



**COMMISSION IMPLEMENTING REGULATION (EU) 2026/253**

**of 6 February 2026**

**on a technical specification relating to the telematics subsystem of the rail system in the European Union for interoperability of data sharing in rail transport ('TEL TSI') and repealing Regulations (EU) No 454/2011 ('TAP TSI') and (EU) No 1305/2014 ('TAF TSI')**

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

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

Having regard to Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union <sup>(1)</sup>, and in particular Article 5(11) thereof,

Whereas:

- (1) Point 1(b), third indent, of Annex II to Directive (EU) 2016/797 lists 'telematics applications for passenger and freight services' as a subsystem of the rail system that is described in point 2.6 of that Annex. Points 1.6.2 and 2.7 of Annex III to that Directive set out the essential requirements for that subsystem.
- (2) The technical specifications that apply to the 'telematics applications for passenger and freight services' subsystem are currently set out in Commission Regulation (EU) No 454/2011 <sup>(2)</sup>, which relates to telematics applications for passenger services ('TAP TSI'), and Commission Regulation (EU) No 1305/2014 <sup>(3)</sup>, which relates to telematics applications for the freight subsystem ('TAF TSI'). Pursuant to Commission Delegated Decision (EU) 2017/1474 <sup>(4)</sup>, those two regulations are to be revised on the basis of a coherent set of objectives, which the Commission is to integrate into one technical specification for interoperability ('TSI'), in order to take into account open source and open data architecture requirements, facilitate the emergence of through-ticketing, integrated ticketing and multimodal travel information and reservation systems, improve the performance of rail freight, facilitate logistics and operations of combined and multi-modal transport, include data that is to be exchanged with safety related applications and allow the European Union Agency for Railways ('the Agency') to assess the compliance of telematics applications against the requirement of the TSIs.

<sup>(1)</sup> OJ L 138, 26.5.2016, p. 44, ELI: <http://data.europa.eu/eli/dir/2016/797/oj>.

<sup>(2)</sup> 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 (OJ L 123, 12.5.2011, p. 11, ELI: <http://data.europa.eu/eli/reg/2011/454/oj>).

<sup>(3)</sup> Commission Regulation (EU) No 1305/2014 of 11 December 2014 on the technical specification for interoperability relating to the telematics applications for freight subsystem of the rail system in the European Union (OJ L 356, 12.12.2014, p. 438, ELI: <http://data.europa.eu/eli/reg/2014/1305/oj>).

<sup>(4)</sup> Commission Delegated Decision (EU) 2017/1474 of 8 June 2017 supplementing Directive (EU) 2016/797 of the European Parliament and of the Council with regard to specific objectives for the drafting, adoption and review of technical specifications for interoperability (OJ L 210, 15.8.2017, p. 5, ELI: [http://data.europa.eu/eli/dec\\_del/2017/1474/oj](http://data.europa.eu/eli/dec_del/2017/1474/oj)).

- (3) Taking into account the relevant recommendations of the Agency <sup>(5)</sup>, it is necessary to set out common technical and functional requirements for digital information sharing through interoperable data for rail passenger and rail freight services. Those requirements should meet the changing needs of the rail sector and support the implementation of Union legislation in the single European rail area <sup>(6)</sup> and the trans-European transport network (TEN-T) <sup>(7)</sup>, such as rail safety <sup>(8)</sup>, network capacity management and network information <sup>(9)</sup>, intermodal and multimodal digital information <sup>(10)</sup>, paperless freight transport <sup>(11)</sup>, rail passenger rights <sup>(12)</sup> or reservation systems for integrated ticketing.
- (4) This Regulation should cover information systems and data sharing protocols between data holders, on the one hand, and data recipients or data users, on the other, that are governed by the horizontal Union rules set out in Regulation (EU) 2023/2854 of the European Parliament and of the Council <sup>(13)</sup>, in particular its Chapters III, IV, V and IX, and Regulation (EU) 2022/868 of the European Parliament and of the Council <sup>(14)</sup> with adaptations necessary for the concepts and processes relating to the telematics subsystem.
- (5) Rail related processes falling within the scope of this Regulation should cover capacity and traffic management, the management of connections between trains and with other modes of transport, train preparation, the management of freight wagons and their load as well as the production of accompanying electronic freight documents and rail ticketing including the issuing of tickets across operators and modes of transport as well as rail passenger travel information. As a result, the definition of telematics stakeholders should include not only the rail infrastructure managers and railway undertakings but also other stakeholders that carry out tasks which are part of those rail related processes.

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<sup>(5)</sup> The recommendation of the Agency of 25 January 2022 on TAP TSI, and the recommendation of the Agency of 27 January 2022 on TAF TSI.

<sup>(6)</sup> Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (recast) (OJ L 343, 14.12.2012, p. 32, ELI: <http://data.europa.eu/eli/dir/2012/34/oj>).

<sup>(7)</sup> Regulation (EU) 2024/1679 of the European Parliament and of the Council of 13 June 2024 on Union guidelines for the development of the trans-European transport network, amending Regulations (EU) 2021/1153 and (EU) No 913/2010 and repealing Regulation (EU) No 1315/2013 (OJ L, 2024/1679, 28.6.2024, ELI: <http://data.europa.eu/eli/reg/2024/1679/oj>).

<sup>(8)</sup> Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast) (OJ L 138, 26.5.2016, p. 102, ELI: <http://data.europa.eu/eli/dir/2016/798/oj>).

<sup>(9)</sup> Commission Implementing Regulation (EU) 2017/2177 of 22 November 2017 on access to service facilities and rail-related services (OJ L 307, 23.11.2017, p. 1, ELI: [http://data.europa.eu/eli/reg\\_impl/2017/2177/oj](http://data.europa.eu/eli/reg_impl/2017/2177/oj)).

<sup>(10)</sup> Commission Delegated Regulation (EU) 2017/1926 of 31 May 2017 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide multimodal travel information services (OJ L 272, 21.10.2017, p. 1, ELI: [http://data.europa.eu/eli/reg\\_del/2017/1926/oj](http://data.europa.eu/eli/reg_del/2017/1926/oj)).

<sup>(11)</sup> Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information (OJ L 249, 31.7.2020, p. 33, ELI: <http://data.europa.eu/eli/reg/2020/1056/oj>).

<sup>(12)</sup> Regulation (EU) 2021/782 of the European Parliament and of the Council of 29 April 2021 on rail passengers' rights and obligations (recast) (OJ L 172, 17.5.2021, p. 1, ELI: <http://data.europa.eu/eli/reg/2021/782/oj>).

<sup>(13)</sup> Regulation (EU) 2023/2854 of the European Parliament and of the Council of 13 December 2023 on harmonised rules on fair access to and use of data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (Data Act) (OJ L, 2023/2854, 22.12.2023, ELI: <http://data.europa.eu/eli/reg/2023/2854/oj>).

<sup>(14)</sup> Regulation (EU) 2022/868 of the European Parliament and of the Council of 30 May 2022 on European data governance (Data Governance Act) (OJ L 152, 3.6.2022, p. 1, ELI: <http://data.europa.eu/eli/reg/2022/868/oj>).

- (6) To ensure clear responsibilities in ticketing processes, it is necessary to specify that a railway undertaking or ticket vendor, as defined in Article 3, point (5), of Regulation (EU) 2021/782 of the European Parliament and of the Council <sup>(15)</sup>, may have one or more of the following roles: 'distributor' or 'retailer' of rail products, or 'issuer' of rail tickets. Relations between those entities should be subject to contracts which may fall under Union or national legislation, including competition law and horizontal rules on data sharing. Those contracts should include provisions on the interoperable solution agreed between the railway undertaking and the distributor involved in availability check and reservation of rail products. As regards the distribution of rail products, this Regulation should specify the interoperable solutions that are applicable on the basis of contractual provisions. The ERA Technical Document B.5 <sup>(16)</sup> issued by the Agency should list the currently most used solutions, namely 2 TAP TSI legacy solutions, OSDM and OMSA.
- (7) In accordance with Article 23(2) of Regulation (EU) 2016/796 and under the process of Article 5 of Directive (EU) 2016/797, any technical document issued or amended by the Agency becomes mandatory where its corresponding baseline is referenced in Appendix C of this Regulation. The same applies where a European standard referred to in Regulation (EU) No 1025/2012 of the European Parliament and of the Council <sup>(17)</sup> replaces a technical document a new baseline should be incorporated in the Appendix C of this Regulation under the same process.
- (8) The Agency should establish, publish and apply a transparent and comprehensive change control management procedure in accordance with Article 23(2) of Regulation (EU) 2016/796 to maintain technical documents and implement error corrections, minor and maintenance releases identifying applicable updates.
- (9) To develop the competitiveness of rail transport and to remove technical barriers, notably through the digitalisation of rail related processes, this Regulation should take into account the proposals made in the Ministerial Declaration 'Rail freight corridors to boost international rail freight' <sup>(18)</sup> endorsed by the Member States, Switzerland and Norway on 21 June 2016 in Rotterdam. In line with those proposals, it is therefore appropriate to lay down rules on data sharing within the logistic chain, including terminals and intermodal transport operators, on sharing up-to-date and forecast information about the movements of trains and the status of freight wagons and their load to make rail freight transport more attractive and to better align intermodal logistics processes, and to harmonise safety and operational rules. Those rules should apply to telematics stakeholders having contractual obligations to carry out the rail related processes in the scope of this Regulation or those having an operational responsibility in those processes. A telematics stakeholder may have an operational responsibility that does not result directly from a contractual obligation. For example, where train traffic information impacts different railway undertakings operating trains on the same network and their service providers or different rail transport services on that network and associated service providers.

<sup>(15)</sup> Regulation (EU) 2021/782 of the European Parliament and of the Council of 29 April 2021 on rail passengers' rights and obligations (OJ L 172, 17.5.2021, p. 1, ELI: <http://data.europa.eu/eli/reg/2021/782/oj>).

<sup>(16)</sup> Solutions specified in the ERA technical document B.5:

- A1: TAP TSI legacy binary messages-based API;
- A2: TAP TSI legacy XML/SOAP-based API;
- B1: The Open Sales and Distribution Model (OSDM) JSON/REST based API;
- B2: The Transmodel (EN12896) and JSON/REST based Open Mobility Sales API (OMSA).

<sup>(17)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12, ELI: <http://data.europa.eu/eli/reg/2012/1025/oj>).

<sup>(18)</sup> <https://data.consilium.europa.eu/doc/document/ST-10306-2016-INIT/en/pdf>.

