, p. 1.

Article 8

This Regulation shall enter into force on the day following its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 5 May 2011.

For the Commission
The President
José Manuel BARROSO

ANNEX I

1. INTRODUCTION

1.1. **Technical scope**

This Technical Specification for Interoperability (hereinafter referred to as the 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.

1.2. **Geographical scope**

The geographical scope of this TSI is the trans-European rail system as defined in Article 2(a) of Directive 2008/57/EC.

1.3. **Content of this TSI**

The content of this TSI is in accordance with Article 5 of Directive 2008/57/EC.

This TSI also comprises, in Chapter 4, the operating and maintenance rules specific to the technical and geographical scope.

2. DEFINITION OF THE SUBSYSTEM/SCOPE

2.1. **Subsystem**

This TSI covers:

(a) the functional subsystem 'Telematics applications for passenger services';

(b) the part of the maintenance subsystem relating to the telematics applications for passenger services (i.e. methods of use, management, updating and maintenance of databases, software and data communication protocols, etc.).

It includes the provision of information on the following aspects:

(a) systems providing passengers with information before and during the journey;

(b) reservation and payment systems;

(c) luggage management;

(d) issuing of tickets via ticket offices or ticket selling machines or telephone or Internet, or any other widely available information technology, and on board trains;

(e) management of connections between trains and with other modes of transport.

2.1.1. *Providing passengers with information before and during the journey*

Annex II to Regulation (EC) No 1371/2007 on rail passengers' rights and obligations lists the minimum information to be provided to passengers by railway undertakings and/or by ticket vendors.

2.1.2. *Reservation and payment systems*

Information will be exchanged between the reservation and ticketing systems, and the payment systems of the different ticket vendors and railway undertakings in order to enable the passenger to pay for the above tickets, reservations and supplements for the journey and service chosen by the passenger.

2.1.3. *Luggage management*

Information will be provided to the passenger relating to the complaints procedures in the event of registered luggage being lost during the journey. Moreover, passengers will be provided with information about sending or picking up registered luggage.

2.1.4. *Issuing of tickets via ticket offices or ticket selling machines or telephone or Internet or any other widely available information technology*

Information will be provided between railway undertakings and ticket vendors in order to enable the latter to issue, where available, tickets, through tickets, and supplements, and to make reservations.

2.1.5. *Management of connections between trains and with other modes of transport*

A standard is proposed for the provision of information to and exchange of information with other modes of transport.

3. ESSENTIAL REQUIREMENTS

3.1. **Compliance with the essential requirements**

In accordance with Article 4(1) of Directive 2008/57/EC, the trans-European rail system, subsystems and interoperability constituents must meet the essential requirements set out in general terms in Annex III to the Directive.

Within the scope of the present TSI, fulfilment of relevant essential requirements quoted in Chapter 3 of this TSI will be ensured for the subsystem by compliance with the specifications described in Chapter 4: Characterisation of the subsystem.

3.2. **Aspects relating to general requirements**

The relevance of the general requirements to the telematics applications subsystem for passengers is determined as follows:

3.2.1. *Safety*

The safety-related essential requirements that apply to the telematics applications subsystem for passengers are the following: essential requirements 1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5 of Annex III to Directive 2008/57/EC. These essential requirements are not relevant to the telematics applications subsystem.

3.2.2. *Reliability and availability*

The essential requirement 1.2 of Annex III to Directive 2008/57/EC is met by the following sections:

— Section 4.2.19: Various reference files and databases,

— Section 4.2.21: Networking and communication.

3.2.3. *Health*

Essential requirements 1.3.1 and 1.3.2 of Annex III to Directive 2008/57/EC are not relevant to the telematics applications subsystem.

3.2.4. *Environmental protection*

Essential requirements 1.4.1, 1.4.2, 1.4.3, 1.4.4 and 1.4.5 of Annex III to Directive 2008/57/EC are not relevant to the telematics applications subsystem.

3.2.5. *Technical compatibility*

Essential requirement 1.5 of Annex III to Directive 2008/57/EC is not relevant to the telematics applications subsystem.

3.3. **Aspects relating specifically to the telematics applications for the passenger services subsystem**

The relevance of the general requirements to the telematics applications for the passenger services subsystem is determined as follows:

3.3.1. *Technical compatibility*

Essential requirement 2.7.1 of Annex III to Directive 2008/57/EC is met in particular by the following sections:

— Section 4.2.19: Various reference files and databases,

— Section 4.2.21: Networking and communication.

3.3.2. *Reliability and availability*

Essential requirement 2.7.2 of Annex III to Directive 2008/57/EC is met in particular by the following sections:

— Section 4.2.19: Various reference files and databases,

— Section 4.2.21: Networking and communication.

However, this essential requirement, especially the method of use to guarantee the efficiency of these telematics applications and the quality of the service, is the foundation for the complete TSI and is not restricted only to the sections mentioned above.

3.3.3. *Health*

Regarding essential requirement 2.7.3 of Annex III to Directive 2008/57/EC, this TSI does not specify any requirements in addition to existing national and European rules related to minimum rules on ergonomics and health protection of an interface between these telematics applications and users.

3.3.4. *Safety*

Essential requirement 2.7.4 of Annex III to Directive 2008/57/EC is met by the following sections:

— Section 4.2.19: Various reference files and databases,

— Section 4.2.21: Networking and communication.

4. CHARACTERISATION OF THE SUBSYSTEM

4.1. **Introduction**

Taking all the applicable essential requirements into account, the telematics application for passenger services subsystem is characterised by the following basic parameters which are described in the following sections.

4.2. **Functional and technical specifications of the subsystem**

4.2.1. *Exchange of timetable data*

This basic parameter lays down how the railway undertaking shall perform the exchange of timetable data.

This basic parameter shall ensure that timetables comprising the data elements defined below shall be made available to another railway undertaking, to third parties and to public bodies. This basic parameter shall further ensure that each railway undertaking shall provide accurate and up-to-date timetable data.

The provisions of this basic parameter shall apply to the passenger services of the railway undertaking.

This basic parameter shall have the following process:

4.2.1.1. The railway undertaking makes available its own timetable data to other railway undertakings and to third parties

The railway undertaking shall make available all of its timetable data for which the railway undertaking is responsible as sole or joint carrier and which are related to transport services which are available for purchase by the public by guaranteeing access to all railway undertakings, to third parties and to public bodies. The railway undertaking shall ensure that the timetable data are accurate and up-to-date. The timetable data shall be kept available at least for 12 months after such data have expired.

Where a railway undertaking operates a transport service for which it is one of the Joint carriers, the railway undertaking shall ensure, together with all the other Joint carriers, that its part of the timetable are accurate and up-to-date.

The main content of the timetable data shall be:

— Basic principles of train variants

— Representation of a train

— Different possible ways of representing days of operation

— Train category/service mode

— Transport service relationships

— Coach groups attached to trains

— Joining to, splitting from

— Through connections (connecting to)

— Through connections (change of service number)

— Details of transport services

— Stops with traffic restrictions

— Overnight trains

— Crossing of time zones

— Pricing regime and reservation details

— Information provider

— Reservation provider

— Service facilities

— Accessibility of the train (including scheduled existence of priority seats, wheelchair spaces, universal sleeping compartments — see PRM TSI 4.2.4) — see Section 4.2.6.1

— Service extras

— Connecting — Timing between transport services

— Station list.

For those transport services over which the railway undertaking has sole control, the annual timetable shall be made available at least 2 months before that timetable comes into force. For the remaining transport services, the railway undertaking shall make the timetable available as soon as possible.

The railway undertaking shall make available any changes to the annual timetable in a series of timetable updates at least 7 days before those changes take effect. This obligation shall apply only if the change is known to the railway undertaking seven or more days in advance of it taking effect.

The above process and the information used therefor shall comply with the technical document(s):

— B.4 (see Annex III).

4.2.2. *Exchange of tariff data*

This basic parameter lays down how the railway undertaking shall perform the exchange of tariff data.

This basic parameter shall ensure that tariff data in the format defined below shall be available for other railway undertakings or for third parties authorised to sell.

The provisions of this basic parameter shall apply in respect of all passenger tariffs of the railway undertaking for domestic, international and foreign sales.

This basic parameter shall have following process:

4.2.2.1. The railway undertaking makes available its own tariffs to other railway undertakings, authorised public bodies and third parties authorised to sell

The railway undertaking shall make available all its tariffs (including fare tables) by guaranteeing access to the railway undertakings and third parties to which it grants authorisation to sell according to distribution agreements and to authorised public bodies. The railway undertaking shall ensure that the tariff data are accurate and up-to-date.

Where a railway undertaking operates a transport service for which it is one of the joint carriers, the railway undertaking shall ensure, together with all the other joint carriers, that the tariff data are accurate and up-to-date.

The main content of tariff data intended for international or foreign sales shall be as defined in Annex IV.

Tariff data intended for international or foreign sales shall be made available to railway undertakings and third parties authorised to sell according to distribution agreements and to authorised public bodies, at least as far in advance as provided for in Annex IV.

The above process and the information used for it shall be compliant for tariff data intended for international or foreign sales with the technical document(s):

— B.1 (see Annex III),

— B.2 (see Annex III),

— B.3 (see Annex III).

Tariff data intended for domestic sales shall be made available to railway undertakings and to third parties which are authorised to sell, and also to authorised public bodies, at least as long in advance as it is the case for tariff data intended for international or foreign sales.

The above process and the information used for it in respect of tariff data intended for domestic sales shall comply with the technical document(s) to be developed by the Agency (see Annex II).

4.2.3. *Handling of information on contact details of the railway undertaking*

This basic parameter lays down how the railway undertaking shall provide information about its official website from which customers can obtain accurate information.

The provisions of this basic parameter shall apply to all railway undertakings.

This basic parameter shall have following process:

4.2.3.1. The railway undertaking makes available a dataset of its contact details

The railway undertaking shall make available to other railway undertakings, to the Agency, to third parties and to public bodies a dataset that includes its carrier name, carrier code and its official website. The official website referred to in this basic parameter shall be machine readable and compliant with web content accessibility guidelines. If a railway undertaking operates a joint business unit with (an)other railway undertaking(s), the name of the joint business unit, carrier codes and official website shall be made available to the other railway undertakings.

When a railway undertaking makes its timetable information available to other railway undertakings pursuant to Section 4.2.1.1, it shall ensure that the carrier name in the timetable delivery has a corresponding carrier name in this dataset. If changes have occurred, the railway undertaking shall update the content of the dataset as soon as possible.

4.2.4. *Handling of information concerning conditions of carriage*

This basic parameter lays down how the railway undertaking shall handle information concerning conditions of carriage.

This basic parameter shall ensure that conditions of carriage are available on the official website of the railway undertaking.

The provisions of this basic parameter shall apply to the passenger services of the railway undertaking.

This basic parameter shall entail the following process:

4.2.4.1. The railway undertaking publishes information relating to conditions of carriage

The railway undertaking shall publish information relating to:

— general conditions of carriage for rail passengers (GCC-CIV/PRR),

— its own conditions of carriage,

— a link to Regulation (EC) No 1371/2007 of 23 October 2007 on rail passengers' rights and obligations,

— the accepted means of payment,

— sales and after-sales conditions, especially for the exchange and reimbursement of tickets,

— procedures for the submission of complaints,

at least on its official website. This website shall comply with web content accessibility guidelines which take into account the needs of people with auditory and/or visual impairment.

This process shall be performed for the first publication not later than 6 months after this TSI comes into force. Changes to this information shall be published at least 6 days before they enter into force. The railway undertaking shall list the articles which have been changed compared to the previous version. On each such occasion the railway undertaking shall maintain the earlier version of this information on its official website.

4.2.5. *Handling of information concerning carriage of registered luggage*

This basic parameter lays down how the railway undertaking shall ensure the provision of information for the carriage of registered luggage if the service is offered by the railway undertaking. If the service is not offered, the railway undertaking shall provide the information that the service is not offered.