- (10) To ensure the proportionality of the rules on data sharing with operators of service facilities, this Regulation should cover only station managers and the multimodal freight terminals of the trans-European transport network (railroad terminal, maritime ports, inland ports). To ensure consistency between the European frameworks applicable to the trans-European transport network and the single European railway area for the purposes of this Regulation, the operators of multimodal freight terminals should be considered as operators of service facilities that are offering services which are necessary for operating a freight rail transport service and whose service facilities are listed in point (2), subpoints (b), (c), (d) and (g), of Annex II to Directive 2012/34/EU.
- (11) To facilitate access by Union, national, regional and local authorities to data shared through telematics applications, this Regulation should provide corresponding obligations for free of charge and direct access to raw data. However, upon transparent and proportionate requests in terms of their scope and level of detail, additional data-related services for the development and production of European official statistics should be ensured on a sustainable basis and according to fair, clear, predictable and proportionate rules, in line with the Union's fundamental rights framework, and in accordance with the principle of cost-effectiveness and are not to entail excessive burdens on economic operators as laid down in Article 338(2) of the Treaty on the Functioning of the European Union (TFEU) and Articles 17a to 17g and 23 of Regulation (EC) No 223/2009 of the European Parliament and of the Council <sup>(19)</sup>.
- (12) The operation of trains throughout the single European railway area requires seamless access to and interconnection with the information and communication systems used by the stakeholders involved in accordance with the latest technical developments and should cater for testing of innovation.
- (13) The Commission's guidelines on recommended standard licences, datasets and charging for the re-use of documents <sup>(20)</sup> identify Creative Commons ("CC") licences as a recommended standard for open licences. CC licences are developed by a non-profit organisation and have become a leading licensing solution for public information across the world. It is therefore appropriate to refer to the most recent version of the CC licence suite, namely CC 4.0. To allow for additional arrangements due to ad hoc specificities of the data available for use, it should also be possible to use a standard open licence established by the data holder that is equivalent to the CC licence suite, as long as associated arrangements do not restrict the possibilities for reusing the data. It should also be possible to use a standard open licence equivalent to the CC licence suite, under fair, reasonable and non-discriminatory licencing terms and conditions subject to the relevant horizontal Union rules set out in Chapters III, IV, V and IX of Regulation (EU) 2023/2854.
- (14) In order to facilitate the reuse of reference data managed by the Agency, the Agency should use the European Union Public Licence ('EUPL') version 1.2 set out in Commission Implementing Decision (EU) 2017/863 <sup>(21)</sup>.
- (15) Free access to information disseminated for public use is a fundamental right. Restricted availability of digital information on existing rail transport services and routes, such as train traffic and timetable including conditions of carriage and connection times between access nodes, hinders potential customers from making informed decisions on their preferred transport options as well as the development of innovative applications or machine learning methods that may be integrated into artificial intelligence. Therefore, that digital information (raw data) should be available online for reuse in accordance with relevant access conditions set out under standard open licences in the

<sup>(19)</sup> Regulation (EC) No 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics and repealing Regulation (EC, Euratom) No 1101/2008 of the European Parliament and of the Council on the transmission of data subject to statistical confidentiality to the Statistical Office of the European Communities, Council Regulation (EC) No 322/97 on Community Statistics, and Council Decision 89/382/EEC, Euratom establishing a Committee on the Statistical Programmes of the European Communities (OJ L 87, 31.3.2009, p. 164, ELI: <http://data.europa.eu/eli/reg/2009/223/oj>).

<sup>(20)</sup> OJ C 240, 24.7.2014, p. 1.

<sup>(21)</sup> Commission Implementing Decision (EU) 2017/863 of 18 May 2017 updating the open source software licence EUPL to further facilitate the sharing and reuse of software developed by public administrations (OJ L 128, 19.5.2017, p. 59, ELI: [http://data.europa.eu/eli/dec\\_impl/2017/863/oj](http://data.europa.eu/eli/dec_impl/2017/863/oj)).

TSI established by this Regulation. However, information about train operations subject to security measures, such as the transport of dangerous goods or for armed forces and commercial data relating to the identification of the goods transported should be protected and therefore not disclosed to the public. Personal data relating to the identification of business and associated owner may be considered by a freight railway undertaking as either commercially sensitive or crucial information for market visibility and should upon request be protected. To ensure maximum impact of information on rail transport services and to facilitate its use, that digital information should be available for reuse with minimal legal restrictions and free-of-charge. It should also be machine-readable, provided by application programming interfaces ('APIs') and, where relevant, provided as bulk download. To protect the data holder, it is important to ensure that users of publicly available data about freight rail transport services are traceable. That would allow for appropriate action in the event of alleged misuse beyond the standard access conditions set out in this TSI under standard open licences. Where commercial products derived from additional data processing services applied to publicly available data are offered – either by the data holder without affecting the public availability of that data or by users subject to the data holder's licensing terms – non-discriminatory and reasonable compensation may be required for such services in accordance with the horizontal Union rules laid down in Article 9 of Regulation (EU) 2023/2854.

- (16) Information relating to passenger rail transport services is mostly public under Union or national law. Therefore, technical conditions should be set for telematics stakeholders holding such information to grant access for use to the respective data sets.
- (17) Urban nodes, as defined in Article 3, point (6), of Regulation (EU) 2024/1679, play an important role in the TEN-T network as starting points or destinations ('first and last mile') and are points of transfer within or between different passenger transport modes. Access to transport and travel information should reduce the detrimental effect of capacity bottlenecks and insufficient network connectivity. To encourage the combination of transport services, access nodes in one or more urban nodes may be grouped in one or more meta stations and digital information for journey planning, namely the timetable of passenger rail transport services and associated conditions of carriage, and the minimum connection time between different access nodes, should be publicly available online for use under standard open licences.
- (18) To enable the telematics stakeholders concerned to provide passengers with information in accordance with Regulation (EU) 2021/782 and to allow ticket vendors to easily compare the rail products that are proposed to them by railway undertakings, it is necessary that national access points serve as reliable sources of information in the case of complaints and trusted points of access to accurate, complete, and up-to-date rail travel and traffic data based on data quality requirements specified in accordance with Article 8(1) of Delegated Regulation (EU) 2017/1926 and applied by the data holder.
- (19) Horizontal Union rules on terms and conditions for business-to-business data sharing are set out in Chapters III, IV and IX of Regulation (EU) 2023/2854. As a consequence, any fees and charges for data sharing and access to data for use, or the use of telematics applications as APIs and web user interfaces, or the access for use to reference data pursuant to this Regulation should be reasonable and proportionate to the legitimate costs incurred for setting up, maintaining and using such APIs, web user interfaces or reference data.
- (20) Horizontal essential requirements for interoperability of data, data sharing mechanisms and services, common European data spaces, data processing services, and for smart contracts executing data sharing agreements are laid down in Chapter VIII of Regulation (EU) 2023/2854. To help the rail sector meet those horizontal requirements and bring about a common European mobility data space which is interoperable with other European data spaces, a common central repository creating a single source of reference data and common Ontology for the Union rail system should be established and published through the EU Open Data Portal to cover the data necessary to implement this Regulation. That repository should be based on an open data architecture and provide significant

benefits for discoverability, accessibility, ease of collaboration, consistency and flexibility within rail data management. As system authority for telematics applications of the Union rail system, the Agency should be responsible pursuant to Article 23, paragraphs 1 and 3, of Regulation (EU) 2016/796 of the European Parliament and of the Council <sup>(22)</sup>, for the management of that repository and for the reference data necessary to share data in accordance with this Regulation. An appropriate transition period should be ensured to bring together data from the databases managed jointly by infrastructure managers or by a group of railway undertakings.

- (21) Regulations (EU) 2016/679 <sup>(23)</sup> and (EU) 2018/1725 <sup>(24)</sup> of the European Parliament and of the Council apply in the context of processing of personal data in the application of this Regulation. Therefore, telematics stakeholders should use a single reference identifier when identifying their organisation and role in rail-related processes. That identifier may constitute or be associated with personal data within the meaning of Article 4, point (1), of Regulation (EU) 2016/679 and Article 3, point (1), of Regulation (EU) 2018/1725.
- (22) Network-specific data requirements (such as parameters or identifiers that are part of messages or messages specific to a network) used or intended to be used for data sharing as part of the deployment of the telematics subsystem or any national legal provision requiring their existence, should be justified by the technical characteristics of the network and should not hinder the transparent and non-discriminatory application of capacity and traffic management processes.
- (23) To update the specifications referenced in this Regulation, the Agency should establish, publish and apply a change control management procedure pursuant to Articles 5(9) and 23(2) of Regulation (EU) 2016/796. To ensure a coordinated development of telematics applications and monitor their deployment in the Union pursuant to Article 23, paragraphs 1 and 4, of Regulation (EU) 2016/796, the Agency should identify updates for these specifications and where relevant propose implementation dates for their application.
- (24) A framework should be established for railway undertakings sharing roles and responsibilities for the operation of a direct train across one or more networks to ensure consistent data sharing throughout the whole service.
- (25) For the digitalisation of multi-network processes to be fit for the delivery of the single European railway area, telematics applications for interoperable data sharing should be based on standardise APIs and web user interfaces. The interfaces between those tools and users should comply with the minimum rules on ergonomics and health protection.

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<sup>(22)</sup> Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways and repealing Regulation (EC) No 881/2004 (OJ L 138, 26.5.2016, p. 1, ELI: <http://data.europa.eu/eli/reg/2016/796/oj>).

<sup>(23)</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 119, 4.5.2016, p. 1, ELI: <http://data.europa.eu/eli/reg/2016/679/oj>).

<sup>(24)</sup> Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39, ELI: <http://data.europa.eu/eli/reg/2018/1725/oj>).

- (26) To facilitate digital access to data sharing systems for capacity management, train preparation, and train traffic management, one infrastructure manager in each Member State could act as single point of contact, in particular in relation to multi-network processes.
- (27) To ensure fair competition between railway undertakings and to guarantee full transparency and non-discriminatory access to their service facilities pursuant to Article 13 of Directive 2012/34/EU of the European Parliament and of the Council <sup>(25)</sup>, station managers should establish the default minimum time for passengers to connect the access nodes of different passenger transport services.
- (28) To set out the strategy for the application of this Regulation pursuant to Article 4(3), point (h), of Directive (EU) 2016/797, including the provisions applicable to the existing subsystem and the stages to be completed for a gradual transition to a target subsystem pursuant to point (f) of that Article, a timescale and the gradual milestones pursuant to Article 4(4) of that Directive should be established.
- (29) To assist the Commission pursuant to Article 23(4) of Regulation (EU) 2016/796 in monitoring the deployment of telematics applications in accordance with this Regulation, the Agency should automate the digital collection information from telematics stakeholders on their implementation plans and the status of implementation of this Regulation and publish figures aggregated at national and Union level. Reporting obligations should be limited to key telematics stakeholders and to the monitoring of implementation until compliance with the requirements of this Regulation is achieved.
- (30) To facilitate the monitoring of the deployment of telematics applications in accordance with this Regulation and enable follow-up actions based on the result of an evaluation by the Agency, this Regulation should allow the Agency, as the system authority for telematics, to assess the compliance of telematics applications against this Regulation, in relation to the data shared through them, in case of doubt or complaints and based on a self-declaration of telematics stakeholders. To that end, the Agency should develop web applications enabling telematics stakeholders to automate their self-declaration of compliance based on the testing procedures specified in this Regulation and to notify the corresponding results to the Agency.
- (31) To support the enforcement of other Union acts for which this TSI set out harmonised specifications for the use of digital means, digital communication technologies and accessible formats necessary to comply with those acts, an evaluation by the Agency may be required by relevant national bodies such as national safety authorities as defined in Article 3, point (7), of Directive (EU) 2016/798 of the European Parliament and of the Council <sup>(26)</sup> in relation to operational communications, regulatory bodies as referred to in Section 4 of Directive 2012/34/EU in relation to the transparent and non-discriminatory application of capacity and traffic management processes and the minimum access package laid down in point 1 of Annex II to that Directive, enforcement bodies as referred to in Chapter VII of Regulation (EU) 2021/782 in relation to rail passenger travel information, and competent authorities as referred to in Article 9 of Delegated Regulation (EU) 2017/1926 in relation to travel and traffic data shared via national access points.
- (32) To support the advancement of the TSI set up by this Regulation, by the Agency, the Commission should entrust the Agency pursuant to Article 40(2) of Regulation (EU) 2016/796 with the task of promoting innovation that aims at improving the use of new information technologies, timetable information and tracking and tracing systems.

<sup>(25)</sup> Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (recast) (OJ L 343, 14.12.2012, p. 32, ELI: <http://data.europa.eu/eli/dir/2012/34/oj>).

<sup>(26)</sup> Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (OJ L 138, 26.5.2016, p. 102, ELI: <http://data.europa.eu/eli/dir/2016/798/oj>).