This basic parameter shall ensure that information on the handling of registered luggage shall be available to the passenger.

This basic parameter shall entail the following process:

4.2.5.1. The railway undertaking publishes conditions for the handling of registered luggage

The railway undertaking shall publish for the attention of passengers the conditions for the handling of registered luggage where the railway undertaking offers such handling. Where the service is not offered, the railway undertaking shall publish information to that effect. This information shall be published at least on the official website of the railway undertaking. This website shall comply with web content accessibility guidelines which take into account the needs of people with auditory and/or visual impairment.

This process shall be performed for the first publication not later than 6 months after this TSI comes into force. Changes to this information shall be published at least 6 days before the modification enters into force. The railway undertaking shall list the articles which have been modified compared to the previous version. The railway undertaking shall on each such occasion maintain the previous version of this information on its official website.

4.2.6. *Handling of information concerning carriage and assistance of persons with reduced mobility (PRM)*

This basic parameter lays down how the railway undertaking, ticket vendor, and/or station manager must ensure the provision of information on the carriage and assistance of PRMs.

This basic parameter shall ensure that information on the carriage and assistance of PRMs shall be available to the passenger. If the railway undertaking uses IT communication for the purposes of sending an availability/reservation request for PRM assistance, the system to which it is addressed shall at least be able to handle messages according to the protocol specified in the technical document B.10 (see Annex III). In addition, the system shall issue a confirmation number for the assistance reservation — this is essential in order to provide the customer/passenger with the guarantee and confidence that the assistance will be provided and to establish accountability and responsibility for the provision of assistance. Those messages contain all the information needed in order for the railway undertaking, ticket vendor and/or station manager to issue to the PRM a confirmation number (for each departure and arrival of each journey) to reserve assistance.

The provisions of this basic parameter shall apply as follows: the handling of information concerning the carriage of PRM shall be applied in respect of the passenger services of the railway undertaking. The provisions of this basic parameter regarding electronic request/confirmation shall be applied if there is an agreement between the requesting and the addressed parties.

This basic parameter shall entail the following processes:

4.2.6.1. The railway undertaking publishes information on the accessibility of rail services and on the conditions of access to rolling stock

The railway undertaking shall publish the following information:

— the train types/numbers and/or line number (if no train number is available for the public) where PRM facilities are available,

— the types and minimum quantities of PRM facilities in the above trains (such as wheelchair seat, PRM berth, PRM toilet, location of PRM seats) under normal operating conditions,

— the methods of requesting assistance for boarding and disembarking from trains (including PRM notice period, address, e-mail, operating hours and the telephone number of the office(s) for PRM-assistance) according to Article 24 of the Regulation on Passenger Rights,

— the maximum size and weight of wheelchair (including the weight of the PRM) permitted,

— the transport conditions for accompanying persons and/or animals,

— conditions of access to the station building and platforms, including whether the station is classified as accessible for PRMs and whether is staffed for PRM support,

at least on its official website. This website shall comply with web content accessibility guidelines which take into account the needs of people with auditory and/or visual impairment.

This process shall be performed for the first publication at the latest 6 months after this TSI comes into force. Any modifications to this information shall be published at least 6 days before the modification enters into force. The railway undertaking shall list the articles which have been modified compared to the previous version. On each occasion the railway undertaking shall maintain on its official website the previous version of this information.

4.2.6.2. The railway undertaking or ticket vendor sends an availability/reservation request for PRM assistance to the addressed system(s)

If the railway undertaking or ticket vendor uses IT communication for the purposes of sending an availability/reservation request for PRM assistance, such request must comply with the relevant provisions.

The possibility of making a reservation for PRM assistance shall be subject to the existence of a commercial agreement between the carrier(s) and distributor(s) involved. Such agreements can include charges, technical and safety standards, specific limitations in terms of trains, origins/destinations, tariffs, sales channels, etc.

Subject to an agreement between the parties involved, the requesting distribution system shall send to the system requests for the relevant train availability/reservation in respect of the specified type of assistance.

The main types of requests shall be:

— Availability request,

— Reservation request,

— Partial cancellation request,

— Full cancellation request.

This process shall be performed following a request from a customer transmitted to the system of the railway undertaking or ticket vendor.

The data elements and the information content of the message used to meet the obligations shall comply:

— either with elements defined in the technical document B.10 (see Annex III), in which case all addressed systems must be able to understand the request and to respond,

— or with otherwise defined standards, in which case the addressed system must be able to understand the request and to reply only if there is a specific agreement with the requesting system.

4.2.6.3. Addressed system sends an availability/reservation response for PRM assistance

If the railway undertaking uses IT communication for the purposes of sending of an availability/reservation response for PRM assistance, it shall abide by the terms and conditions of this process.

If a request for reservation of PRM assistance has been properly formulated according to the process described above, the addressed system shall send to the requesting system an availability/reservation response for the requested assistance type.

The main types of reservation responses shall be:

— Reply about availability,

— Confirmation of reservation request,

— Confirmation of partial cancellation request,

— Confirmation of complete cancellation request,

— Negative reply.

This process shall be performed in response to an incoming request received by the system to which it is sent according to the process described above.

The data elements and the message information contents used to meet the obligations shall comply:

— either with the elements defined in technical document B.10 (see Annex III),

— or with otherwise defined standards,

according to the protocol used by the requesting system.

4.2.7. *Handling of information concerning the carriage of bicycles*

This basic parameter lays down how the railway undertaking shall ensure the provision of information concerning the carriage of bicycles.

This basic parameter shall ensure that information for the carriage of bicycles shall be available to the passenger. The attributing system shall be able to handle at least messages according to the protocol specified in technical document B.5 (see Annex III).

The provisions of this basic parameter shall apply as follows: the handling of information concerning the carriage of bicycles shall be applied in respect of the passenger services of the railway undertaking where carriage of bicycles is offered. The provisions of this basic parameter regarding an electronic request/confirmation shall be applied if there is an agreement between the requesting and the attributing parties for the provision of services where such carriage may be reserved or is subject to compulsory reservation.

This basic parameter shall have the following processes:

4.2.7.1. The railway undertaking publishes conditions for handling of bicycles

The railway undertaking shall publish for the attention of passengers the conditions for carriage of bicycles where such carriage is offered by the railway undertaking. This information shall be published at least on the railway undertaking's official website. This website shall meet web content accessibility guidelines which take into account the needs of people with auditory and/or visual impairment. These conditions shall list at least:

— the train types/numbers or line number (if no train number is available for the public) where carriage of bicycles is available,

— particular times/periods where carriage of bicycles is permitted,

— the fares for the carriage of bicycles,

— whether a specific reservation for a bicycle storage place in the train is available or required (including bicycle notice period, operating hours, e-mail and/or telephone).

The first publication of these conditions shall take place not later than 6 months after this TSI comes into force. Changes to this information shall be published at least 6 days before the change comes into force. The railway undertaking shall list the articles which have been changed compared to the previous version. The railway undertaking shall in all cases maintain the previous version of this information on its official website.

4.2.7.2. A railway undertaking or ticket vendor sends an availability/reservation request for bicycles to the attributing reservation system

The possibility of making a reservation shall be subject to the existence of a commercial agreement between the carrier(s) and distributor(s) involved. Such agreements can include charges, technical and safety standards, specific limitations in terms of trains, origins/destinations, tariffs, sales channels, etc.

If the railway undertaking or ticket vendor uses IT communication for the purposes of sending a request for availability/reservation for the carriage of bicycles, such communication shall conform to the requirements of this process.

Subject to an agreement between the parties involved, the requesting distribution system shall send requests for the specified bicycle carriage to the attributing system concerning the availability/reservation of the train concerned.

The main types of reservation requests shall be:

— Enquiry about availability,

— Reservation request,

— Partial cancellation request,

— Complete cancellation request.

This process shall be performed following a request from a customer sent to the distribution system of the railway undertaking.

The data elements and the information content of the message used to meet the obligations shall be compliant:

— either with the definitions in technical document B.5 (see Annex III), in which case all attributing systems shall be able to understand the request and to answer,

— or with otherwise defined standards, in which case the attributing system shall be able to understand the request and to answer only if a specific agreement has been concluded with the requesting distribution system.

4.2.7.3. Attributing reservation system sends availability/reservation response for bicycles

If the railway undertaking uses IT communication for the purposes of sending of an availability/reservation answer for the carriage of bicycles, it shall follow the relevant instructions of this process.

If a request for reservation of bicycle spaces has been correctly formulated according to the process above described, the attributing system shall send to the requesting distribution system an availability/reservation response for the requested train.

The main types of reservation responses shall be:

— Reply about availability,

— Confirmation of reservation request,

— Confirmation of partial cancellation request,

— Confirmation of complete cancellation request,

— Negative reply.

This process shall be performed in response to an incoming request arriving at the attributing system according to the process described above.

The data elements and the information content of the message used to meet the obligations shall comply:

— either with information contained in technical document B.5 (see Annex III),

— or with otherwise defined standards,

according to the protocol used by the requesting attributing system.

4.2.8. *Handling of information concerning the carriage of cars*

This basic parameter lays down how the railway undertaking shall ensure the provision of information for the carriage of cars/motorcycles (in the following, the word 'cars' includes motorcycles) if it is offered by the railway undertaking.

This basic parameter shall ensure that information on the carriage of cars shall be available to the passenger. The attributing system shall be able to handle at least messages according to the protocol specified in technical document B.5 (see Annex III).

The provisions of this basic parameter shall apply as follows: the handling of information concerning the carriage of cars shall be applied in respect of the passenger services of the railway undertaking where carriage of cars is offered. The provisions of this basic parameter regarding electronic request/confirmation shall apply if there is an agreement between the requesting and the attributing parties for services where such carriage may be reserved or is subject to mandatory reservation.

This basic parameter shall apply as follows:

4.2.8.1. The railway undertaking publishes conditions for the handling of cars

The railway undertaking shall communicate to the passenger the conditions for carriage of cars where this is offered by the railway undertaking. This information shall be published at least at the railway undertaking's official website. This website shall comply with web content accessibility guidelines which take into account the needs of people with auditory and/or visual impairment.

These conditions shall list at least:

— the train types/numbers on which carrying of cars is available,

— particular times/periods where carrying of cars is available,

— the standard fares for carrying of cars (incl. fares for accommodation of passengers, where accommodation is offered by the railway undertaking),

— specific address and time for loading of cars on to the train,

— specific address and arrival time of the train at the station of destination,

— size, weight and other limitations for the transport of cars.

The first publication shall take place at the latest 6 months after this TSI comes into force. Changes to this information shall be published at least 6 days before they enter into force. The railway undertaking shall list the articles which have been amended. The railway undertaking shall on each occasion keep the previous version of this information on its official website.

4.2.8.2. The railway undertaking or ticket vendor sends an availability/reservation request for cars to the reservation system

The possibility of making a reservation shall be subject to the existence of a commercial agreement between the carrier(s) and distributor(s) involved. Such agreements may include charges, technical and security standards, specific limitations in terms of trains, Origins/Destinations, tariffs, sales channels, etc.

If the railway undertaking or ticket vendor uses IT communication for the purpose of sending availability/reservation requests for the carriage of cars, such communication shall comply with the provisions governing this process.

Subject to an agreement between the parties involved, the requesting distribution system shall send to the attributing system for the relevant train availability/reservation requests for the specified carriage of cars.

The main types of reservation requests shall be:

— Availability request,

— Reservation request,

— Partial cancellation request,

— Complete cancellation request.

This process shall be performed following a request transmitted by a customer to the distribution system of the railway undertaking.

The data elements and the information content of the message used to meet the obligations shall be compliant:

— either with elements defined in technical document B.5 (see Annex III), in which case all attributing systems shall be able to understand the request and to reply,

— or with otherwise defined standards, in which case the attributing system shall be able to understand the request and to answer only if there is a specific agreement with the requesting distribution system.

4.2.8.3. Attributing reservation system sends availability/reservation response for cars

If the railway undertaking uses IT communication for the purpose of sending availability/reservation responses for the carriage of cars, it shall adhere to the rules laid down in respect of this process.

If a request for reservation of cars has been properly formulated according to the process described above, the attributing system shall send an availability/reservation response for the requested train to the requesting distribution system.

The main types of reservation responses shall be:

— Reply about availability,

— Confirmation of reservation request,

— Confirmation of partial cancellation request,

— Confirmation of complete cancellation request,

— Negative reply.

This process shall be performed in response to an incoming request arriving at the attributing system according to the process described above.

The data elements and the information content of the message used to meet the obligations shall comply:

— either with elements defined in technical document B.5 (see Annex III),

— or with otherwise defined standards,

according to the protocol used by the requesting distribution system.

4.2.9. *Handling of availability/reservation*

This basic parameter lays down the manner in which the railway undertakings shall deal with reservations for the accommodation of passengers. All of the various types of accommodation (such as seats, couchettes, sleepers, priority seats, wheelchair spaces, universal sleeping compartments (see PRM TSI Section 4.2.4)) will be designated hereinafter as 'places', unless more specific information is needed. Reservations for the carriage of bicycles, cars and for assistance of PRM, are described in separate basic parameters in separate sections.

Reservation of places may simply concern the booking of accommodation, in addition to the transport contract, or may be part of a combined transaction which includes both accommodation and a transport contract.

This basic parameter shall ensure that the issuing and attributing railway undertakings shall exchange appropriate availability and reservation information. The attributing system shall be able to handle at least messages according to the protocol specified in the technical document B.5 (see Annex III).

The provisions of this basic parameter shall be applied if an agreement between the requesting and the attributing parties exists in respect of services which may be reserved or are subject to mandatory reservation.

This basic parameter shall involve the following processes:

4.2.9.1. The railway undertaking or ticket vendor sends an availability/reservation request to the attributing reservation system

The possibility of making a reservation shall be subject to the existence of a commercial agreement between the involved carrier(s) and distributor(s). Such agreements can include charges, technical and safety standards, specific limitations in terms of trains, origins/destinations, tariffs, sales channels, etc.

Subject to an agreement between the parties involved, the requesting distribution system shall send requests to the attributing system in respect of the relevant train availability/reservation for the specified accommodation type.

The main types of reservation requests are:

— Enquiry about availability,

— Reservation request,

— Request for partial cancellation,

— Request for complete cancellation.

This process shall be performed following a request from a customer transmitted to the distribution system of the railway undertaking.

The data elements and the information contained in the message used to meet the obligations shall comply:

— either with the elements set out in technical document B.5 (see Annex III), in which case all attributing systems shall be able to understand the request and to reply,

— or with otherwise defined standards, in which case the attributing system shall be able to understand the request and to answer only if there is a specific agreement with the requesting distribution system.

4.2.9.2. Attributing reservation system sends availability/reservation response

If a request for reservation of places has been validly formulated according to the process described above, the attributing system shall send an availability/reservation response for the requested train to the requesting distribution system.

The main types of reservation responses shall be:

— Reply about availability,

— Confirmation of reservation request,

— Confirmation of partial cancellation request,

— Confirmation of complete cancellation request,

— Replacement proposal,

— Negative reply.

This process shall be performed in response to an incoming request arriving at the attributing system according to the process described above.

The data elements and the message information contents used to meet the obligations shall be compliant:

— either with elements defined in technical document B.5 (see Annex III),

— or with otherwise defined standards,

according to the protocol used by the requesting distribution system.

4.2.10. *Handling of security elements for product distribution*

This basic parameter specifies the manner in which the attributing railway undertaking shall generate security elements for the distribution of its products.

This basic parameter must ensure that railway undertakings and passengers shall, at the appropriate time, obtain from the attributing railway undertaking the security information and references needed for the various ticket types.

This basic parameter shall entail the following processes:

4.2.10.1. Attributing system creates security element for electronic delivery

If a railway undertaking issues CIV compliant ticket/reservation, the staff of the rail ticket office/agency/retailer or the distribution system of the railway undertaking shall generate the security information to be inserted in the ticket/reservation.

This process shall be performed as soon as the booking status and sales transaction data have been successfully sent to the distribution system of the agreed railway undertakings.

The above process and the information used for it shall comply with:

— the standard for the handling of security elements for product distribution which is under development. It is therefore an open point and is listed in Annex II.

4.2.10.2. Attributing system creates a dossier reference for the railway undertaking for electronic delivery

If a railway undertaking issues CIV compliant ticket/reservation, the staff of rail ticket office/agency/retailer or the distribution system of the railway undertaking shall produce a dossier reference to retrieve the ticket/reservation and shall enter all information concerning the ticket into its own distribution system.

This process shall be performed as soon as the booking status and sales transaction data have been successfully sent to the distribution system of the agreed railway undertakings.

The above process and the information used for it shall be compliant with:

— the standard for the handling of security elements for product distribution which is under development. It is therefore an open point and is listed in Annex II.

4.2.10.3. Attributing system creates a dossier reference for the passenger for electronic delivery

If a railway undertaking issues a CIV compliant ticket/reservation, the staff of the rail ticket office/agency/retailer or the distribution system of the railway undertaking shall generate a dossier reference and shall enter it on the ticket/reservation.

This process shall be performed as soon as the booking status and sales transaction data have been successfully sent to the distribution system of the agreed railway undertakings.

The above process and the information used for it shall be compliant with:

— the standard for the handling of security elements for product distribution which is under development. It is therefore an open point and is listed in Annex II.

4.2.11. *Delivery of the product to the customer after its purchase (fulfilment)*

This basic parameter sets out all the possible direct and indirect fulfilment methods which are linked to the ticket and/or reservation and to the kind of media (e.g. paper).

This basic parameter shall ensure that the issuer or ticket vendor shall issue tickets according to standards that ensure interoperability between railway undertakings. For the purposes of issuing tickets for international and foreign sales, railway undertakings shall use at least one of the fulfilment types listed in Section 4.2.11.1 Fulfilment — direct — for international and foreign sales and in Section 4.2.11.2 Fulfilment — indirect — for international and foreign sales.

The provisions of this basic parameter shall be applied at least in respect of the tariffs for international and foreign sales.

4.2.11.1. Fulfilment — direct — for international and foreign sales

This process shall be an alternative to process 4.2.11.2 Fulfilment — indirect — for international and foreign sales.

The railway undertakings shall at least accept tickets according to the definition in technical document B.6 (see Annex III), except where the ticket is not appropriate for the journey being undertaken, where the railway undertaking has reasonable grounds to suspect fraud and where the ticket is not being used in accordance with the conditions of carriage according to Section 4.2.4.

The main types of issued tickets are specified in technical document B.6 of Annex III:

— Ticket and reservation,

— Ticket only,

— Reservation only,

— Supplements,

— Upgrade,

— Change of itinerary,

— Boarding pass,

— Special fares in conjunction with national railcards,

— Group ticket,

— International rail passes of various kinds,

— Accompanied vehicle coupon,

— Travel voucher for compensation.

The above process and the information used for it shall be compliant with the technical document(s):

— B.6 (see Annex III).

4.2.11.2. Fulfilment — indirect — for international and foreign sales

This process shall be an alternative to process 4.2.11.1 Fulfilment — direct — for international and foreign sales

If the railway undertaking makes sales using indirect fulfilment on one of the following methods, it must use the following standards:

— CIV compliant electronic delivery (Ticket On Departure),

— CIV compliant Manifest On List,

— CIV compliant A4 ticket via e-mail delivery.

The main types of above issued tickets shall be:

— Open ticket (travel only),

— Open ticket + reservation (travel and reservation),

— Open ticket + supplement (travel and supplement),

— Open ticket + reservation + supplement (travel, reservation and supplement),

— Global price ticket (travel and reservation).

The above process and the information used for it shall be compliant with the following technical document(s):

— B.6 (see Annex III),

— B.7 (see Annex III),

— Standard for European 'Ticket On Departure' and for European 'Manifest On List' is under development. It is therefore an open point and is listed in Annex II.

4.2.11.3. Fulfilment — direct — domestic sales

This is an open point (see Annex II).

4.2.11.4. Fulfilment — indirect — domestic sales

This is an open point (see Annex II).

4.2.12. *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.

This basic parameter shall entail the following processes:

4.2.12.1. Station manager informs customers within the station

With regard to information on train departures, station managers shall provide the following departure information on trains to customers in stations:

— Train type and/or number,

— Station(s) of destination,

— And, where appropriate, intermediate station stop(s),

— Platform or track,

— Scheduled Departure time.

In the event of deviation from this information for departing trains, station managers shall provide, in stations, at least the following train information:

— Train type and/or number,

— Station(s) of destination,

— Scheduled Departure time,

— Deviation from plan.

As regards information on terminating trains, the station manager shall provide at least the following train information:

— Station(s) of origin,

— Arrival time at the terminating station,

— Train type and/or number,

— Arrival platform or track.

In the case of deviation for terminating trains, the station manager shall provide at least the following information for such trains:

— Train type and/or number,

— Station(s) of origin,

— Scheduled arrival time,

— Deviation from plan.

Deviations from plan comprise:

— Material delays,

— Change of track or platform,

— Full or partial cancellation of train,

— Train rerouting.

The station manager decides according to agreements with the railway undertakings and/or infrastructure managers on:

— The type of information system (Display and/or voice announcement),

— The point in time when the information is provided,

— The location within the station where the information system will be installed.

In accordance with a contractual agreement, information about deviations shall be delivered by railway undertakings and/or Infrastructure managers in due time to the station manager.

4.2.13. *Handling of information provision in the vehicle area*

This basic parameter lays down how the railway undertaking shall provide train running information within the vehicle area.

The provisions shall apply to new or renewed or upgraded rolling stock, if information systems (voice announcements and/or displays) are renewed or installed.

The provisions of this basic parameter shall apply to at least all those trains performing international service.

This basic parameter shall have the following processes:

4.2.13.1. The railway undertaking informs passengers in the train

The railway undertakings shall provide passengers in the train:

— At station of departure and major intermediate station stops:

— Train type and/or number,

— Final destination(s),

— Where practicable, intermediate station stops,

— Material delay,

— Reasons for delay, if known.

Before arrival at all intermediate station stops:

— Next station stop (station name).

Before arrival at major intermediate station and destination station:

— Next station stop (station name),

— Planned arrival time,

— Estimated arrival time and/or other Delay information,

— Next main connecting services (at the discretion of the railway undertaking).

The railway undertaking decides on:

— The type of information system (Display and/or voice announcements),

— The point in time when the information will be provided,

— The location within a train where the information devices will be installed.

4.2.14. *Train preparation*

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.

The provisions of this basic parameter shall apply to all trains of the railway undertaking.

This basic parameter shall entail the following processes:

4.2.14.1. 'Train ready' message for all trains

The railway undertaking shall send a 'train ready' message to the infrastructure manager 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. In the latter case, the railway undertaking shall inform the infrastructure manager and, if applicable, the station manager if the train is not ready as soon as possible.

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.

Other items, such as:

— Path departure Point with the time for which the path was requested,

— Path Destination Point with the time at which the proposed train is due to arrive at its destination,

may be transmitted in the same message.

The above process and the information used for it shall at least comply with the 'train ready' message of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if the parties involved have concluded a specific agreement allowing these standards to be used.