- (33) To facilitate a coordinated and coherent implementation of this Regulation at national and Union level, national contact points ('NCP'), established pursuant to Article 5(3) of Regulation (EU) No 1305/2014 and Article 6 of Regulation (EU) No 454/2011, should support the Agency. To allow a coherent implementation between freight and passenger services, the tasks of the NCP should be undertaken by one single entity. An infrastructure manager may be tasked with acting as the NCP, where necessary in cooperation with other entities providing specific expertise.
- (34) Information on passenger rail transport services related to access nodes for multimodal purposes is to be available in accordance with Delegated Regulation (EU) 2017/1926. To ensure consistency of that information with a single source of reference data at Union level, data holders should consistently use reference data such as location codes assigned by the Agency when providing access to data via national access points. To that effect, the NCP should facilitate interaction between national telematics stakeholders and the Member States, which are responsible for setting up national access points. Article 4(1)(b) and Article 5(1)(b) of Commission Delegated Regulation (EU) 2017/1926 refer to the technical specifications to be applied for rail passenger transport services. To ensure a coherent implementation of these specifications based on interoperable formats and protocols in a multimodal context by data holders involved in rail-related processes, this TSI should set out harmonised specifications to be applied by data holders in relation to passenger rail transport services. However, additional terms and conditions for direct access to and commercial use of data by distributors and retailers may be agreed with railway undertakings on a contractual basis taking into account applicable legal provisions.
- (35) To ensure the digitalisation of passenger travel information and tickets in accordance with Regulation (EU) 2021/782, this TSI should set out harmonised specifications for the use of appropriate digital means, digital communication technologies and accessible formats.
- (36) The Agency, acting as the system authority for telematics applications pursuant to Article 23 of Regulation (EU) 2016/796, is to coordinate the development of telematics applications, manage change requests and system versions and monitor the deployment of telematics applications through relevant working parties established pursuant to Chapter 2 of that Regulation.
- (37) Since certain terms reflecting the structure of the data shared are widely accepted and used in one technical language, such terms in the Annex should remain in that widely accepted technical language used for coding in telematics applications.
- (38) To fulfil the specific essential requirement safety for the telematics subsystem set out in point 2.7.4 of Annex III to Directive (EU) 2016/797, this Regulation should identify the functions relevant for the safety of operations. Basic level of integrity and dependability are defined in this Regulation. Without prejudice to the requirements applicable to the control-command and signalling subsystem, additional levels should be applicable to digital systems subject to this Regulation where data is intended to be used for the safety of operations. Where these levels have not yet been harmonised at Union level, they should be identified as an open point pursuant to Article 4(6) of Directive (EU) 2016/797. Until harmonisation is achieved, any additional levels intended to be applied by stakeholders should be assessed and established, and may be implemented through mutual agreement, without creating obstacles to access the single European railway area.

- (39) This Regulation should be aligned with other TSIs developed pursuant to Directive (EU) 2016/797, in particular with Commission Implementing Regulation (EU) 2019/773 for operation and traffic management ('OPE TSI')<sup>(27)</sup>, Commission Implementing Regulation (EU) 2023/1695 regarding control-command and signalling ('CCS TSI')<sup>(28)</sup>, Commission Regulation (EU) No 1300/2014 regarding persons with disabilities and persons with reduced mobility ('PRM TSI')<sup>(29)</sup>, Commission Regulation (EU) No 1304/2014 regarding rolling-stock noise ('NOI TSI')<sup>(30)</sup>, Commission Regulation (EU) No 1301/2014<sup>(31)</sup> regarding the energy subsystem ('ENE TSI'), and Commission Regulation (EU) No 1302/2014<sup>(32)</sup> ('Loc&Pas TSI') regarding locomotives and passenger rolling-stock.
- (40) Point 4.2.3.3.2 of the Annex to Implementing Regulation (EU) 2019/773 ('OPE TSI') requires the railway undertaking to inform the infrastructure manager when a train is ready for access to the network. Currently, that requirement is implemented in different ways depending on infrastructure characteristics (for example, Railway Mobile Radio (RMR) systems, ETCS L2, dedicated interlocking at departure point, dedicated telematics message). Point 4.2.4 of Annex I to Implementing Regulation (EU) 2023/1695 ('CCS TSI') sets out requirements for mobile communication functions for railways (RMR), which for GSM-R Voice and operational communication applications mandate the application of system requirements specification referenced in index [33] of Appendix A to that Annex. Those requirements specify the dialling code to be used for 'train ready' and 'train not ready' respectively. Point 4.2.2 of Annex I to Implementing Regulation (EU) 2023/1695 ('CCS TSI') sets out requirements for on-board ETCS functionalities, which for the 'Start of mission' procedure in ETCS L2 are defined in the system requirements specification referenced as index [4] referred to in the Appendix A to that Annex. For the purposes of this Regulation, those options for communicating on train readiness should be limited and harmonised.
- (41) Article 4(1) of Implementing Regulation (EU) 2019/777 requires infrastructure managers to publish in the register of infrastructure (the 'RINF') referred to in Article 49 of Directive (EU) 2016/797 the values of the parameters of its railway network as soon as such data becomes available. Points 4.2.1.2.2 and 4.8.1 of the Annex to Implementing Regulation (EU) 2019/773 ('OPE TSI') require infrastructure managers to publish in the RINF any changes to the nominal infrastructure characteristics, whenever such information becomes available and affects the operation of train on the network, including permanent or temporary restrictions and modifications. As set out in the point (8) of Annex VII to Directive 2012/34/EU, such information covers speed restrictions, axle load, train length, traction, or structure gauge included in capacity restrictions. Any temporary change to the nominal value of a network parameter, resulting from such restrictions or modifications, is to be published in the RINF as a temporary value, along with the validity dates associated with that restriction or modification.

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<sup>(27)</sup> Commission Implementing Regulation (EU) 2019/773 of 16 May 2019 on the technical specification for interoperability relating to the operation and traffic management subsystem of the rail system within the European Union and repealing Decision 2012/757/EU (OJ L 139I, 27.5.2019, p. 5, ELI: [http://data.europa.eu/eli/reg\\_impl/2019/773/oj](http://data.europa.eu/eli/reg_impl/2019/773/oj)).

<sup>(28)</sup> Commission Implementing Regulation (EU) 2023/1695 of 10 August 2023 on the technical specification for interoperability relating to the control-command and signalling subsystems of the rail system in the European Union and repealing Regulation (EU) 2016/919 (OJ L 222, 8.9.2023, p. 380, ELI: [http://data.europa.eu/eli/reg\\_impl/2023/1695/oj](http://data.europa.eu/eli/reg_impl/2023/1695/oj)).

<sup>(29)</sup> Commission Regulation (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility (OJ L 356, 12.12.2014, p. 110, ELI: <http://data.europa.eu/eli/reg/2014/1300/oj>).

<sup>(30)</sup> Commission Regulation (EU) No 1304/2014 of 26 November 2014 on the technical specification for interoperability relating to the subsystem 'rolling stock — noise' amending Decision 2008/232/EC and repealing Decision 2011/229/EU (OJ L 356, 12.12.2014, p. 421, ELI: <http://data.europa.eu/eli/reg/2014/1304/oj>).

<sup>(31)</sup> Commission Regulation (EU) No 1301/2014 of 18 November 2014 on the technical specifications for interoperability relating to the energy subsystem of the rail system in the Union (OJ L 356, 12.12.2014, p. 179, ELI: <http://data.europa.eu/eli/reg/2014/1301/oj>).

<sup>(32)</sup> Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the rolling stock — locomotives and passenger rolling stock subsystem of the rail system in the European Union (OJ L 356, 12.12.2014, p. 228, ELI: <http://data.europa.eu/eli/reg/2014/1302/oj>).

- (42) To allow for sufficient return on investments of projects which aim to implement the telematics subsystem in accordance with Regulations (EU) No 454/2011 and (EU) No 1305/2014 and which, on the date of entry into force of this Regulation, are at an advanced stage of development within the meaning of Article 2, point (23), of Directive (EU) 2016/797, it is necessary to set an appropriate transitional period for corresponding telematics stakeholders to comply with this Regulation, without prejudice to Article 7(1), point (a), of that Directive.
- (43) To support the digitalisation of rail related processes within rail freight service facilities and to facilitate a gradual and timely implementation of interoperable data sharing by their operators, it is necessary to set an appropriate transitional period to allow operators of rail freight service facilities to comply with this Regulation, unless they are excluded from the scope of Directive (EU) 2016/797 in accordance with Article 1(4) of that Directive.
- (44) To facilitate a gradual and timely deployment of the technical tools to be provided by the Agency for the coordinated development of telematics applications in the Union and the management of their specifications, the date of application of this Regulation should be deferred in relation to the delivery by the Agency of those tools.
- (45) Regulations (EU) No 454/2011 and (EU) No 1305/2014 should therefore be repealed.
- (46) The European Data Protection Supervisor was consulted in accordance with Article 42(1) of Regulation (EU) 2018/1725 and delivered an opinion on 28 April 2025 <sup>(33)</sup>.
- (47) The measures provided for in this Regulation are in accordance with the opinion of the committee referred to in Article 51 of Directive (EU) 2016/797,

HAS ADOPTED THIS REGULATION:

## CHAPTER 1

### GENERAL PROVISIONS

#### *Article 1*

#### **Subject matter**

This Regulation lays down common, specific and interface requirements for the interoperability of data sharing in rail transport by establishing a technical specification for interoperability (TSI) relating to the ‘telematics applications for passenger and freight services’ subsystem of the rail system in the Union, as set out in the Annex.

#### *Article 2*

#### **Scope**

1. This Regulation applies to ‘telematics applications for passenger and freight services’ referred to in point 1(b), third indent, of Annex II to Directive (EU) 2016/797 and described in point 2.6 of that Annex, with respect to the following processes:

- (a) as regards both freight and passenger rail transport services:
- (i) capacity management;
  - (ii) train preparation;
  - (iii) traffic management;

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<sup>(33)</sup> European Data Protection Supervisor’s opinion C2025-0228.

- (b) as regards freight rail transport services only: management of freight wagons and their load;
  - (c) as regards passenger rail transport services only:
    - (i) rail ticketing;
    - (ii) rail passenger travel information.
2. This Regulation applies to the Union rail system as defined in Article 2, point (1), of Directive (EU) 2016/797.
3. This Regulation does not apply to rail transport services leaving or entering the Union to or from a third country which are not subject to similar rules under an international agreement. However, telematics stakeholders may apply alternative measures between the border and the border station designated for cross-border operations.