4.2.15. *Train running information and forecast*

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

This basic parameter lays down how the infrastructure manager must, at the appropriate time, send train running information to the railway undertaking and the next neighbouring infrastructure manager 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. This message shall be sent from the infrastructure manager to the railway undertaking and the neighbouring infrastructure manager involved in the run. The information about the train running forecast shall be delivered to the station manager in due time by the railway undertakings and/or infrastructure managers according to a contractual agreement.

The path contract specifies Reporting Points for the train's movement.

This basic parameter describes the content of the message and does not prescribe the process for generating the train running forecast.

The provisions of this basic parameter shall apply to all trains of the railway undertaking.

This basic parameter shall entail the following processes:

4.2.15.1. Train running information for all trains

The infrastructure manager shall send a 'train running information' message to the railway undertaking. 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).

Other items, such as:

— delta deviation from booked scheduled time (in minutes),

— where available, the reason for the delay,

may be transmitted in the same message.

The above process and the information used for it shall comply at least with the 'TrainRunningInformation-Message' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if there is a specific agreement between the parties involved to allow the use of these standards.

4.2.15.2. Train running forecast for all trains

The infrastructure manager shall send a 'train running forecast' message to the railway undertaking.

This process shall be performed as soon as the train reaches contractually agreed Reporting Points to deliver a forecast. An agreed forecast point can be, among others, a handover point or a Station. A train running forecast can also be sent before the train starts running. For additional delays occurring between two Reporting Points, a threshold has to be contractually defined between the railway undertaking and the infrastructure manager to which an initial or a new forecast has to be sent. If the delay is not known, the infrastructure manager has to send a 'service disruption message' (see Section 4.2.16 Service disruption information).

The train running forecast message must give the forecast time for agreed forecast points.

Information on the train running forecast shall be delivered by the railway undertakings and/or infrastructure managers in due time to the station manager under a contractual agreement.

The infrastructure manager shall send this message to the next neighbouring infrastructure manager involved in the train run.

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).

Other items, such as:

— estimated delta deviation from booked scheduled time (in minutes),

— transmission of the reason for delay, where available,

may be sent in the same message.

The above process and the information used for it shall at least be compliant with the 'Train RunningForecastMessage' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if a specific agreement to that effect has been signed between the parties involved that allows the use of these standards.

4.2.16. *Service disruption information*

This basic parameter lays down how service disruption information is handled between the railway undertaking and the infrastructure manager.

The provisions of this basic parameter shall apply to all trains of the railway undertaking.

For the purpose of dealing with passengers' complaints, service disruption data shall be kept available for railway undertakings, ticket vendors and/or authorised public bodies for at least 12 months after such data has expired.

This basic parameter shall entail the following processes:

4.2.16.1. General remarks

The railway undertaking shall inform the infrastructure manager of the operational status of the trains, as defined in OPE TSI Section 4.2.3.3.2.

If train running is interrupted, the infrastructure manager shall send a 'train running interrupted' message as specified below.

4.2.16.2. Train Running Interrupted message for all trains

If train running is interrupted, the infrastructure manager issues this message to the neighbouring infrastructure manager and to the railway undertaking(s).

If the length of the delay is known, the infrastructure manager must send a train running forecast message (see Section 4.2.15.2 Train running forecast).

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.

The above process and the information used for it shall at least comply with the 'TrainRunningInterruptionMessage' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if a specific agreement has been concluded between the parties involved which allows the use of these standards.

4.2.17. *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 infrastructure manager. These requirements are valid for all Short Notice Path Requests.

This BP does not include Traffic Management issues. The time limit between Short Term paths and Traffic Management path changes is subject to Local Agreements. It has to be possible, where short-notice transport needs are concerned (e.g. special train, additional train), to request a Short Term path. To this end, the AP requesting a Short Term path must provide the infrastructure manager with all necessary information indicating when and where a train is required to run and the data relating thereto.

No minimum time frame is specified at European level. The network statement may specify minimum time frames.

Each infrastructure manager is responsible for the suitability of a path on their infrastructure, and the railway undertaking is obliged to check the train characteristics against the values given in the details of its contracted path.

The various possible scenarios are set out below:

— Scenario A: The AP contacts all infrastructure managers involved directly (case A) or via the One Stop Shop (case B) to organise the paths for the complete journey. In this case the AP has also to operate the train on the complete journey.

— Scenario B: Each AP involved in the transport journey contacts the local infrastructure managers directly or via OSS to request a path for the journey section on which it is operating the train.

In both scenarios the allocation procedure for a Short Notice Path Request takes the form of a dialogue between AP and infrastructure manager, which contains the following messages:

— Path request message,

— Path details message,

— Path not available message,

— Path confirmed message,

— Path details refused message,

— Path cancelled message,

— Booked path no longer available message,

— Receipt confirmation message.

In the case of train movements for which a path has already been requested and issued, it is not necessary to repeat the request for a path unless delays exceeds a value that is contractually agreed between the railway undertaking and the infrastructure manager or if the train composition is changed in such a way that it renders the existing path request invalid.

The provisions of this basic parameter shall apply to path handling for all trains of the railway undertaking, but only if the parties involved use telematics applications within the meaning of Annex II to Directive 2001/14/EC of the European Parliament and of the Council [1] for Short Notice Path Requests.

[1] OJ L 75, 15.3.2001, p. 29.

In such a case, this basic parameter shall involve the following processes:

4.2.17.1. Path Request message

This message is sent to the infrastructure manager by the AP with the following main content:

— AP making the path request,

— Path departure point: start point of path,

— Time of departure from start point of path: time for which the path is requested,

— end point of path: train's destination on path requested,

— Time of arrival at end point of path: time proposed train is to arrive at its destination,

— section of the journey requested,

— intermediate stops or any other designated points along the proposed path, indicating the Time of arrival plus the time of departure from an Intermediate Point. If this field is not completed, it means that the train does not stop at this point,

— agreed and necessary train equipment/data for section of the journey,

— maximum permissible train speed,

— maximum speed under specified train control system(s) (national and international, e.g. LZB, ETCS),

— for each traction unit: class of traction, technical variant,

— banking traction unit (class of traction, technical variant),

— driving vehicle trailer (DVT) leading,

— total length,

— total weight,

— maximum axle load,

— gross weight per meter,

— brake performance (representing brake level effective braking power),

— brake type (for the indication of usage of electromagnetic brake),

— specified train control system(s) (national and international),

— emergency brake override,

— radio system (e.g. GSM-R),

— SCs (special consignments),

— loading gauge,

— any other technical prerequisites that differ from the standard dimensions (e.g. exceptional loading gauge),

— train category,

— any other specific data required locally or nationally to process the path request,

— definitions of activities that are to be performed at a given Intermediate Point along the route,

— railway undertaking code responsible for the train movement on the current section of the journey,

— infrastructure manager code responsible for the train over the respective section of the journey,

— railway undertaking and infrastructure manager code for the next section of the train, where appropriate.

The above process and the information used for it shall at least comply with the 'PathRequestMessage' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if there is a specific agreement between the parties involved that allows the use of these standards.

4.2.17.2. Path Details message

The infrastructure manager sends this message with the following main content to the requesting AP in reply to that AP's path request:

— AP making the path request,

— path departure point: start point of path,

— Time of departure from start point of path: time for which the path is requested,

— end point of path: train's destination on path requested,

— Time of arrival at end point of path: time proposed train is to arrive at its destination,

— section of the journey requested,

— intermediate stops or any other designated points along the proposed path, indicating the time of arrival plus the time of departure from an intermediate point. If this field is not completed, it means that the train does not stop at this point,

— agreed and necessary train equipment/data for section of the journey,

— maximum permissible train speed,

— maximum speed under specified train control system(s) (national and international, e.g. LZB, ETCS),

— for each traction unit: class of traction, technical variant,

— banking traction unit (class of traction, technical variant),

— driving vehicle trailer (DVT) leading,

— total length,

— total weight,

— maximum axle load,

— gross weight per metre,

— brake performance (representing brake level effective braking power),

— brake type (for the indication of usage of electromagnetic brake),

— specified train control system(s) (national and international),

— emergency brake override,

— radio system (e.g. GSM-R),

— SCs (special consignments),

— loading gauge,

— any other technical prerequisites that differ from the usual dimensions (e.g. exceptional loading gauge),

— train category,

— any other specific data required locally or nationally to process the path request,

— definitions of activities that are to be performed at a given Intermediate Point along the route,

— code of railway undertaking responsible for the train movement on the current section of the journey,

— code of infrastructure manager responsible for the train over the respective section of the journey,

— code of railway undertaking and infrastructure manager for the next section of the journey, if appropriate.

The above process and the information used for it shall at least comply with the 'PathDetailsMessage' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if a specific agreement is concluded between the parties involved to allow the use of these standards.

4.2.17.3. 'Path Not Available' message

The infrastructure manager sends this message to the requesting AP in reply to the AP's path request in the event of no path being available:

— Path departure point: train's point of departure on the path,

— Path destination point,

— Time of departure from start point of path: time for which the path is requested,

— indication that the path is not available,

— reason for path not being available.

At the same time as this message, or as soon as possible, the infrastructure manager must send an alternative proposal without requiring any further request from the railway undertaking (Path Details message).

The above process and the information used for it shall at least comply with the 'PathNotAvailableMessage' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if there is a specific agreement between the parties involved that allows the use of these standards.

4.2.17.4. Path Confirmed message

The requesting AP uses this message to book/confirm the path proposed by the infrastructure manager:

— Path Number for the purpose of identifying the path,

— Path departure point: train's point of departure on the path,

— Path destination point,

— Time of departure from start point of path: time for which the path is requested,

— End point of path: train's destination on path requested,

— Time of arrival at end point of path: time at which the proposed train is due to arrive at its destination,

— indication that the AP accepts the path proposed.

The above process and the information used for it shall be compliant at least with the 'PathConfirmedMessage' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if there is a specific agreement between the parties involved allowing the use of these standards.

4.2.17.5. Path Details Refused message

The requesting AP uses this message to reject the path details proposed by the relevant infrastructure manager:

— Path Number for the purpose of identifying the path,

— Indication that the path details are being rejected,

— Reason for refusing the path or for the alteration requested by the AP,

— Path departure point: train's point of departure on the path,

— Path destination point,

— Time of departure from start point of path: time for which the path is requested,

— end point of path: train's destination on path requested,

— Time of arrival at end point of path: time at which the proposed train is due to arrive at its destination.

The above process and the information used for it shall be compliant at least with the 'PathDetailsRefused-Message' of the technical document(s):

— B.30 (see Annex III).

Other existing standards may also be used for the same purpose if there is a specific agreement between the parties involved that allows the use of these standards.

4.2.17.6. Path Cancelled message

This message is used by an AP to cancel a path it has booked:

— Path Number for the purpose of identifying the path,

— section of the journey to be cancelled,

— indication that the path is being cancelled,

— original path departure point: train's point of departure on the path,

— Path destination point,

— Time of departure from original start point of path: time for which the path was requested,

— original end point of path: train's destination on the requested path,

— Time of arrival at original end point of path: time at which the proposed train was due to arrive at its destination.

The above process and the information used for it shall be compliant at least with the 'PathCancelledMessage' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if there is a specific agreement between the parties involved allowing the use of these standards.

4.2.17.7. 'Receipt Confirmation' message

This message is exchanged between infrastructure managers and APs when the required response to any of the above messages cannot be made available within 5 minutes:

— Receipt Confirmation message: indicates that its sender has received the message and will act upon it as necessary.

The above process and the information used for it shall be compliant at least with the 'ReceiptConfirmation-Message' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if there is a specific agreement between the parties involved that allows the use of these standards.

4.2.17.8. 'Booked Path No Longer Available' message

The infrastructure manager uses this message to let the AP know that a path which has been booked is no longer available. The path has ceased to be available for an important reason, e.g. a major disruption. Content of message:

— Path Number,

— Train number of the scheduled train for which the path is no longer available (if already known to the infrastructure manager),

— Original path departure point: train's point of departure on the path,

— Path destination point,

— Time of departure from original start point of path: time for which the path was requested,

— Original end point of path: train's destination on path requested,

— Time of arrival at original end point of path: time when the proposed train was due to arrive at its destination,

— Indication of the cause.