### Article 3

#### Definitions

For the purposes of this Regulation, the following definitions apply:

- (1) 'data' means a machine-readable representation of acts, facts or information and any compilation of such acts, facts or information intended to be shared in a harmonised and structured format;
- (2) 'data sharing' means the provision of data by a data holder to a data recipient for the purpose of the joint or individual use of such data, directly or through an intermediary, for example under open or commercial licences subject to a fee or free of charge;
- (3) 'rail ticketing' means the process comprising at least one of the following for passenger rail transport services:
  - (a) the digital presentation of passenger rail transport services for journey planning;
  - (b) the digital checking of the availability or the digital reservation of corresponding rail products for sales;
  - (c) the digital issuing and control of tickets;
  - (d) the digital handling of after sale processes;
- (4) 'rail product' means a tailored service in relation to a passenger rail transport service linked to a tariff;
- (5) 'ticket' means a ticket as defined in Article 3, point (7), of Regulation (EU) 2021/782;
- (6) 'reservation' means a reservation as defined in Article 3, point (8), of Regulation (EU) 2021/782;
- (7) 'rail transport service' means a scheduled service for carriage by rail between a point of departure and a point of arrival and covers transport services for goods, passengers, luggage, bicycles or cars, and tailored transport arrangements, as well as passenger assistance including services for re-routing and journey continuation;
- (8) 'operator of rail freight service facility' means operators of service facilities as defined in Article 3, point (12), of Directive 2012/34/EU, that provide services necessary for operating a freight rail transport service and whose service facilities are listed in point (2), subpoints (b), (c), (d) and (g), of Annex II to Directive 2012/34/EU and are connected to the trans-European transport network as specified in Annex II to Regulation (EU) 2024/1679, limited to the multimodal freight terminals identified pursuant to Article 36 of that Regulation;
- (9) 'telematics stakeholder' means the following data holders or data recipients whose activities entail the use of telematics applications for passenger and freight services:
  - (a) railway undertakings;
  - (b) infrastructure managers;
  - (c) station managers;
  - (d) operators of rail freight service facilities;
  - (e) intermodal transport operators;

- (f) applicants for railway infrastructure capacity or capacity in service facilities;
  - (g) bodies responsible for allocating infrastructure capacity or capacity in service facilities;
  - (h) railway undertakings, or ticket vendors as defined in Article 3, point (5), of Regulation (EU) 2021/782, where those undertakings or vendors act as either a retailer, a distributor, an issuer, or a combination of two or more of those roles, in the processes referred to in Article 2(1), point (c);
  - (i) entities in charge of maintenance as defined Article 3, point (20), of Directive (EU) 2016/798;
  - (j) third-party service providers that either have an operational responsibility in the functioning of the rail system or in supporting the delivery of passenger or freight rail transport services, or that are contracted to monitor the movements of trains or the flow of passengers or goods;
  - (k) freight customers;
  - (l) holders of a freight transport contract relating to a specific train or to a specific type of rail transport service;
  - (m) non-commercial third-party information aggregators that provide independent, non-discriminatory, publicly available data relating to rail transport services;
  - (n) any other entity that is involved in the operation of telematics applications, in relation to the elements of the subsystem referred to in point 2.6 of Annex II to Directive (EU) 2016/797;
- (10) 'Union bodies' means Union bodies as defined in Article 2, point (27), of Regulation (EU) 2023/2854;
- (11) 'public sector body' means public sector body as defined in Article 2, point (28), of Regulation (EU) 2023/2854;
- (12) 'data holder' means a natural or legal person that has the right to use or an obligation to produce and make available data;
- (13) 'data recipient' means a natural or legal person that has the right to access the data produced and made available by the data holder under specified access conditions for use;
- (14) 'access to data' means the right to consult the data with or without control over it, distinctively from other rights and obligations relating to its use for non-commercial or commercial purposes;
- (15) 'national access point' means a national access point within the meaning of Article 3 of Commission Delegated Regulation (EU) 2017/1926;
- (16) 'ERA Ontology' means a technical document issued by the Agency pursuant to Article 4(8) of Directive (EU) 2016/797, setting out human-readable and machine-readable data definitions and presentations and the associated quality and accuracy requirements for data elements of the Union rail system;
- (17) 'data element' means a field, value, or attribute of the data shared, which is structured in a consistent manner with the overall protocol used for data sharing and carries essential information that contributes to the meaning and purpose of the data shared, enabling data sharing between systems, applications or organisations;
- (18) 'reference data' means a data set of standardised and interoperable single identifiers to be used as a basis for data sharing in a specific domain;
- (19) 'metadata' means metadata as defined in Article 2, point (2), of Regulation (EU) 2023/2854;
- (20) 'multi-network process' means a process that is affected by the operation of a rail transport service across two or more networks managed by different infrastructure managers or operators of rail freight service facilities;
- (21) 'direct rail transport service' means a rail transport service that may include intermediate commercial stops between its origin and destination but does not involve any transfer of passengers or freight between trains;

- (22) ‘application programming interface’ or ‘API’ means a set of functions, procedures, definitions and protocols for interoperable data sharing between telematics applications;
- (23) ‘station manager’ means a station manager as defined in Article 3, point (3), of Regulation (EU) 2021/782;
- (24) ‘minimum connection time’ means the minimum amount of time that is sufficient for a passenger to connect between the access nodes of two consecutive passenger transport services included in a journey;
- (25) ‘person with disabilities’ and ‘person with reduced mobility’ means a person with disabilities and person with reduced mobility as defined in point 2.2 of the Annex to Regulation (EU) No 1300/2014 (‘PRM TSI’);
- (26) ‘journey’ means an end-to-end trip of a passenger or a load that can include multiple legs;
- (27) ‘public departure time’ means the boarding time limit for passengers, that is the point in time when access to the train, platform or station is closed in preparation for departure and after which passengers are no longer allowed to board and that takes into account the time that may be required for the check-in of passengers, bicycles, or luggage;
- (28) ‘public arrival time’ means the alighting time for passengers, that is the point in time when the doors of the train are opened at the destination platform or terminal and disembarkation is allowed for passengers;
- (29) ‘working timetable’ means working timetable as defined in Article 3, point (28), of Directive 2012/34/EU that is used for capacity and traffic management as referred to in Section 2 of the Annex to this Regulation;
- (30) ‘meta station’ means a group of stations within a functional urban area, including one or more urban nodes listed in Annex II to Regulation (EU) 2024/1679, that may extend across multiple Member States and where distinct stations can be reached by connecting urban transport modes and urban transport services, whether scheduled or unscheduled;
- (31) ‘access node’ means access node as defined in Article 2, point (25), of Delegated Regulation (EU) 2017/1926;
- (32) ‘applicant’ means applicant as defined in Article 3, point (19), of Directive 2012/34/EU;
- (33) ‘passenger timetable’ means the date and time of passenger rail transport services operated as a commercial service by a railway undertaking during a given time interval that are used in the context of rail ticketing and rail passenger travel information referred to in Section 4 of the Annex;
- (34) ‘shunting movement’ means shunting movements as defined in Table 1 of the Annex to Implementing Regulation (EU) 2019/773 (‘OPE TSI’);
- (35) ‘freight customer’ means the entity that has issued the consignment information to the relevant freight railway undertaking and which may be a logistics service provider, an intermodal transport operator, a freight forwarder, a fleet manager of empty wagons, or where relevant the data holder, that has concluded a contract of carriage covering transport services for goods;
- (36) ‘intermodal transport operator’ means an entity that organises freight transport services connecting two or more freight terminals with more than one transport mode;
- (37) ‘consignment note’ means a transport document referred to in Article 6 of Council Regulation No 11 <sup>(34)</sup>;
- (38) ‘distributor’ means an entity that, deriving from contractual provisions, has:
- (a) the technical capacity to combine one or more rail products from one or more railway undertakings, for the purpose of supplying them to an issuer or a retailer;

<sup>(34)</sup> Council Regulation No 11 concerning the abolition of discrimination in transport rates and conditions, in implementation of Article 79(3) of the Treaty establishing the European Economic Community (OJ 52, 16.8.1960, p. 1121, ELI: <http://data.europa.eu/eli/reg/1960/11/oj>).

- (b) rights to operate without an initial query to the attributing systems of those undertakings in relation to the rail products referred to in point (a);
  - (c) autonomous rights to check the availability of price for each of the services that is part of the combined rail products referred to in point (a);
- (39) 'journey planner' means a search engine used to find an optimal journey based on defined criteria set out by its user;
- (40) 'issuer' means an entity that has the legal and technical capacity, deriving from contractual provisions, to issue, for a retailer, a ticket on which the parties to the contract of carriage are indicated;
- (41) 'attributing system' means the railway undertaking's digital system that hosts the online catalogue of individual rail transport services and that enables distributors to check the availability of those services and make reservations;
- (42) 'retailer' means an entity that:
- (a) has the legal and technical capacity, deriving from contractual provisions, to combine, or combine and sell, one or more rail products made available to it by one or more distributors;
  - (b) obtains access to the rail products referred to in point (a) after submitting an initial request to the distributors involved;
  - (c) sells the rail products referred to in point (a), where relevant, but without autonomous rights to amend the content of those rail products or conditions of the offers set out by distributors;
  - (d) is permitted to apply fees or reductions to the offers set out by distributors;
- (43) 'tariff' means the aggregated data established by a railway undertaking, or, where relevant, by the data holder, that provides all relevant details of a tariff, including the rail transport service price due by a distributor to the railway undertaking and the associated attributes and conditions;
- (44) 'offer' means the aggregated data established by a distributor combining applicable tariffs that include the rail product price due by the retailer to the distributor and which may vary from the price set out by the railway undertaking due to the application of automated pricing rules, discounts or other commercial conditions;
- (45) 'yielded price' means the price associated to a tariff resulting from the application of an algorithm based on variables, referred to as the yielding rule;
- (46) 'ticket control organisation' or 'TCO' means an organisation empowered to inspect passenger tickets, including at platform access doors;
- (47) 'data quality' means the degree of fitness for use at which the characteristics of data satisfy the stated and implied level of accuracy, completeness, consistency, timeliness and uniqueness of datasets, and create actionable insights for other users under specified conditions.

## CHAPTER 2

### GENERAL RULES AND PRINCIPLES

#### *Article 4*

#### **Data sharing between telematics stakeholders and rights to access data**

1. Where telematics stakeholders involved in the same rail transport services and related processes referred to in Article 2(1) have rights or obligations deriving from legal or contractual provisions for those processes, they shall grant each other access for use or share the data specified in the Annex that are necessary to carry out those processes.

Except for the processes referred to in Article 2(1), point (c)(i), the rights and obligations referred to in the first subparagraph may also result from the operational responsibility in those processes, of any entity involved.

2. Upon reasoned request of the Commission, a Union body or a public sector body, telematics stakeholders that hold data specified in the Annex shall grant free of charge direct access to specific raw data for one of the following purposes:

- (a) the monitoring of the establishment of the single European rail area or the trans-European transport network;
- (b) the development of rail interoperability and safety in the Union;
- (c) the monitoring or auditing of the flow of passengers or freight in the Union.

#### Article 5

##### **Access to train traffic data and train composition data**

1. In addition to the obligations set out in Article 4 of this Regulation, each infrastructure manager or, where relevant, an operator of rail freight service facilities shall grant telematics stakeholders pursuant to Article 4(1) access via a common Union web user interface ('web UI') in the area of traffic management referred to in Article 14(5) of this Regulation, and as part of the minimum access package laid down in point 1 of Annex II to Directive 2012/34/EU, to the following raw data in accordance with the specifications and access conditions set out in Annex:

- (a) working timetable data, referred to in point 2.3.10 of the Annex to this Regulation, generated by the infrastructure managers or, where relevant, the data holder;
- (b) train traffic data, referred to in point 2.6 of the Annex to this Regulation, generated by the infrastructure managers as holders of that data;
- (c) train composition data, referred to in point 2.5.1 of the Annex to this Regulation, received from railway undertakings as holders of that data;
- (d) historic record of train data, referred to in point 2.7 of the Annex to this Regulation.

2. Access to the data referred to in paragraph 1 shall be public and free of charge via a publicly accessible common Union web UI.

3. Paragraph 2 shall not apply to transport of dangerous goods subject to the provisions of Directive 2008/68/EC of the European Parliament and of the Council <sup>(35)</sup>.

4. In the case of freight rail transport services, paragraph 2 shall only apply where a freight railway undertaking chooses to disclose the data referred to in paragraph 1 in respect of some or all of its transport services on a voluntary basis.

5. The common Union web UI referred to in paragraph 1 shall ensure an automated implementation of the access restrictions and limitations referred to in this Article as specified by the data holder.

6. The provisions of this Article shall neither apply to rail transport services for the armed forces nor to other rail transport services subject to security measures adopted by a Member State where such services are operated.

<sup>(35)</sup> Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods (OJ L 260, 30.9.2008, p. 13, ELI: <http://data.europa.eu/eli/dir/2008/68/oj>).

*Article 6***Access to data for journey planning of passenger rail transport services and to tariff data**

1. Each passenger railway undertaking, or, where relevant, the competent authority as defined in Article 2, point (b), of Regulation (EC) No 1370/2007 of the European Parliament and of the Council <sup>(36)</sup>, or the data holder, shall grant public and free of charge access to data specified in points 4.2.1 and 4.4 of the Annex regarding the passenger timetable of the rail transport service that it operates and for corresponding conditions of carriage, respectively.

Access shall be granted at least via the national access points in accordance with the specifications and access conditions set out in the Annex.

2. Each station manager, or, where relevant, the infrastructure manager or another entity designated by one of them or by the Member State, as data holder, shall grant public and free of charge access to data specified in point 4.2.2 of the Annex regarding connection times between access nodes.

Access shall be granted at least via the national access points in accordance with the specifications and access conditions set out in the Annex.

3. Where a passenger railway undertaking, or where relevant the data holder, has rights or obligations deriving from contractual provisions to grant access to its tariff data that access shall be granted to all its tariffs at least via the national access points in accordance with the specifications and access conditions set out in point 4.3 of the Annex.

Additional terms and conditions for direct access to and commercial use of that data may be agreed on a contractual basis.

4. Where a distributor has rights or obligations deriving from contractual provisions to access availability and reservation data of the rail products of a passenger railway undertaking, including for yielded prices, that access shall be granted by that railway undertaking at least through a direct connection to its attributing system in accordance with the specifications set out in point 4.5 of the Annex.

Additional terms and conditions for direct access to and use of that data shall be agreed on a contractual basis.

5. This Article shall apply in addition to the obligations set out in Article 4.

*Article 7***Cybersecurity and data format**

1. Telematics stakeholders, Union bodies and public sector bodies involved in the implementation of this Regulation shall be identified through a single identifier of their organisation assigned and validated in accordance with Article 9.

2. Where a telematics stakeholder shares and grants access to data pursuant to this Regulation, it shall ensure that the communication networks and protocols, systems, interfaces or databases it uses comply with the cybersecurity measures set out in point 1.3 of the Annex.

3. Where a telematics stakeholder shares and grants access to data pursuant to this Regulation, it shall comply with the semantics specified in the data catalogue elements as subsets of the ERA Ontology and the data sequence referred to in point 1.4 of the Annex.

4. The Agency shall ensure that the ERA Ontology and associated specific data catalogue elements reflect regulatory and technical developments affecting the Union rail system.

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<sup>(36)</sup> Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70 (OJ L 315, 3.12.2007, p. 1, ELI: <http://data.europa.eu/eli/reg/2007/1370/oj>).

*Article 8***Common central repository and reference data**

1. The Agency shall maintain a common central repository as a single source of common Union rail data for telematics. The repository shall be made available to the public and shall store all the following information:
  - (a) metadata and associated specific data catalogue elements, that are referred to in point 1.4 of the Annex as a subset of the ERA Ontology, specifying the content and the structure of the data;
  - (b) a list of certification authorities for public key infrastructure ('PKI') established in accordance with the requirements set out in point 1.3 of the Annex;
  - (c) common reference data, referred to in Article 9, managed by the Agency;
  - (d) a link to access the source of freight specific reference data, referred to in point 3.3 of the Annex, managed by the rail sector.
2. The Agency shall enable any telematics stakeholder to subscribe to automated notifications regarding any update to the information associated with the common central repository.
3. A telematics stakeholder may replicate for its own operational use the data available in the common central repository.
4. The Agency and each telematics stakeholder responsible for common reference data in accordance with points 1.2, and 4.8 of the Annex shall take the following steps:
  - (a) make publicly available and free of charge their reference data for reuse in accordance with the specifications and access conditions set out in the Annex, as well as the service level conditions applied to the availability and accessibility of corresponding repository;
  - (b) manage assignment, maintenance and storage of, and access to, their reference data in a transparent, fair, reasonable, and non-discriminatory manner.

*Article 9***Governance of common reference data**

1. The Agency shall provide telematics stakeholders with web applications to allow them to submit requests for the assignment of codes and the updating of associated data elements.

The Agency shall define and publish a user manual describing the different functions of the web applications.

2. The Agency shall define, publish and apply the procedures for managing requests to assign codes and update of associated data elements, including associated language arrangements in accordance with Article 74 of Regulation (EU) 2016/796 and deadlines. That manual shall provide guidance to telematics stakeholders for the submission of requests.

3. The Agency shall manage and assign common reference data in the form of single reference identifiers ('codes'), used or intended to be used by telematics stakeholders in respect of the processes referred to in Article 2 (1) to identify the following data elements:

- (a) entities ('organisation codes') involved in data sharing in accordance with acts adopted pursuant to Directive (EU) 2016/797 or Directive (EU) 2016/798 or Directive 2012/34/EU, referred to in point 1.2.1 of the Annex;
- (b) geographical points ('location codes') referred to in point 1.2.2 of the Annex;
- (c) ticketing aspects ('code lists for ticketing') referred to in point 4.8 of the Annex.

4. A telematics stakeholder shall submit to the Agency requests for the assignment of codes. The request shall be in accordance with the specifications for common reference data set out in point 1.2 of the Annex.

5. Where a telematics stakeholder submits a request for the assignment of a code for a location in the Union that is outside of the scope of the Union's rail network referred to in Annex I, point 1, of Directive (EU) 2016/797, the Agency shall assign a location code as a virtual extension of the rail network ('virtual location code') in the following cases:

- (a) where the location is used by transport services that replace rail transport services temporarily;
- (b) where the location is used by transport services sold as rail transport services that are not operated by railway undertakings;
- (c) where the location is considered a meta station.

6. The Agency shall ensure that the position of the location codes assigned is specified in relation to the relevant infrastructure data available in the register of the railway infrastructure (the 'RINF') referred to in Article 49 of Directive (EU) 2016/797 and store them.

7. By 2 September 2026, each infrastructure manager and each operator of rail freight service facilities, or another competent entity established in the Union designated by either, shall specify the position of the location codes, assigned to them before the entry into force of this Regulation, relative to the relevant infrastructure data available in the RINF.

8. Where, for passenger rail transport services, a telematics stakeholder refers to an access node or a data holder via national access points, it shall use the common reference data managed and assigned by the Agency pursuant this Article as European identifiers ('EU-Ids').

#### *Article 10*

#### **Data quality**

1. The Agency and each telematics stakeholder shall ensure that their reference data comply with the data quality criteria and nominal values set out in point 1.5 of the Annex and meet an appropriate level of integrity and reliability.

2. Where a telematics stakeholder shares or grants access to data pursuant to this Regulation, it shall ensure that that data meets an appropriate level of integrity and reliability and contains the reference data referred to in paragraph 1. It shall also endeavour to comply with the nominal values set out in point 1.5 of the Annex with a margin of tolerance of 5% for each of the data quality criteria set out in that point.

3. Each telematics stakeholder shall ensure that data replicated from the common central repository preserves the same quality level.

4. Where a telematics stakeholder shares or grants access to data pursuant to this Regulation, it shall perform quality assurance checks. Any deficiencies identified in the data quality shall be corrected as soon as possible.

5. Each telematics stakeholder shall establish processes for recurrent quality assurance checks against each of the data quality criteria, for at least a selection of routes and locations of reference.

#### *Article 11*

#### **Network-specific data requirements**

1. The Agency shall establish and publish a template to collect non harmonised data requirements applied or intended to be applied by telematics stakeholders, as part of the change control management procedure referred to in Article 12(1).

2. By 2 December 2026, each infrastructure manager shall share with the Agency, as part of the change control management procedure referred to in Article 12(1), the network-specific data requirements it applies or intends to apply and a justification thereof using the template referred to in paragraph 1.

Each Member State shall ensure that infrastructure managers under its responsibility comply with the provisions set out in the first subparagraph.

3. As part of the change control management procedure referred to in Article 12(1) of this Regulation and based on the information collected, the Agency shall, where justified, update the corresponding harmonised specifications referenced in Appendix C of the Annex to this Regulation or recommend to the Commission, pursuant to Article 4(a) of Regulation (EU) 2016/796, the integration of specific cases as part of Section 5 of the Annex to this Regulation.

4. Telematics stakeholders shall only apply data requirements that are harmonised pursuant to this Regulation or listed as a specific case.

#### Article 12

### Updates to referenced specifications

1. The Agency shall establish, publish and apply a change control management procedure to update and maintain the harmonised specifications referenced in Appendix C of the Annex.

2. Where the Agency issues opinions pursuant to Article 10, paragraphs 2 and 3, or Article 19(1), point (d), of Regulation (EU) 2016/796 identifying changes constituting acceptable means of compliance, it shall, where relevant, propose implementation dates for their application.

3. The Agency shall keep Member States informed of its activities pursuant to paragraph 2 of this Article through the committee referred to in Article 51(1) of Directive (EU) 2016/797.

#### Article 13

### Lead railway undertaking

1. Where a direct rail transport service is operated or intended to be operated by several railway undertakings, those undertakings shall designate one of them, or another competent entity established in the Union, to be a lead railway undertaking, for the entire service for the following tasks that are part of the processes referred to in Article 2(1):

- (a) integrating consistently the identification number of the train ('reference train identifier') with other object identifiers in accordance with the specifications set out in point 2.1 of the Annex;
- (b) coordinating the railway undertakings and other applicants involved in relation to capacity management in accordance with the specifications set out in point 2.3 of the Annex;
- (c) aggregating passenger timetable data for that service, in accordance with the specifications set out in point 4.2 of the Annex, where it differs from the working timetable;
- (d) monitoring the movement of freight wagons and their load, in accordance with the specifications set out in point 3.2 of the Annex;
- (e) integrating and sharing consignment note data in case of a freight service and act as a single point of contact for that service, in accordance with the specifications set out in point 3.1.1 of the Annex.

2. The railway undertakings referred to in paragraph 1 may distribute the tasks referred to in paragraph 1 or part of them to more than one undertaking or competent entity, each acting as the lead railway undertaking in relation to one or more tasks it is responsible for.

3. Where a direct rail transport service, with or without intermediate stops, is operated or intended to be operated by a single railway undertaking, that undertaking shall be the lead railway undertaking.

4. A lead railway undertaking responsible for the tasks referred to in paragraph 1, shall act as single point of contact for ensuring the consistency and the integration of the data that is shared or made accessible pursuant to this Regulation by the relevant data holders.

*Article 14***Telematics applications for data sharing**

1. Where a telematics stakeholder shares or grants access to data pursuant to this Regulation, it shall use a telematics application. That application shall be based on an application programming interface ('API') for machine-to-machine data sharing or a web user interface ('web UI') for human-to-machine data sharing which access is provided for use by another telematics stakeholder as an alternative.
2. Each telematics stakeholder shall ensure that the telematics applications it uses or to which it provides access for use comply with the specifications set out in point 1.7 of the Annex and ensures non-discriminatory data sharing.
3. Two or more telematics stakeholders may jointly use or jointly provide access for use to one telematics application.
4. In the areas of capacity management, train preparation and traffic management, each infrastructure manager shall both use an API and provide access for use to web UIs for its network as part of the minimum access package laid down in point 1 of Annex II to Directive 2012/34/EU.

Where there is more than one infrastructure manager in a Member State, that Member State may require those infrastructure managers to jointly use such an API and jointly provide access for use to web UIs for their networks. In that case, the Member State concerned shall appoint one infrastructure manager responsible for the joint deployment of those telematics applications.