The above process and the information used for it shall be compliant at least with the 'PathNotAvailable-Message' of the technical document(s):

— B.30 (see Annex III).

In addition, other existing standards may be used for the same purpose if there is a specific agreement between the parties involved that allows the use of these standards.

4.2.18. *The quality of the data and information related to this TSI*

4.2.18.1. The requirements

In order to meet the requirements of this TSI, the following shall be applied as regards data and information quality throughout the whole TSI.

All those to whom this 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 railway undertakings, or to infrastructure managers, or to a third party. Each actor addressed by this 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 railway undertakings, or to infrastructure managers, or to a third party.

Where data or information are used in order to meet the requirements of several basic parameters of this TSI at the same time, the actors to whom this TSI is addressed shall ensure that the data or information shared between those basic parameters is used in a coherent manner (e.g. coherence i) between timetable and tariff information or ii) between tariff and reservation information shall be ensured).

Where information or data are provided by several actors addressed by this TSI, the actors shall together ensure that the parts of the common data or information provided are up-to-date, coherent, accurate, complete and compatible (example: deliveries of timetable information for railway undertaking A and railway undertaking B must be coherent in order to ensure that they match at the border, etc.).

Where reference data or reference information is used in order to meet the requirements of this TSI, the actors addressed by this TSI shall guarantee the coherence between the reference data or reference information and the data or information used in the basic parameters of this TSI (examples: coherence (i) between location reference codes and train running information or (ii) between railway undertaking reference codes and fulfilment shall be ensured, etc.).

The quality of data or information provided by the actors for the purposes of this TSI shall be such that it enables the actors to whom this TSI is addressed to issue tickets as set out in Article 10 of the Regulation on Rail Passengers' Rights and Obligations.

The quality of data or information provided by the actors for the purposes of this TSI shall achieve a level which makes it possible for the actors addressed by this TSI to provide the information as set out in Article 10 and in Annex II to the Regulation on Rail Passengers' Rights and Obligations.

4.2.19. *Various reference files and databases*

4.2.19.1. Reference files

For the operation of passenger trains on the European network, the following reference files must be available and accessible to all service providers (infrastructure managers, railway undertakings, authorised third parties and station managers). The data must represent the actual status at all times.

The European Railway Agency will centrally store and maintain unique codes for the following reference data:

— 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.

4.2.19.2. Additional requirements concerning databases

The additional requirements which must be supported by the various databases are listed below. They are:

1. Authentication

   A database must support the authentication of users of the systems before they can gain access to the database.

2. Security

   A database must support security aspects in terms of controlling access to the database. The possible encryption of the database contents itself is not required.

3. ACID

   A database selected shall support the ACID principle (Atomicity, Consistency, Isolation, Durability).

4. Access control

   A database must allow access to the data by users or systems that have been granted permission. The access control shall be supported down to a single attribute of a data record. The database shall support configurable, role based access control for the insertion, update or deletion of data records.

5. Tracing

   A database must support the logging of all actions applied to the database to allow the detail of the data entry to be traced (Who, What, When did the contents change?).

6. Locking strategy

A database must implement a locking strategy which allows access to the data even when other users are engaged in editing records.

7. Multiple access

A database must ensure that data can be accessed simultaneously by several users and systems.

8. Reliability

The reliability of a database must support the required availability.

9. Availability

A database must have the necessary availability level for the nature of the data and the business cases based on it.

10. Maintainability

The maintainability of the database must support the required availability.

11. Safety

Databases themselves are not safety related. Hence, safety aspects are not relevant. This is not to be confused with the fact that the data — e.g. incorrect or not up-to-date data — may have an impact on the safe operation of a train.

12. Compatibility

A database must support a data manipulation language that is widely accepted, such as SQL or XQL.

13. Import facility

A database shall provide a facility that allows the import of formatted data that can be used to fill the database instead of manual input.

14. Export facility

A database shall provide a facility that allows the contents of the complete database or part thereof to be exported as formatted data.

15. Mandatory fields

A database must support mandatory fields that are required to be completed before the relevant record is accepted as input to the database.

16. Plausibility checks

A database must support configurable plausibility checks before accepting the insertion, update or deletion of data records.

17. Response times

A database must have response times that allow users to insert, update or delete data records in a timely manner.

18. Performance aspects

The reference files and databases shall support in a cost effective manner the queries necessary to allow the effective operation of all relevant train runs that are covered by the provisions of this TSI.

19. Capacity aspects

A database shall support the storage of the relevant data for all passenger wagons and/or the network. It shall be possible to extend the capacity by simple means (i.e. by adding more storage capacity and computers). The extension of the capacity shall not require replacement of the subsystem.

20. Historical data

A database shall support the management of historical data by making data available that have been already transferred into an archive.

21. Back-up strategy

A back-up strategy shall be in place to ensure that the complete database contents for a period of up to 24 hours can be recovered.

22. Commercial aspects

The database system used shall be available commercially off-the-shelf (COTS-product) or be available in the public domain (Open Source).

23. Privacy aspects

A database has to fulfil the privacy policy requirements of the Member State in which the company performing the service is domiciled.

4.2.20. *Electronic transmission of documents*

The description in Section 4.2.21 — Networking and communication — presents the communication network to be used for data exchange. This network and the described security handling allow any type of network transmission, such as e-mail, file transfer (Ftp, Http), etc. The parties involved in the information exchange can then decide on the type to choose, thereby ensuring the electronic transmission of documents, for example, via FTP.

4.2.21. *Networking and communication*

4.2.21.1. General architecture

Over time this subsystem will see the growth and interaction of a large and complex telematics rail interoperability community with thousands of participating actors (railway undertakings, infrastructure managers, third parties such as retailers and public authorities, etc.), which will compete and/or cooperate in serving the market's needs.

The network and communication infrastructure supporting such a rail interoperability community will be based on a common 'Information Exchange Architecture', known and adopted by all those participating in it.

The proposed 'Information Exchange Architecture':

— is designed to reconcile heterogeneous information models by semantically transforming the data that are exchanged between the systems and by reconciling the differences in business processes and application-level protocols,

— has a minimal impact on the existing IT architectures implemented by each actor,

— safeguards IT investments already made.

The Information Exchange Architecture favours a mostly Peer-to-Peer type of interaction between all actors, while guaranteeing the overall integrity and consistency of the rail interoperability community by providing a set of centralised services.

A Peer-to-Peer interaction model allows the best distribution of costs between the different actors, based on actual usage and, in general, will pose fewer scalability problems.

4.2.21.2. Network

The network shall ensure the necessary level for security, redundancy, traffic control, statistics tools, bandwidth growth, user accessibility and efficient management.

'Network' in this context means the method and philosophy of communication and does not refer to the physical network.

Rail interoperability is based on a common 'Information Exchange Architecture', known and adopted by all participants, thus encouraging and lowering barriers for new entrants, especially customers.

First, the central Repository is approached to obtain meta-information, such as the identity of the peer (actor) on which information is stored, or to verify security credentials. Afterwards, Peer-to-Peer communication takes place between the actors involved.

4.2.21.3. Protocols

Only protocols belonging to the Internet Protocol Suite (commonly known as TCP/IP, UDP/IP, etc.) may be used for developments.

4.2.21.4. Security

On top of the security level guaranteed at the level of the network (see Section 4.2.21.2 Network), an additional level of security can be achieved for sensitive data by using a combination of encryption, certification scheme and VPN technologies.

4.2.21.5. Encryption

Either asymmetric or symmetric encryption can be used for data transmission and storage, depending on the business requirements. For this purpose a public key infrastructure (PKI) is to be implemented.

4.2.21.6. Central repository

The central repository must be able to handle:

— metadata — structured data describing the content of messages,

— list of electronic addresses where the actors addressed by this TSI allow other actors to obtain information or data according to the provisions of this TSI,

— encryption,

— authentication,

— directory (phonebook) — it contains all necessary information on those participating in exchanging messages and data.

Where the Central Repository is in use in conjunction with the TAF TSI, development and changes shall be performed as closely as possible to the implemented TAF TSI in order to achieve optimum synergies.

4.2.21.7. Common interface for RU/IM communication

The common interface is mandatory for each actor in order to join the rail interoperability community.

The common interface 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:

(i) positive: send ACK;

(ii) negative: send NACK.

The common interface uses the information in the Central Repository in order to manage the above tasks.

If an actor implements a local 'mirror' of the Central Repository, that actor must then — by its own means — ensure that the local 'mirror' is an accurate and up to date copy of the Central Repository.

Where the Common Interface is in common use with the TAF TSI, the development and changes shall take place as closely as possible to the implemented TAF TSI, in order to achieve optimum synergies.

4.2.22. *Management of connection with other modes of transport*

In order to manage the connection with other modes of transport, the following standard should be applied for the provision of information to and exchange of information with other modes of transport:

— For the exchange of timetable information between railway undertakings and other modes of transport: norms EN 12896 ('Transmodel') and EN TC 278 WI 00278207 ('IFOPT — Identification of Fixed Objects in Public transport'),

— For the exchange of specific timetable data, the XML technical standards and protocols based on Transmodel, in particular norm EN 15531 ('SIRI') for the exchange of real-time timetables and norm EN TC 278 WI 00278207 ('IFOPT') for the exchange of 'stop/station' data.

— For the exchange of tariff data: this standard is still an open point (see Annex II — List of open points).

4.3. **Functional and technical specifications of the interfaces**

From the standpoint of technical compatibility, the interfaces of the subsystem 'telematics applications for passenger services' with the other subsystems are as described in the following paragraphs.

4.3.1. *Interfaces with the Rolling Stock Subsystem*

Table 1

Interfaces with the Rolling Stock subsystem

Interface	Reference Telematics Applications for passengers TSI	Reference Conventional Rail Rolling Stock TSI's
Board device display	4.2.13 Handling of information provision in vehicle area	4.2.5 Customer information (PRM)
Automatic voice and announcement	4.2.13 Handling of information provision in vehicle area	4.2.5 Customer information (PRM)
		4.2.5.2 Public address system

4.3.2. *Interfaces with the Telematics Applications for Freight Subsystem*

Table 2

Interfaces with the Telematics Applications for Freight subsystem

Interface	Reference Telematics Applications for passengers TSI	Reference Conventional Rail Telematics Applications for Freight TSI
Train ready	4.2.14.1 Train ready message for all trains	4.2.3.5 Train ready message
Train running forecast	4.2.15.2 'Train running forecast' message for all trains	4.2.4.2 Train running forecast message
Train running information	4.2.15.1 'Train running information' message for all trains	4.2.4.3 Train running information
Train running interrupted to RU	4.2.16.2 'Train running interrupted' message for all trains	4.2.5.2 Train running interrupted
Handling of short term timetable data	4.2.17 Handling of short term timetable data for trains	4.2.2 Path Request
Common Interface	4.2.21.7 Common interface for RU/IM communication	4.2.14.7 Common interface for RU/IM communication
Central Repository	4.2.21.6 Central repository	4.2.14.6 Central repository
Reference Files	4.2.19.1 Reference files	4.2.12.1 Reference files

4.4. **Operating rules**

In the light of the Essential Requirements in Chapter 3, the operating rules specific to the subsystem concerned by this TSI are as follows:

4.4.1. *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 quality assurance will include comparison with data from databases provided as part of this TSI as described above, plus — where applicable — logic checks to assure the timeliness and continuity of data and messages.

Data are of high quality if they are fit for their intended uses, which means that they:

— are error-free: accessible, accurate, timely, complete, consistent with other sources, etc.,

— possess the desired features: relevant, comprehensive, proper level of detail, easy-to-read, easy-to-interpret, etc.