The API and web UIs referred to in the first subparagraph of this paragraph may also be the common Union applications required for multi-network processes pursuant to paragraph 5.

5. For multi-network processes in the areas of capacity management, train preparation and traffic management:
  - (a) infrastructure managers shall jointly use a common Union API and jointly provide access for use to common Union web UIs;
  - (b) operators of rail freight service facilities may jointly use a common Union API and jointly provide access for use to common Union web UIs.
6. In the area of the management of freight wagons and their load, freight railway undertakings may jointly use a common Union API and provide access for use to common Union web UIs.

*Article 15***Connection time and passenger information in stations**

1. Each station manager, or where relevant the infrastructure manager or another entity designated by one of them, or by the Member State, as the data holder, shall, for the stations under its responsibility, establish in a neutral and non-discriminatory manner, the following minimum connection times in accordance with the requirements set out in point 4.2.2.1 of the Annex and where relevant in cooperation with other station or infrastructure managers:
  - (a) the minimum connection time between access nodes of:
    - (i) different passenger rail transport services within the station;
    - (ii) different passenger rail transport services of different stations that are part of the same meta station;
    - (iii) different passenger rail transport services and other relevant scheduled passenger transport services that may be connected;
  - (b) the minimum connection times referred to in point (a) adapted to:
    - (i) persons with disabilities and persons with reduced mobility;
    - (ii) a passenger transporting a bicycle.

2. Each station manager, or where relevant the infrastructure manager or the data holder, shall, for the stations under its responsibility, define the applicable means to connect transport services and gather information on the additional time that may be requested as part of the conditions of carriage by a railway undertaking or public authorities for the check-in of passengers, bicycles, or luggage, and include the information thereof in the minimum connection time.

3. Each station manager, or where relevant the infrastructure manager or the data holder, shall, for the stations under its responsibility, establish in a neutral and non-discriminatory manner, the most appropriate information system to be installed in the station to provide integrated train traffic and train composition rail passenger information in the station area in accordance with the requirements set out in point 4.7.1 of the Annex.

4. For the purposes of paragraphs 1, 2 and 3 of this Article, passenger railway undertakings, passenger organisations, station managers, infrastructure managers and, where appropriate, the competent authority as defined in Article 2, point (b), of Regulation (EC) No 1370/2007, or where relevant the data holder, shall cooperate with a station manager, or where relevant an infrastructure manager or the data holder, upon request of any of the latter three.

### CHAPTER 3

#### IMPLEMENTATION

##### *Article 16*

#### **Implementation deadlines**

1. Each telematics stakeholder shall ensure that any new telematics applications it deploys after the entry into force of this Regulation comply with this Regulation.

2. For its existing telematics applications, each telematics stakeholder shall follow the milestones set out in Appendix G of the Annex to ensure that those applications and the data shared or made accessible through them comply with this Regulation as regards the processes referred to in Article 2(1) and carried out in relation to the working timetables for the year 2030 that apply from 9 December 2029.

3. For the purposes of paragraph 2, operators of rail freight service facilities shall benefit from an additional transitional period of 12 months.

4. Operators of service facilities listed in point (2) of Annex II to Directive 2012/34/EU not referred to in other paragraphs of this Article may choose to apply this Regulation on a voluntary basis.

5. Where the planning or the implementation of the telematics subsystem in accordance with Regulations (EU) No 454/2011 or (EU) No 1305/2014 has reached a point where its compliance with this Regulation may compromise the viability of the putting into service of that subsystem, the deadlines set out in paragraphs 2 and 3 may be extended by 12 months.

##### *Article 17*

#### **Implementation monitoring**

1. The Agency shall provide a web application supporting telematics stakeholders' reporting. That web application shall enable automated data import from telematics applications used by telematics stakeholders to support their implementation reporting.

2. Until proof of compliance of their telematics applications is provided pursuant to Article 18, telematics stakeholders shall report to the Agency, using the automated web application referred to in paragraph 1, setting out in an accurate and transparent manner the status of their implementation and their implementation plans to meet the milestones set out in Appendix G of the Annex, in accordance with the following conditions:

- (a) no later than 2 September 2027, each infrastructure manager shall report in the following areas:
  - (i) capacity management;
  - (ii) train preparation;
  - (iii) traffic management;
- (b) no later than 2 March 2028:
  - (i) each freight railway undertaking shall report in the areas of train preparation and the management of freight wagons and their load;
  - (ii) each operator of rail freight service facilities shall report in the area of traffic management;
  - (iii) each station manager shall report in the area of rail ticketing and rail passenger travel information;
  - (iv) each passenger railway undertaking shall report in the areas of train preparation, rail ticketing and rail passenger travel information.

3. Telematics stakeholders shall coordinate their efforts in drawing up their implementation plans. Each Member State shall support national coordination or delegate the task to the national contact point.

4. The Agency shall publish aggregated figures about the status of the implementation and the implementation plans per Member State and at Union level, linked to the network size for infrastructure managers and to market share of railway undertakings expressed as tonnes/km and passengers/km, respectively.

#### Article 18

#### **Compliance assessment**

1. The Agency shall provide a web application enabling telematics stakeholders to automatically self-assess individual messages.

The Agency shall publish a user manual describing the different functions of the web applications.

2. Each telematics stakeholder subject to reporting obligations pursuant to Article 17 shall self-assess the compliance of its telematics applications only in relation to the data shared using the web application referred to in paragraph 1 before the implementation deadlines set out in Article 16. Individual messages self-assessed shall comply with the testing procedure set out in point 1.6 of the Annex and Appendix D.1 thereto.

3. Where self-assessment results are positive, the web application referred to in paragraph 1 shall automatically perform all the following functions:

- (a) issue an evidence-based declaration providing to the self-assessed telematics stakeholder and to the Agency a presumption of compliance of self-assessed messages and associated telematics applications with the provisions of this Regulation;
- (b) compile the relevant information associated with this self-assessment as set out in point 1 of Appendix D.1 to the Annex;
- (c) generate and publish a list of telematics applications which are presumed to be compliant.

4. Where a telematics application has received a positive compliance assessment delivered and published by the Agency before the date of entry into force of this Regulation, such an assessment shall remain valid unless changes are made to it.

5. Changes to a telematics application shall be self-assessed where such changes have an impact on any of the following matters:

- (a) the data elements, data structure or sequence to be shared pursuant to Article 7(3);
- (b) the implementation of a new or updated API or web UI;
- (c) cybersecurity measures pursuant to Article 7(2).

6. In the case a justified alleged non-compliance of a telematics application used by a telematic stakeholder, or where there is justified doubt, the Agency shall, on its own initiative or upon request of the Commission, a Union body, a public sector body or a telematics stakeholder, evaluate the correctness of the self-assessment based on the relevant information compiled pursuant to paragraph 3(b) and in accordance with the testing procedure set out in Appendix D.2.

7. The Agency shall inform the requesting entity and the telematics stakeholder using the telematics applications evaluated of the result, of its evaluation that may be used for follow-up actions, including enforcement by a national safety authority as defined in Article 3, point (7), of Directive (EU) 2016/798, or other national authorities responsible for the implementation of this Regulation.

8. The Agency shall also evaluate the correctness of the self-assessment on the basis of the information compiled in accordance with paragraph 3(b) for projects of telematics applications where an application for Union financial support has been submitted.

Upon request, the Agency may also perform such evaluation for projects not subject to Union financial support as a service pursuant to Article 64(2), point (d), and Article 80(2), point (c), of Regulation (EU) 2016/796.

9. The Agency shall set out, publish and apply the procedures and deadlines to evaluate the correctness of the self-assessment for the purposes of paragraphs 6, 7 and 8.

#### *Article 19*

#### **Innovative solutions**

1. Where a telematics stakeholder intends to use an innovative solution for a telematics application not envisaged by this Regulation, it shall submit the technical file associated with the proposed innovative solution to the Commission for analysis and declare how the interoperability of interfaces with other compliant telematics stakeholders can be ensured. The Commission shall request the opinion of the Agency pursuant to Article 10(2) of Regulation (EU) 2016/796 on the proposed innovative solution.

2. Where the Agency's opinion is negative, the innovative solution proposed cannot be applied.

3. Where the Agency's opinion is positive, the appropriate functional and interface specification and the testing procedure to allow the use of such innovative solution shall be developed and may subsequently be included as part of the revision process laid down in Article 5 of Directive (EU) 2016/797.

4. In addition to paragraph 3, the Agency may consider in its positive opinion that the innovative solution constitutes an acceptable means of compliance pursuant to Article 6(3) of Directive (EU) 2016/797. In that case, that positive opinion may be used to assess the compliance of the innovative solution with this Regulation.

#### *Article 20*

#### **National contact point**

1. Member States shall designate a national contact point ("NCP"), independent from railway undertakings or other applicants, among the representatives of either a public sector body or an infrastructure manager and ensure appropriate resources.

2. Where a Member State decides to appoint different actors in relation to the processes referred to in Article 2(1) and the tasks referred to in paragraph 3 of this Article, the designated NCP shall ensure coordination of those actors at national level and remains the single point of contact for the Agency, the Commission, and other relevant organisations.
3. The NCP shall carry out the following tasks:
  - (a) act as Member State representative in the working party referred to in Article 22, cooperate with the Agency and other NCPs, and share with the working party relevant operational views and issues reported by telematics stakeholders in a transparent and non-discriminatory manner;
  - (b) collect relevant market shares and contact details of telematics stakeholders covered by Article 17, and share them with the Agency;
  - (c) facilitate contacts between Member States, telematics stakeholders at national level, the Agency, the Commission, and other relevant organisations;
  - (d) support a coordinated implementation of the provisions of this Regulation by facilitating:
    - (i) return of experience and exchange of best practices among telematics stakeholders at national level, as well as at Union level in the working party referred to in Article 22;
    - (ii) coordination of infrastructure managers' implementation plans and consultation of other telematics stakeholders through the rail sector representative bodies listed by the Commission pursuant to Article 38(4) of Regulation (EU) 2016/796;
    - (iii) integration of prospective telematics stakeholders informing them about the applicable framework.
4. By 2 December 2026, each Member State shall communicate to the Agency the details of the designated NCP. The Agency shall publish those details.

#### Article 21

### Cooperation and coordination

1. Infrastructure managers shall cooperate within the European network of infrastructure managers, referred to in Article 7f of Directive 2012/34/EU and in consultation with operators of rail freight service facilities, railway undertakings and other telematics stakeholders to coordinate the following:
  - (a) the development of common sector specifications for a common Union API and common Union web user interfaces referred to in Article 14(5), point (a), of this Regulation;
  - (b) their implementation plans at Union level and the consultation with other telematics stakeholders active at national level with the support of national contact points.
2. Freight railway undertakings shall cooperate on the development of a common sector specification for a common Union API and common Union web user interfaces referred to in Article 14(6).
3. Operators of rail freight service facilities shall cooperate on the development of a common sector specification for a common Union API and common Union web user interfaces referred to in Article 14(5), point (b).
4. By 30 September 2027, infrastructure managers, freight railway undertakings and operators of rail freight service facilities shall deliver within the process managed by the Agency referred in Article 5 of Directive (EU) 2016/797 their respective common sector specifications resulting from their tasks under paragraphs 1, 2 and 3 of this Article taking into account the work of the Europe's Rail Joint Undertaking established in Title IV of Council Regulation (EU) 2021/2085 <sup>(37)</sup>.

<sup>(37)</sup> Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe and repealing Regulations (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 560/2014, (EU) No 561/2014 and (EU) No 642/2014 (OJ L 427, 30.11.2021, p. 17, ELI: <http://data.europa.eu/eli/reg/2021/2085/oj>).