The main characteristics of data quality are:

— accuracy,

— completeness,

— consistency,

— timeliness.

Accuracy

The information (data) required needs to be captured as economically as possible. This is only feasible if the Primary Data only are recorded, if possible, on one single occasion. Therefore, the Primary Data should be introduced into the system as close as possible to its source, so that they can be fully integrated into any subsequent processing operation.

Completeness

Before sending out messages, the completeness and syntax must be checked using the Metadata. This also avoids unnecessary information traffic on the network.

All incoming messages must also be checked for completeness using the Metadata.

Consistency

Business rules must be implemented in order to guarantee consistency. Double entry should be avoided and the owner of the data should be clearly identified.

The type of implementation of these business rules depends on their complexity. For simple rules, database constraints and triggers are sufficient. In the case of more complex rules, which require data from various tables, validation procedures must be implemented which check the consistency of the data version before interface data are generated and the new data version becomes operational. It must be ensured that transferred data are validated against the defined business rules.

Timeliness

Providing information right on time is important. Insofar as the trigger for data storage or for message sending is event driven directly from the IT system, timeliness is not a problem if the system is designed properly and according the needs of the business processes. However, in most cases, the sending of a message is initiated by an operator or is at least based on additional input from an operator. To fulfil the timeliness requirements, the data must be updated as soon as possible, also in order to guarantee that the actual data content of the messages is current when these messages are sent out automatically by the system.

The response time for enquiries must be addressed for the various applications and user types within the detailed IT specifications. All data updates and exchanges shall be carried out as soon as possible.

Data quality metrics

The detailed IT specifications shall define appropriate percentages for:

— the completeness of data (percent of data fields having values entered into them) and the consistency of data (percent of matching values across tables/files/records),

— the timeliness of data (percent of data available within a specified threshold time frame),

— the required accuracy (percent of stored values that are correct when compared to the actual value).

4.4.2. *Operating the central repository*

The functions of the Central Repository are defined in Section 4.2.21.6 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 this TSI.

4.5. **Maintenance rules**

In the light of the Essential Requirements in Chapter 3, the maintenance rules specific to the subsystem concerned by this TSI are as follows:

The quality of the transport service must be guaranteed, even if the data were corrupted or if the data processing equipment were to suffer a complete or partial breakdown. It is therefore advisable to install duplex systems or computers with a particularly high degree of reliability, and for which uninterrupted operation during maintenance is ensured.

The maintenance aspects of the various databases are mentioned in Section 4.2.19.2 — Additional requirements on the databases, points 10 and 21.

4.6. **Professional qualifications**

The professional qualifications of the staff required to operate and maintain the subsystem and for implementing the TSI are as follows:

The implementation of this TSI does not require a complete new system in terms of hardware and software with new staff. Achieving the requirements of the TSI results only in those changes, upgrades or functional enlargements of the operation which are already being made by the existing staff. Therefore, there are no requirements in addition to the existing national and European rules on professional qualifications.

If necessary, add-on training of staff should not consist solely of showing them how to operate equipment. Staff members must know and understand the specific role they have to play in the overall transportation process. Staff must, in particular, be aware of the requirement to maintain a high level of working performance, since this is decisive for the reliability of the information which is to be processed at a later stage.

The professional qualifications needed for the composition and operation of trains are defined in the TSI for Operation and Traffic Management.

4.7. **Health and safety conditions**

The health and safety conditions of staff required for the operation and maintenance of the subsystem concerned and for the implementation of the TSI are as follows:

There are no requirements in addition to existing national and Union health and safety rules.

4.8. **Registers of authorised types of vehicles and of infrastructure**

Pursuant to Article 34(1) of Directive 2008/57/EC, 'The Agency shall set up and keep a register of types of vehicles authorised by the Member States for placing in service on the Community rail network'. Pursuant to Article 35(1) of Directive 2008/57/EC, 'Each Member State shall ensure that a register of infrastructure is published and updated'.

Due to the annual updating and publication of these registers they cannot be used for the Telematics Applications subsystem for passengers. Therefore, this TSI has nothing to do with these registers.

5. INTEROPERABILITY CONSTITUENTS

5.1. **Definition**

According to Article 2(f) of Directive 2008/57/EC, 'interoperability constituents' means any elementary component, group of components, subassembly or complete assembly of equipment incorporated or intended to be incorporated into a subsystem, upon which the interoperability of the rail system depends directly or indirectly. The concept of a 'constituent' covers both tangible objects and intangible objects such as software'.

5.2. **List of constituents**

The interoperability constituents are covered by the relevant provisions of Directive 2008/57/EC.

No interoperability constituents are determined as far as the subsystem 'Telematics applications for passengers' is concerned.

Only standard IT equipment is needed in order to fulfil the requirements of this TSI, without any specific aspects for interoperability in the railway environment. This is valid both for hardware components and for the standard software used, such as the operating system and databases. The application software is individual to each user and can be adapted and improved according the individual's actual functionality and needs. The proposed 'application integration architecture' assumes that applications might not have the same internal information model. Application integration is defined as the process of making independently designed application systems work together.

5.3. **Constituents' performances and specifications**

See Section 5.2, not relevant for the TSI Telematics Applications for passenger services.

6. ASSESSMENT OF CONFORMITY AND/OR SUITABILITY FOR USE OF THE CONSTITUENTS AND VERIFICATION OF THE SUBSYSTEM

6.1. **Interoperability constituents**

6.1.1. *Assessment procedures*

Not relevant for the TSI Telematics Applications for passenger services.

6.1.2. *Module*

Not relevant for the TSI Telematics Applications for passenger services.

6.2. **Subsystem Telematics Applications for passenger services**

According to Annex II to Directive 2008/57/EC, the subsystems are broken down into structural and operational areas. The conformity assessment is obligatory for TSIs in the structural area. The subsystem Telematics Applications for passenger services belongs to the functional area and this TSI does not determine any modules for conformity assessment.

7. IMPLEMENTATION

7.1. **Introduction**

This TSI concerns the subsystem telematics applications for passenger services. This subsystem is functional according to Annex II to Directive 2008/57/EC. The application of this TSI therefore does not rely on the notion of new, renewed or upgraded subsystem, as is customary in the case of TSIs related to structural subsystems, except where it is specified in the TSI.

The TSI will be implemented in phases:

— phase one: detailed IT specifications, governance and master plan,

— phase two: development,

— phase three: deployment.

7.2. **Phase one — detailed IT specifications, governance and master plan**

Phase one has three objectives:

1. To define the data exchange system (hereinafter referred to as 'the 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 Commission, the European Railway Agency, the Member States and the stakeholders concerned.

7.2.1. *Project governance of Phase one*

The Commission shall establish a steering committee not later than 1 month after the publication of this Regulation in the *Official Journal of the European Union*, which shall consist of:

— the representative bodies from the railway sector acting on a European level as defined in Article 3(2) of Regulation (EC) No 881/2004 (the rail sector representative bodies),

— a representative of ticket vendors,

— a representative of European passengers,

— the European Railway Agency, and

— the Commission.

This steering committee shall be co-chaired by (a) the Commission and (b) a person nominated by the rail sector representative bodies. The Commission assisted by the members of the steering committee shall draft the rules of procedure of this steering committee, on which the steering committee shall agree. The decisions taken shall be transparent and shall be accompanied by a sound technical and economic justification.

The members of the steering committee may propose to the steering committee that other organisations be included as observers where there are sound technical and organisational reasons for doing so.

7.2.2. *Roles and responsibilities*

7.2.2.1. Stakeholders

1. A project team established by the rail sector representative bodies and including a ticket vendor representative shall develop the detailed IT specifications, the governance and the master plan on the basis of a work programme to be approved by the steering committee.

2. The project team shall set up the necessary working groups bringing in expertise from the European Railway Agency, railway undertakings, infrastructure managers, station managers, ticket vendors workers' representatives and passenger representatives.

3. The project team shall conduct the whole project transparently, and all minutes, documents and deliverables of the project team and its working groups shall be made permanently and fully accessible to the Commission and the European Railway Agency.

4. The project team shall send monthly progress reports to the steering committee and shall take full account of the latter's decisions. The structure and content of the progress report shall be approved by the steering committee at the kick-off meeting.

5. The project team shall provide information to railway undertakings, infrastructure managers, station managers, ticket vendors and passenger representatives, and shall consult them. It shall pay particular attention to small railway undertakings and railway undertakings that are not members of rail sector representative bodies, and shall keep them informed and consult them.

6. Railway undertakings, infrastructure managers, station managers, ticket vendors and passengers' representatives shall support the project by providing information, and functional and technical expertise, as and when requested by the project team.

7.2.2.2. European Railway Agency

1. The European Railway Agency shall monitor and assess the development of the detailed IT specifications, governance and master plan with a view to determining whether the objectives pursued have been achieved.

2. The European Railway Agency shall submit to the Commission a recommendation on the detailed IT specifications, governance and master plan.

7.2.2.3. Commission

1. The Commission shall indicate to the project team the list of bodies to be involved in the project.

2. Upon reception of the detailed IT specifications, governance and master plan, the Commission shall assess them on the basis of the recommendation of the European Railway Agency and, in the light of this assessment, shall take the necessary measures to amend the current TSI.

3. The Commission will keep the Member States informed via the committee established in accordance with Article 29(1) of Directive 2008/57/EC.

7.2.3. *Deliverables*

The detailed IT specifications shall describe the system and shall indicate in a clear and unambiguous manner how the system fulfils the requirements of the TAP TSI. The development of such specifications requires a systematic analysis of the relevant technical, operational, economic and institutional issues that underpin the process of implementing the TAP TSI. Therefore, deliverables shall include, but shall not be limited to, the following:

1. Functional, technical and performance specifications, the associated data, the interface requirements, the security and the quality requirements.

2. The outline of the global architecture of the system. It shall describe how the requisite components interact and fit together. This shall be based on the analysis of the system configurations capable of integrating the legacy IT facilities, while delivering the required functionality and performance.

The master plan shall include:

1. The identification of the activities necessary to achieve the implementation of the system.

2. A migration plan which includes a set of phases that is conducive to intermediate and verifiable tangible results, from the current framework of stakeholders' information and communication systems to the system itself.

3. A detailed milestone plan.

4. A risk assessment of the crucial phases of the master plan.

5. An assessment of the total lifecycle costs (LCC) associated with the deployment and operation of the system, together with a subsequent investment plan and the relevant cost-benefit analysis.

The governance shall include the identification of the appropriate governance structures, methods and procedures to support the development and validation of the system and subsequently its deployment and its field operation and management throughout its lifetime (including dispute management between the parties involved under the provisions of this TSI).

7.2.4. *Milestones*

1. A kick-off meeting between the project team and the steering committee shall take place not later than 2 months after the publication of this Regulation in the *Official Journal of the European Union*.

   (a) At the kick-off meeting, the project team shall present a project description and a project work programme including a timetable. The project description shall explain the understanding of the tasks, the project organisation, the roles and responsibilities and the project method, including the process of consulting and informing all stakeholders.

   (b) At the kick-off meeting, the content and level of detail of the intermediate report and of the monthly progress report referred to in Section 7.2.2.1 will be discussed and agreed between the project team and the steering committee.

2. The project team shall submit the intermediate report to the steering committee not later than 5 months after the kick-off meeting.

3. The deliverables shall be submitted to the Commission and the European Railway Agency not later than 10 months after the kick-off meeting.

4. The European Railway Agency shall submit a recommendation on deliverables submitted to the Commission not later than 2 months after receiving them.

7.3. **Phase 2 — Development**

All actors concerned shall develop the system following the amendment of the present TSI.

7.4. **Phase 3 — Deployment**

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

7.5. **Change Management**

7.5.1. *Change Management Process*

Change management procedures shall be designed to ensure that the costs and benefits of change are properly analysed and that changes are implemented in a controlled way. These procedures shall be defined, put in place, supported and managed by the European Railway Agency and shall include:

— the identification of the technical constraints underpinning the change,

— a statement of who takes responsibility for the change implementation procedures,

— the procedure for validating the changes to be implemented,

— the policy for change management, release, migration and roll-out,

— the definition of the responsibilities for the management of the detailed specifications and for both its quality assurance and configuration management.

The Change Control Board (CCB) shall be composed of the European Railway Agency, rail sector representative bodies, a ticket representative body, a passenger representative body and Member States. Such an affiliation of the parties shall ensure a perspective on the changes that are to be made and an overall assessment of their implications. The CCB ultimately shall be brought under the aegis of the European Railway Agency.

7.5.2. *Specific Change Management Process for technical documents published by the European Railway Agency*

Technical documents quoted in Chapter 4 of this TSI (except for the standards which are linked to open issues) and listed in Annex III to this Regulation are technical documents published by the European Railway Agency pursuant to Article 5(8) of Directive 2008/57/EC.

The change control management for these technical documents shall be established by the European Railway Agency in accordance with the following criteria:

1. The change requests affecting the technical documents are submitted either via the National Safety Authorities (NSA), or via the representative bodies from the railway sector acting on a European level as defined in Article 3(2) of Regulation (EC) No 881/2004, or the ticket vendors' representative, or via the body which originally developed the specifications that were the forerunners of the technical documents.

2. The European Railway Agency shall gather and store the change requests.

3. The European Railway Agency shall present change requests to the dedicated ERA working party, which will evaluate them and prepare a proposal accompanied by an economic evaluation, where appropriate.

4. Afterwards the European Railway Agency shall present the change request and the associated proposal to the change control board that will or will not validate or postpone the change request.

5. If the change request is not validated, the European Railway Agency shall send back to the requester either the reason for the rejection or a request for additional information about the draft change request.

6. If the change request is validated, the technical document shall be amended.

7. Prior to the publication of the modified technical document, it shall be communicated to the Commission together with the change request and its economic evaluation.

8. The Commission will keep the Member States informed via the committee established in accordance with Article 29(1) of Directive 2008/57/EC.

9. The new version of the technical document and the validated change request shall be made available at the site of the European Railway Agency.

Where change control management affects elements which are in common use within the TAF TSI, the changes shall be made so as to remain as close as possible to the implemented TAF TSI in order to achieve optimum synergies.

7.6. **Specific cases**

7.6.1. *Introduction*

The following special provisions are permitted in the specific cases below:

(a) 'P' cases: permanent cases;

(b) 'T' cases: temporary cases, where it is recommended that the target system is reached by 2020 (an objective set out in Decision No 1692/96/EC of the European Parliament and Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network [1]), as amended by Decision No 884/2004/EC [2].

7.6.2. *List of specific cases*

There are no specific cases indicated for this TSI.

8. GLOSSARY

The definitions in this glossary refer to the use of terms in this TSI.

Term	Description
Access party	Means either a licensed railway undertaking or, to the extent authorised by each Member State, another party seeking to procure a train path in the working timetable for the operation of railway service on its territory with commercial or public-service intent. Examples of such authorised parties may be public authorities, or any other party having an access contract or an international group of such parties, which is also known as an applicant group or access party group

[1] OJ L 228, 9.9.1996, p. 1.
[2] OJ L 167, 30.4.2004, p. 1.

Term	Description
ACID	Stands for Atomicity, Consistency, Isolation, Durability These are the four primary attributes common to any transaction: Atomicity. In a transaction involving two or more discrete pieces of information, either all of the pieces are committed or none are Consistency. A transaction either creates a new and valid state of data or, if any failure occurs, returns all data to the state before the transaction was started Isolation. A transaction in process and not yet committed must remain isolated from any other transaction Durability. Committed data are saved by the system so that, even in the event of a failure and system restart, the data are available in their correct state The ACID concept is described in ISO/IEC 10026-1:1992 Section 4. Each of these attributes can be measured against a benchmark. In general, however, a transaction manager or monitor is designated to implement the ACID concept. In a distributed system, one way to achieve ACID is to use a two-phase commit (2PC), which ensures either that all involved sites must commit to completing the transaction or that none do, and the transaction is rolled back
Arrival date/time, actual	Means the actual date (And time) of arrival of means of transport
Arrival date/time, estimated	Means the date (And time) of arrival of means of transport based on the current forecast
Arrival date/time, planned	Means the date (And time) of arrival of means of transport in the timetable
Arrival delay, expected	Means the time difference between the arrival date/time Estimated and the arrival date/time Planned
Arrival delay, actual	Means the time difference between the arrival date/time actual and the arrival date/time Planned
At the discretion of	Means that the railway undertaking can decide based on its experience and its needs
Attributing system	Means an electronic system hosting the catalogue of transport services for which a transport service provider authorises distributors to issue travel documents
Attributor	Means a company managing an attributing system. May be a carrier
Authorised Public Body	Means a public authority having a statutory obligation or right to provide members of the public with travel information and also refers to the public authority which is responsible for the enforcement of Regulation (EC) No 1371/2007 pursuant to Article 30(1) of the Regulation
Availability	Means the information (transport service, type of offer, tariff, other service) that can actually be obtained by a passenger at a given point in time, for a specific train. Not to be confused with offer, indicating that a (transport service, type of offer, tariff, other service) is offered in the initial planning, but could be sold out and is therefore not obtainable by a passenger at a given time point, for a specific train
Basic parameter	Means any regulatory, technical or operational condition which is critical to interoperability and requires a decision in accordance with the procedure laid down in Article 21(2) before any development of draft TSIs by the joint representative body
Booking (selling)	Means the selling of a ticket with or without a reservation
Carrier	Means the contractual railway undertaking with whom the passenger has concluded a transport contract or a series of successive railway undertakings which are liable on the basis of such a contract

Term	Description
Carrier, Joint	Means a carrier linked by a cooperation agreement to one or more other carriers for the operation of a transport service
Carrier, Sole	Means a carrier that operates a transport service independently of other carriers
Channel	Means the method (such as ticket office machine, on-train media, public web services, telesales, mobile ticketing) by which a service (information, ticket sale, ticket refund, response to complaints, etc.) is provided to the passenger by a railway undertaking
Coach ID	Means the unique identification number of a coach
Commission	Means the European Commission
COTS-product	Means commercial off-the-shelf products
Customer	Means a person who intends to buy, is buying, or has bought a railway product for him/herself or for other person(s). May therefore be different from passenger (see passenger)
Decryption	Means the converting of encrypted data back into their original form
Delay	Means the time difference between the time the passenger was scheduled to arrive according to the published timetable and the time of his/her actual or expected arrival
Delta deviation	Means the operational 'lateness or earliness' in relation to the booked scheduled time
Departure date/time, actual	Means the actual date (And time) of departure of means of transport
Departure date/time, estimated	Means the date (And time) of departure of means of transport based on current forecast
Departure date/time, planned	Means the date (And time) of departure of means of transport in the timetable
Directive 2008/57	Means Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community
Departure delay, actual	Means the time difference between the actual departure date/time and the Planned departure date/time
Departure delay, expected	Means the time difference from the departure date/time and the expected departure date/time
Display	Means any dynamic visual device located either in Stations or on the inside/outside of trains for the purpose of informing passengers
Distributor	Means an undertaking providing legal and technical capacity to issuers to sell rail products or to provide on line-facilities to customers to buy rail products. Besides, the distributor can offer services to issuers by assembling O-Ds carried out by different carriers into complete journeys as required by the traveller. The distributor may be a carrier
Domestic journey	Means a passenger journey by rail whereby a passenger does not cross a border of a Member State
Domestic rail passenger service	Means a rail passenger service which does not cross a border of a Member State
Encryption	Means the encoding of data
ERA	See European Railway Agency

Term	Description
Essential requirements	Means all the conditions set out in Annex III to Directive 2008/57/EC which must be met by the trans-European rail system, the subsystems, and the Interoperability Constituents including interfaces
ETA	Means the Estimated time of arrival (of the train at the station)
ETH	Means the Estimated time of Handover (of a train from one infrastructure manager to another)
ETI	Means the Estimated time of Interchange (of the train from one railway undertaking to another)
European Railway Agency	Means the Agency established pursuant to Regulation (EC) No 881/2004/EC of the European Parliament and of the Council of 29 April 2004 establishing a European Railway Agency
Fare	Means a charge to be paid for transportation or service
Forecast	Means the best estimate of an event (e.g. arrival, departure or passing time of a train)
Forecast point	Means a target point for which the forecast is generated. It may relate to arrival, departure, passage or handover
Foreign rail passenger service	Means a rail passenger service which was purchased by the passenger in a country, but is performed in a country different from the country of purchase
Foreign sale	Means the sale of a train ticket by an issuer which is not (one of) the carrier(s) operating the train where the ticket will be used. The issuer is located in a country different from the country of the carrier(s)
FTP	Means the File Transfer Protocol A protocol to transfer files between computer systems in the TCP/IP network
Fulfilment	Means the process which delivers the Product to the customer after its purchase
General Conditions of Carriage	Means the conditions of the carrier in the form of general conditions or tariffs legally in force in each Member State and which have become, through the conclusion of the contract of carriage, an integral part of it
Global price train	Means a train that a passenger can board only having purchased a global price ticket
Handover point	Means the point where the responsibility changes from one infrastructure manager to another
HTTP	Means the Hypertext Transfer Protocol The client/server protocol used to connect to servers on the Web
IM	Means any body or undertaking that is responsible in particular for establishing and maintaining railway infrastructure. This may also include the management of infrastructure control and safety systems. The functions of the infrastructure manager on a corridor or part of a corridor may be allocated to different bodies or undertakings
Infrastructure manager (IM)	See IM
Integrated Reservation Tickets — IRT	Means a kind of train ticket restricted to a specific train on a specific date/time. A IRT ticket can only be sold by means of an online transaction between the sales terminal and the attributing system where the relevant train is hosted

Term	Description
Interchange between Carriers	Means the transfer of control from one railway undertaking to another for practical operational, safety and liability reasons. Examples are: — successive railway undertakings, — trains with substitute carriers, — the transfer of information between different railway undertakings
Interchange point	Means the location where the control of the train is transferred from one railway undertaking to another railway undertaking Regarding a train running, the train is taken over from one railway undertaking by the other railway undertaking, which now owns the path for the next section of the journey
Intermediate point	Means the location which defines the start or end point of a journey section. This may be an interchange, handover or handling point, for example
International rail passenger service	Means a rail passenger service which crosses a border of at least one Member State
International journey	Means a passenger journey by rail crossing the border of at least one Member State
International sale	Means the sale of a train ticket for an international journey
Interoperability constituent	Means any elementary component, group of components, subassembly or complete assembly of equipment incorporated or intended to be incorporated into a subsystem upon which the interoperability of the trans-European rail system directly or indirectly depends. The concept of a constituent covers both tangible objects and intangible objects, such as software
IP	Means the Internet Protocol
Issuer	Means an undertaking selling the ticket and receiving payment. May be a carrier and/or a distributor. The issuer is the undertaking indicated on the ticket with its code and possibly its logo
Journey	Means the movement of a passenger (or several passengers travelling together) from a location A to a location B
Journey planner	Means an IT system able to propose journey solutions A journey solution is a set of one or more commercial transport services answering at least the question 'How can I go from location A to location B at a given departure/arrival date And time?'. The question could contain more complex additional criteria, such as 'in the fastest way', 'in the cheapest way', 'with no changes', etc. The passenger can build the journey solutions by him/herself, consulting different information sources, or the solution can be offered to him/her by a journey Planner
Keeper	Means the person who, being the owner of a vehicle or having the right to use it, exploits such vehicle economically in a permanent manner as a means of transport and is registered as such in the Rolling Stock Register
Loco ID	Means the unique identification number of a traction unit
Make available	Means the publishing of information or data where access control may be applied
Manifest on list	Means a fulfilment method where the customer makes its purchase in advance (e.g. at home) and receives only a confirmation, usually with a reference code. The undertaking performing this kind of sale provides the TCO with a list of all passengers (and reference codes) admitted on the specific train. The passenger simply manifests his/her desire to be admitted on the train before/after departure at the TCO. TCO checks whether the passenger is allowed to embark/stay on the train