*Article 22***ERA working party on telematics**

The working party or parties established by the Agency pursuant to Chapter 2 of Regulation (EU) 2016/796 shall assist the Agency in applying and further developing the functional and technical specifications set out in this Regulation, in particular in the following tasks of the Agency:

- (a) ensure relevant coordination and cooperation of telematics stakeholders to guarantee implementation and application of this Regulation;
- (b) ensure cooperation of national contact points at Union level and harmonised and coordinated implementation of their tasks across the Union;
- (c) monitor the quality of the common reference data referred to in Article 9(3);
- (d) develop and maintain the user manual referred to in Article 9(1), second subparagraph and the procedure referred to in Article 9(2) for submitting requests for the assignment of reference codes;
- (e) harmonise, where relevant, the network-specific data requirements referred in accordance with Article 11(3);
- (f) develop and maintain the procedure referred to in Article 12(1) and maintain the harmonised specifications issued by the Agency in accordance with Article 12;
- (g) provide guidance for the development of sector specifications supporting the update of harmonised specifications referred to in Articles 12 and 21;
- (h) design, implement, maintain and ensure the automation of data import supporting the reporting obligations referred to in Article 17;
- (i) maintain the testing procedures referred to in point 1.6 of the Annex and Appendix D.1 thereto;
- (j) implement future developments of this Regulation referred to in Article 23;
- (k) facilitate exchange between and collect best practices from telematics stakeholders at Union level;
- (l) reflect on the need for follow-up action by the Agency, the Commission, or the Member States, where relevant;
- (m) shape and contribute to the implementation of follow-up actions to the feedback provided by the working parties;
- (n) identify and prepare strategic topics related to the digitalisation of the rail system with an impact on the subsystem telematics applications for discussion in a wider policy context;
- (o) report to the Commission pursuant to Article 24.

*Article 23***Future developments**

By 31 December 2028, the Agency shall make, taking into account the work of the Europe's Rail Joint Undertaking established in Title IV of Regulation (EU) 2021/2085 and the common specifications referred to in Article 21(4) of this Regulation, a recommendation to the Commission pursuant to Article 19(1), point (a), of Regulation (EU) 2016/796 for the update of the functional and technical specifications laid down in this Regulation with the following objectives and conduct on an impact assessment for that recommendation pursuant to Article 8 of Regulation (EU) 2016/796:

- (a) reflecting regulatory and technical developments affecting the rail system;
- (b) converting the list of specific data requirements based on positively assessed national rules referred to in Article 11(5) of this Regulation into harmonised specifications, specific cases, or open point as appropriate;
- (c) closing the list of open points in Appendix B of the Annex to this Regulation;
- (d) updating the references to the specifications referred to in Article 12 of this Regulation;

- (e) as part of the technical specifications referenced in Appendix C to the Annex to this Regulation, ensuring appropriate and backward compatible transition from technical documents referenced in this Regulation and other specifications compatible and interoperable with those documents to relevant European standards referred to in Regulation (EU) No 1025/2012.

#### CHAPTER 4

#### TRANSITIONAL AND FINAL PROVISIONS

##### Article 24

##### **Report**

1. The report submitted by the Agency pursuant to Article 35(4) of Regulation (EU) 2016/796 shall include an analysis of the effectiveness of this Regulation and the progress made towards achieving interoperability of the telematics subsystem of the Union rail system.
2. Reporting on implementation shall be based on information collected by the Agency pursuant to Article 17 of this Regulation.
3. For the purposes of Article 40(2) of Regulation (EU) 2016/796, the Agency shall publish an overview of Union-funded projects and its analysis of innovative outputs relating to the provisions of this Regulation, as well as its proposals for follow-up action necessary to ensure the coordinated development corresponding applications in the Union and a harmonised and coordinated implementation.

##### Article 25

##### **Repeal**

1. Regulations (EU) No 454/2011 and (EU) No 1305/2014 are repealed.
2. References to the repealed Regulations shall be construed as references to this Regulation.

##### Article 26

##### **Transitional measures**

Until the Agency provides the web applications referred to in Article 9(1), it shall assign codes through existing databases managed jointly by infrastructure managers, or by operators of rail freight service facilities or by a group of railway undertakings. For that purpose, the stakeholders managing those databases shall grant the Agency access to those databases for use.

##### Article 27

##### **Entry into force and application**

1. This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.
2. The following Articles shall apply from 2 September 2026:
  - (a) Article 8(1), points (a), (c) and (d), and Article 8(2);
  - (b) Article 9(2);
  - (c) Article 11(1);
  - (d) Article 12(1).

3. Article 9(3) to (6) shall apply from 15 March 2026.
4. The following Articles shall apply from 2 March 2027:
  - (a) Article 8(1)(b);
  - (b) Article 9(1);
  - (c) Article 17(1);
  - (d) Article 18.

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

Done at Brussels, 6 February 2026.

*For the Commission*  
*The President*  
Ursula VON DER LEYEN

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## 1. COMMON REQUIREMENTS

### 1.1. Essential requirements

- (1) The essential requirements of the subsystem ‘telematics applications for passenger and freight services’ referred to in point 1 (b), third indent, of Annex II to Directive (EU) 2016/797 and described in point 2.6 of that Annex are laid down in Appendix F to this Annex in accordance with point 2.7 of Annex III to that Directive.
- (2) In addition to the levels of integrity and dependability set out in the specifications referenced in Appendix C, index [104], [1] and [106], for the storage or sharing of data pursuant to this Regulation as referred to in the column ‘Safety’ of Appendix F, data holders and data recipients may apply additional levels where such data is intended to be used for the safety of operations not covered by the control command and signalling subsystems.
- (3) Additional levels of integrity and dependability for data stored or shared pursuant to this Regulation intended to be used for the safety of operations are identified as an ‘open point’ in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex. Where data stored or shared pursuant to this Regulation is intended to be used in operation by telematics stakeholders for the safety of operations, suitable additional levels of integrity and dependability shall be set out in their safety management system based on common safety methods for risk evaluation and assessment and specified through agreement. Such an agreement shall not constitute an obstacle to access the network.
- (4) Additional levels agreed by telematics stakeholders shall be delivered within the process managed by the Agency referred in Article 5 of Directive (EU) 2016/797.

### 1.2. Common reference data <sup>(1)</sup>

- (1) The procedure for the assignment of codes referred to in Article 9 is set out in the specifications referenced in Appendix C, index [103].
- (2) The Agency shall manage common reference data in accordance with Articles 8 and 9 and the specifications referenced in Appendix C, index [103] and grant access to those data for use under the conditions of the EUPL 1.2 licence.

#### 1.2.1. Organisation reference data

- (1) The data presentation of an organisation code shall comply with the specifications referenced in Appendix C, index [1].
- (2) Until 31 December 2025, a specific range of organisation codes shall be reserved for organisations falling within the scope of this Regulation.

#### 1.2.2. Location reference data

- (1) Any reference to a geographical point necessary for data sharing pursuant to this Regulation shall be identified with a single location code.
- (2) The data presentation of a location code shall comply with the specifications referenced in Appendix C, index [1].

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<sup>(1)</sup> Common reference data relating to ticketing aspects are specified in point 4.8.

### 1.3. Cybersecurity

For the purposes of Article 7(2), each telematics stakeholder shall:

- (a) implement cybersecurity risk-management measures in accordance with Directives (EU) 2022/2555 <sup>(2)</sup> and (EU) 2022/2557 <sup>(3)</sup> of the European Parliament and of the Council;
- (b) use public key infrastructure ('PKI') in accordance with the specifications referenced in Appendix C, index [106];
- (c) use communication protocols belonging to the Transmission Control Protocol / Internet Protocol (TCP/IP) suite.

### 1.4. Data presentation

- (1) The Agency shall ensure semantic versioning of the ERA Ontology referred to in Article 7, the specifications of which are referenced in Appendix C, index [1]. The Agency shall ensure access to all applicable versions for use under the conditions of the EUPL 1.2 licence.
- (2) The Agency shall ensure through the change control management procedure referred to in Article 12 that the ERA Ontology is compatible with the following data catalogue elements and includes them as subsets:
  - (a) the technical specifications referenced in Appendix C, index [105], for the purposes of the processes referred to in Article 2(1), points (a) and (b);
  - (b) the technical specifications referenced in Appendix C, indexes [P.7], [B.5], [B.10], and [B.14], for the purposes of the processes referred to in Article 2(1), point (c).
- (3) Data, objects and messages shared pursuant to this Regulation shall be serialised in a format mutually agreed upon by the involved stakeholders that comply with the subsets listed in point 1.4(2), as included in the ERA Ontology.
- (4) The sequence of the messages to be exchanged pursuant this Regulation shall comply with the specifications referenced in Appendix C, index [100].

### 1.5. Data quality criteria

For the purposes of identifying a deficiency in data quality as part of the quality assurance check referred to in Article 10, paragraphs (4) and (5), a telematics stakeholder shall measure the deviation of quality from the nominal value (%) set out for each criteria, and where relevant take corrective action aiming at meeting this value.

#### 1.5.1. Accuracy

- (1) Data shared pursuant to this Regulation shall be recorded once as primary data without any intermediate processing, transformation or aggregation by the data holder, that is to say the telematics stakeholder which generated the data. Telematics stakeholders shall be given access to primary data in accordance with Article 4.
- (2) The accuracy of the data shall be measured as the percentage of the values stored as part of the reference data referred to in points 1.2, 3.3 and 4.8 that are correct in comparison with the actual value of the primary data.
- (3) The nominal accuracy is 100 %.

<sup>(2)</sup> Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (NIS 2 Directive) (OJ L 333, 27.12.2022, p. 80, ELI: <http://data.europa.eu/eli/dir/2022/2555/oj>).

<sup>(3)</sup> Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities and repealing Council Directive 2008/114/EC (OJ L 333, 27.12.2022, p. 164, ELI: <http://data.europa.eu/eli/dir/2022/2557/oj>).

#### 1.5.2. *Completeness*

- (1) Before sharing data, the data holder shall ensure that its telematics applications check the completeness and compliance of the data shared against the metadata referred to in Article 8.
- (2) The data recipient, that is to say the telematics stakeholder using the data, shall ensure that its telematics applications check the completeness and compliance of the data used against the metadata.
- (3) The completeness of the data shall be measured as the percentage of mandatory data fields that contain values.
- (4) The nominal completeness is 100 %.

#### 1.5.3. *Consistency*

- (1) The data holder shall ensure that its telematics applications operate in accordance with the business rules established by the data holder to guarantee data consistency.
- (2) Where data consistency needs to be checked against different sources and versions of the reference data referred to in points 1.2, 3.3 and 4.8, the data holder shall implement validation procedures before interface data are generated or a new data version becomes operational. The data duplicated from the reference data shall be validated against the business rules.
- (3) The data holder shall be identified through its organisation code as part of the data it shares.
- (4) The consistency of the data shall be measured as the percentage of matching values across tables, and records, and across processes.
- (5) The nominal consistency is 100 %.

#### 1.5.4. *Timeliness*

- (1) Telematics stakeholders shall share up-to-date data.
- (2) The data holder shall ensure that its telematics applications enable data updates as soon as they are available. The data holder shall set out response times for enquiries and user types in the detailed specifications of its telematics applications.
- (3) The timeliness of the data shall be measured as the percentage of data shared within a specified threshold time frame.
- (4) Data timeliness shall comply with threshold requirements laid down for each function by the data holder without prejudice to applicable rules, in particular the rules for the transport of dangerous goods.

#### 1.5.5. *Uniqueness*

- (1) The data holder shall ensure that there are no duplicated records in the data shared. It shall identify and eliminate any redundant records in the data shared using deduplication tools, automated where possible.
- (2) The uniqueness of the data shall be measured as the complement of the percentage of duplicates across tables and records to 100 %.
- (3) The nominal uniqueness is 100 %.