Term	Description
Market price	See Global price
Metadata	This term simply means data about data. It describes data, software services, and other components contained in the enterprise information systems. Examples of the types of Metadata include standard data definitions, location and routing information, and synchronisation management for distributing shared data
Notified bodies	Means the bodies which are responsible for assessing the conformity or suitability for use of the Interoperability Constituents or for appraising the EC procedure for verification of the subsystems
NRT train	Means a train that a passenger can board having bought a NRT ticket, in the case of international or foreign sales
NRT	Non-integrated reservation tickets — This is a way of selling train tickets meant for international or foreign sales, where the issuer can produce the ticket locally, without any online transaction with an attributing system. The NRT tickets are always open tickets, i.e. the contract of carriage is valid on any NRT train serving the route marked on the ticket, within a defined validity period. To issue a NRT ticket the issuer needs a list of OD's (series) and one or more tables of prices corresponding to distance ranges. Reservations can (in some cases must) be purchased together with the ticket
Offer	See availability
Official website	Means the company's public website where commercial information is released to the customer. The website shall be machine readable by respecting web content accessibility guidelines
One stop shop	An international partnership between rail infrastructure managers providing a single point of contact for rail customers for the purposes of: ordering specified train paths in international freight traffic, monitoring the movement of the entire train, generally also invoicing track access charges on behalf of infrastructure managers
Passenger	Means a person who intends to make, or is making, or has made a journey using the transport services and other services of one or more railway undertakings May be different from customer (see customer)
Path	Means the infrastructure capacity needed to run a train between two places over a given time-period (route defined in time and space)
Path number	Means the number of the defined train path
Payment	Means the transfer of wealth from one party (such as a customer) to another (such as a distributor). A payment is usually made in exchange for the provision of transport or service
Peer-to-Peer	Means a class of systems and applications that employ distributed resources to perform a critical function in a decentralised manner
Person with reduced mobility (PRM)	Means any person whose mobility when using transport is reduced due to any physical disability (sensory or locomotory, permanent or temporary), intellectual disability or impairment, or any other cause of disability, or as a result of age, and whose situation needs appropriate attention and adaptation to its particular needs of the service made available to all passengers
Platform	Means the area at a station to alight from/board trains
Primary data	Means the basic data as reference data input for messages or as the basis for functionality and calculation of derived data
PRM	See Person with reduced mobility

Term	Description
Product	Means a type of train with determined types of services (e.g. high speed, bicycle storage places, PRM accommodation, couchette and/or sleeping cars, dining cars, take-away facilities, etc.) which are linked to relevant prices and may be linked to specific conditions
Publish	Means the publishing of information or data where no access control shall be applied
Rail system	Means (as in 'trans-European rail system') the structure, as described in Annex I (Directive 2008/57/EC), composed of lines and fixed installations, of the trans-European transport network, built or upgraded for conventional rail transport and combined rail transport, plus the rolling stock designed to travel on that infrastructure
Railway undertaking	Means any public or private undertaking the principal business of which is to provide services for the transport of goods and/or passengers by rail, with a requirement that the undertaking must ensure traction; this also includes undertakings which provide traction only
Regular vs. Short Term processes	Regular means a process when performed within a period which is equal to or more than 7 days Short term means a process when performed within a period which is less than 7 days
Reporting point	Means either passing points used by an infrastructure manager to provide train running information (only) or points where forecasts are generated
Repository	Means the storage of data similar to a database and data dictionary; however, it usually encompasses a comprehensive information management system environment. It must include not only descriptions of data structures (i.e. entities and elements), but also Metadata of interest to the enterprise, data screens, reports, programs, and systems
Reservation	Means an authorisation on paper or in electronic form giving entitlement to a service (transportation or assistance) subject to a previously confirmed personalised transport arrangement
Reservation system	Means a computerised system used to store and retrieve information and conduct transactions related to travel. A reservation system is capable of keeping inventory correct in real time, and is accessible to agents/retailers around the world
Retailer	Means a person or an undertaking that sells to the customer a ticket without or with a reservation for a rail service. A retailer can be a railway undertaking (agent) or an accredited travel agent
Route	Means the geographical line to be taken from a starting point to a point of destination
Route section	Means a part of a route
RU	See Railway undertaking
Selling	See Booking
Service	See Transport service
Service provider	Means the responsible entity providing any services linked to the transport of passengers
Shall	Means that the definition is an absolute requirement of the specification
Short Term processes	See Regular vs. Short Term processes

Term	Description
Short notice path request	Means the individual request for a path according to Article 23 of Directive 2001/14/EC due to additional transport demands or operational needs
SQL	Means Structured Query Language A language devised by IBM, then standardised by ANSI and ISO, which is used for creating, managing and retrieving data in relational databases
Stakeholders	Means any person or organisation with a reasoned interest in train service delivery e.g.: — Railway undertaking, — Locomotive provider, — Coach provider, — Driver/train crew provider, — Infrastructure manager (IM), — Fleet manager, — Ferry boat operator, — Worker, — Ticket vendor, — Passenger
Station	Means a railway location where a passenger train can start, stop or end
Station manager	Means an organisational entity in a Member State, which has been made responsible for the management of a railway station and which may be the infrastructure manager
Substitute carrier	Means a railway undertaking, which has not concluded a transport contract with the passenger, but to whom the railway undertaking that is party to the contract has entrusted, in whole or in part, the performance of the transport by rail
Tariff	Means a specific set of fares available on a given train, on a given day for a given O-D leg of the journey. Tariffs may be grouped in different categories (such as public fares, Group fares, etc.)
TCO	Means Ticket Controlling Organisation. This is an organisation empowered to inspect passenger tickets. Mostly a carrier. If necessary, the TCO is to deliver security certificates for the International Rail Ticket for Home Printing (IRTHP) to the distributors
Technical Document	Means any technical document published by the European Railway Agency pursuant to Article 5(8) of Directive 2008/57
Technical Specification for Interoperability	Means a specification adopted in accordance with Directive 2008/57/EC by which each subsystem or part subsystem is covered in order to meet the Essential Requirements and ensure the interoperability of the rail system
TETA	See train Estimated time of arrival
Third party	Means any public or private undertaking, which is not a railway undertaking or infrastructure manager and provides services ancillary to, or in connection with, the services/transport services
Through ticket	Means a ticket or tickets representing a transport contract for successive railway services operated by one or more railway undertakings
Ticket	Means a material or immaterial registration entitling a passenger to contractually use one or more commercial transport services offered by one or more railway undertakings
Ticket On departure	Means a fulfilment method where the customer makes its purchase in advance (e.g. at home) and collects the ticket in the departure Station, at a ticket counter or vending machine

Term	Description
Ticket vendor	Means any retailer of rail transport services concluding transport contracts and selling tickets on behalf of a railway undertaking or for its own account
Timetable	Means the list of commercial transport services offered by a railway undertaking during a given time interval
TOD	See Ticket On Departure
Tour Operator	Means an organiser or retailer, other than a railway undertaking, within the meaning of Article 2, points (2) and (3) of Directive 90/314/EEC
Train Estimated time of Arrival	Means the Estimated time of arrival of a train at a specific point, e.g. handover point, interchange point, train destination
Train path	Means the train route defined in time and space
Train running interrupted	Means that the continuation of the train is unknown based on local circumstances at the time and in the opinion of the parties involved. If the Delay is known, the infrastructure manager sends a train running forecast message
Trans-European rail network	Means the rail network as described in Annex 1 to Directive 2008/57/EC
Transport contract	Means a contract of carriage for consideration or free of charge between a railway undertaking or a ticket vendor and the passenger for the provision of one or more transport services
Transport mode	Means a generic type of vehicle capable of transporting passengers (train, plane, bus, etc.)
Transport service	Means a commercial transport service or transport service under public service contract linking two or more locations, offered by a railway undertaking according to a published timetable. A transport service is normally performed with a specific transport mode
Transport service provider	Means any private or public company authorised to transport people in domestic or international passenger traffic. A 'transport service provider' accepts travel documents issued by the accredited sales points of its distributors. It plays the role of the contractual carrier with which the passenger has entered into a contract of carriage. Execution of the transport service may be entrusted, in part or in full, to a substitute carrier
TSI	See Technical Specification for Interoperability
XML	Means the Extended Mark-up Language
XQL	Means the Extended Structured Query Language

ANNEX II

LIST OF OPEN POINTS

In accordance with Article 5(6) of Directive 2008/57/EC, the following open points are identified:

Section	Open points
4.2.2.1.	Technical document on the process and the information used for it in respect of tariff data intended for domestic sales
4.2.10.	Standard for the handling of security elements for product distribution
4.2.11.2	Standard for European 'Ticket On Departure' and for European 'Manifest On List'
4.2.11.3	Technical document or standard on direct fulfilment methods which are linked to the ticket and/or reservation and to the kind of media for domestic sales
4.2.11.4	Technical document or standard on indirect fulfilment methods which are linked to the ticket and/or reservation and to the kind of media for domestic sales
4.2.22	Standard for the exchange of fare information in the context of connection with other modes of transport

ANNEX III

LIST OF TECHNICAL DOCUMENTS REFERENCED IN THIS TSI

Reference	Label
B.1. (V1.1)	Computer generation and exchange of tariff data meant for international or foreign sales — NRT tickets
B.2. (V1.1)	Computer generation and exchange of tariff data meant for international and foreign sales — Integrated Reservation Tickets (IRT)
B.3. (V1.1)	Computer generation and exchange of data meant for international or foreign sales — Special offers
B.4. (V1.1)	Implementation guide for EDIFACT messages covering timetable data exchange
B.5. (V1.1)	Electronic reservation of seats/berths and electronic production of travel documents — Exchange of messages
B.6. (V1.1)	Electronic seat/berth reservation and electronic production of transport documents (RCT2 standards)
B.7. (V1.1)	International Rail ticket for Home Printing
B.8. (V1.1)	Standard numerical coding for railway undertakings, infrastructure managers and other companies involved in rail-transport chains
B.9. (V1.1)	Standard numerical coding of locations
B.10 (V1.1)	Electronic reservation of assistance for persons with reduced mobility — Exchange of messages
B.30. (V1.1)	Schema — messages/datasets catalogue needed for the RU/IM communication of TAP TSI

ANNEX IV

LIST OF TARIFFS MEANT FOR INTERNATIONAL OR FOREIGN SALES

C.1. **NRT Tariffs**

The main content of NRT tariff data shall be:

— Series,

— Products,

— Services,

— Carrier codes,

— Fare tables,

— Station list.

NRT tariffs shall be made available in advance at least 3 months before the tariffs enter into force.

C.2. **IRT Tariffs**

The main content of IRT tariff data shall be:

— tariffs,

— tariff ranges,

— Cards used with market prices,

— Exclusion types,

— Sales conditions,

— After sales conditions,

— Fare tables,

— Station/zone list.

IRT tariffs shall be made available in advance according to their sales conditions.

C.3. **Special Tariffs**

The main content of the special tariff data shall be:

— The offer and its conditions,

— Fares,

— Supplements,

— Authorisations,

— Number of passengers/accompanying passengers and their categories,

— Reduction types,

— Exclusion types,

— Sales conditions,

— After-sales conditions,

— Reservation fees,

— Series,

— Trains including their categories and facilities.

Special tariffs shall be made available in advance according to its sales conditions.