### 1.6. **Compliance assessment**

Pursuant to Article 18, telematics stakeholders shall self-assess, in relation to the data shared, the compliance of the telematics applications they use to implement this Regulation against the testing procedures and the evidence-based declaration set out in Appendix D.

## 1.7. Telematics applications

- (1) Except for the processes referred to in Article 2(1), point (c), for which the specifications set out in Section 4 apply, the application programming interfaces ('APIs') and web user interfaces ('web UIs') referred to in Article 14 that are deployed by telematics stakeholders shall comply with the specifications for common interface referenced in Appendix C, index [104].
- (2) The specifications referenced in Appendix C, index [1], shall be used to ensure format validity, authenticity and integrity of received or transmitted data in relation to the information available in the common central repository referred to in Article 8. To that end, the data catalogue elements referred to in Article 7(3) and set out in point 1.4 (2) of this Annex shall be linked to the APIs and web UIs referred to in point (1).

### 1.7.1. *Web user interfaces for capacity management, train preparation and traffic management*

Aspects relating to the interoperability of web UIs in the areas of capacity management, train preparation and traffic management, pursuant to Article 14 of this Regulation, are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

### 1.7.2. *Web user interfaces for the management of freight wagons and their load*

Aspects relating to the interoperability of web UIs in the area of the management of freight wagons and their load, pursuant to Article 14 of this Regulation, are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

## 2. CAPACITY MANAGEMENT, TRAIN PREPARATION, AND TRAFFIC MANAGEMENT

- (1) Section 2 lays down the requirements for interoperable data sharing required to carry out the processes referred to in Article 2(1), point (a).
- (2) Data in the areas of capacity management, train preparation, and traffic management, shall be shared by means of an API or a web UI in accordance with Article 14 and point 1.7.
- (3) In the areas of capacity management, train preparation, and traffic management of a rail transport service, telematics stakeholders subject to Article 4 shall mutually share, grant access and use, for operational and non-commercial purposes, all free-of-charge, data relating to the trains that are part of this rail transport service.

## 2.1. Object identifiers

### 2.1.1. *General*

- (1) The main object identifiers set out in points 2.1.2 to 2.1.7 shall be shared between the different telematics stakeholders involved in a rail transport service, and consistently used by them. Those objects shall be marked with unique identifiers in the planning phase of that rail transport service and consistently used in the areas of train preparation and traffic management for that rail transport service.
- (2) Object identifiers shall be in accordance with the specifications referenced in Appendix C, index [1].

### 2.1.2. *Reference train identifier*

- (1) The objects referred to in points 2.1.3 to 2.1.7 shall be embedded in messages exchanged pursuant to points 2.2 to 2.8, using a unique and stable identifier of the train, that is the reference train identifier (object type 'TR', as part of the 'PlannedTransportIdentifier') for the complete lifecycle of the train and the related objects across networks.
- (2) The lead railway undertaking shall specify the reference train identifier.
- (3) The reference train identifier shall be in accordance with the specifications referenced in Appendix C, index [1].

- (4) Where a rail transport service is operated or intended to be operated by several railway undertakings along that service, the lead railway undertaking shall coordinate the railway undertakings operating that service by integrating the objects referred to in points 2.1.3 to 2.1.7.

#### 2.1.3. *Train object*

- (1) The train object ('TrainID'), linked to the reference train identifier referred to in point 2.1.2, shall be specified by the lead railway undertaking.
- (2) Once consistently integrated by the lead railway undertaking responsible for coordinating the applicants for the same rail transport service, the corresponding 'TrainID' shall be sent by each applicant to the infrastructure managers involved along the route of that service by means of the following elements:
  - (a) the reference train identifier in accordance with point 2.1.2;
  - (b) the route object in accordance with point 2.1.6 and the 'path request' object in accordance with point 2.1.4;
  - (c) the elements of the messages relating to:
    - (i) capacity allocation referred to in point 2.3;
    - (ii) train preparation as referred to in point 2.5.
- (3) The 'TrainID' describes the planned train for a rail transport service and its entire route.

#### 2.1.4. *Path request object*

- (1) The path request object ('PathRequestID'), linked to the reference train identifier referred to in point 2.1.2, shall be specified by the lead railway undertaking.
- (2) Once consistently integrated by the lead railway undertaking responsible for coordinating the applicants for the same rail transport service, the corresponding path request object shall be sent by each applicant to the infrastructure managers involved along the route of that service.
- (3) The path request object describes the details of the path requested for the planned train on the network. It shall contain, as attribute, the identifier of the lead railway undertaking. It may contain, as attribute, the expected operational train number ('OperationalTrainNumberIdentifier'). It may also contain, as attribute, the commercial train number ('RetailServiceId')

#### 2.1.5. *Path object*

- (1) The path object (object type 'PA', as part of the 'PlannedTransportIdentifier') shall be specified by the infrastructure manager which is responsible for corresponding path on its network.
- (2) The path object shall be sent by the infrastructure manager to the applicant.
- (3) The path object describes the details of the path allocated for a train. Infrastructure managers involved along the route of that train shall coordinate between themselves the path objects.
- (4) Where a specific train number is specified by the applicant as part of the path request object referred to in point 2.1.4(3), the path object sent by the infrastructure manager to the applicant shall contain, as attribute, the train number assigned, which may change along the lifecycle of the path or the linked train.

#### 2.1.6. *Route object*

- (1) The route object (object type 'RO', as part of the 'PlannedTransportIdentifier') shall be specified by the lead railway undertaking. It refers to the geographical line of operation from a point of origin to a point of destination.
- (2) Once consistently integrated by the lead railway undertaking responsible for coordinating the applicants for a single rail transport service, the route object shall be sent by the applicant to all infrastructure managers involved along the route of that service.

- (3) The route object describes the minimum information about the entire route for which an infrastructure manager needs to perform its duties including the analysis of the 'path request'.
- (4) The route object shall contain at least the following information:
  - (a) point of origin;
  - (b) points of handover as referred in point 2.6.2 (b);
  - (c) point of destination;
  - (d) corresponding planned dates according to the working timetable.

#### 2.1.7. *Case reference object*

- (1) The case reference object (object type 'CR', as part of the 'PlannedTransportIdentifier') shall be specified by the holder of that data.
- (2) Where a specific object or data are used or intended to be used by a telematics stakeholder, they shall be part of a dedicated 'case reference object' subject to the process referred to in Article 11.
- (3) Except for block trains referred to in point 2.6.1 (6), aspects relating to the interoperability of data sharing for the identification of shunting movements, including in rail freight service facilities, are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

## 2.2. **Strategic management of infrastructure capacity**

Aspects relating to the interoperability of data sharing for the strategic management of infrastructure capacity are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

## 2.3. **Capacity allocation**

### 2.3.1. *General*

- (1) The data required and allocated pursuant to the Annex to Implementing Regulation (EU) 2019/773 ('OPE TSI'), as referred to in Appendix A to this Annex, in relation to the capacity rights and the characteristics of the train for each section of these rights, including the sections in rail freight service facilities, are designated hereafter as 'path'.

The first paragraph of this point is without prejudice to the definition of 'train path' in Article 3, point (27), of Directive 2012/34/EU in relation to a rail transport service, and the definition of 'service facility capacity' in Article 3, point (4), of Implementing Regulation (EU) 2017/2177, solely in relation to the sections of that rail transport service operated in a rail freight service facility.
- (2) Where allocating infrastructure capacity referred to in Section 3 of Chapter IV of Directive 2012/34/EU, the messages referred to in points 2.3.2 to 2.3.9 of this Annex shall be exchanged between the applicant and the infrastructure manager or the allocation body designated in accordance with Article 7a (3) of that Directive using an API or a web UI referred to in Article 14 and point 1.7 of the Annex to this Regulation.
- (3) Where allocating capacity in rail freight service facilities referred to in Article 13 of Directive 2012/34/EU and Articles 7, 8 and 9 of Implementing Regulation (EU) 2017/2177, solely in relation to the sections of a freight rail transport service subject to the allocation of a path, the messages referred to in points 2.3.2 to 2.3.9 of this Annex shall be exchanged between the applicant and the infrastructure manager or the allocation body designated for the network connected to those rail freight service facilities using an API or a web UI referred to in Article 14 and point 1.7 of the Annex to this Regulation.
- (4) Aspects relating to the interoperability of data sharing for the planning of shunting movements and stabling are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

- (5) In the case of multi-network processes in the area of capacity allocation that involve more than one infrastructure manager or operator of rail freight service facilities along a train route, the infrastructure managers and operators of rail freight service facilities involved shall, pursuant to Article 40(1) of Directive 2012/34/EU, coordinate their allocation processes to ensure consistency of corresponding outcomes.

Applicants for capacity across multiple networks may use the common Union API or a common Union web UI referred to in Article 14(5) of this Regulation.

Aspects relating to the interoperability of data sharing for the coordination of multi-network processes in the area of capacity management are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

- (6) Where more than one railway undertaking operates a rail transport service, the railway undertakings involved may designate the lead railway undertaking as the applicant for the overall route of that service. The lead railway undertaking shall at least ensure the coordination of the applicants and their allocation processes pursuant to Article 13(1), point (b), integrating the object identifiers referred to in point 2.1 for the overall route of that service.
- (7) In the case of an intermodal transport service, the railway undertakings involved may delegate the role of lead railway undertaking or applicant to an intermodal transport operator for the overall route of corresponding freight rail transport service.
- (8) In case of a short-notice request for the allocation of infrastructure capacity close to departure or during real-time operations, information relating to corresponding path shall be communicated as part of a path section modification in accordance with point 2.6.7.
- The time threshold related to the remaining time until the departure of a train at the time of the request for capacity allocation from which this request is to be considered ad hoc is identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.
- (9) In the case of a freight rail transport service where the actual characteristics of the consignment require the path allocated to be adapted, the information contained in the 'ConsignmentNoteMessage' referred to in point 3.1.1 shall be used as part of a path section modification in accordance with point 2.6.7.
- (10) Messages exchanged for the allocation of a path relating to a freight rail transport service shall contain information identifying quieter routes intended for operation, if any, in accordance with the Annex to Regulation (EU) No 1304/2014 (NOI TSI), as referred to in Appendix A to this Annex.
- (11) In the case of an intermodal transport service, the messages exchanged in accordance with points (2) and (3) for the allocation of paths for corresponding freight rail transport service shall contain information relating to the maximum profile of the intermodal loading units intended to be used for that service.
- (12) The working timetable reflects the paths that are confirmed as allocated.

### 2.3.2. *Path request*

- (1) The 'PathRequestMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) To request a path, the applicant shall send a 'PathRequestMessage' to the infrastructure managers concerned.

### 2.3.3. *Path details*

- (1) The 'PathDetailsMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) In response to a 'PathRequestMessage' received from an applicant in accordance with point 2.3.2, each infrastructure manager shall send a 'PathDetailsMessage' to specify the details of the path offered to the applicant.

#### 2.3.4. *Path confirmed*

- (1) The 'PathConfirmedMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) To confirm the allocation of the path offered by an infrastructure manager in the 'PathDetailsMessage' referred to in point 2.3.3, the applicant shall send back the 'PathConfirmedMessage'.
- (3) Upon receipt of the 'PathConfirmedMessage', the receiving infrastructure manager shall acknowledge its receipt by sending the originating applicant a 'PathDetailsMessage' confirming the booking and integrate the corresponding path in its working timetable.
- (4) Upon receipt of the 'PathDetailsMessage' confirming the booking, the applicant shall also send this message to the railway undertakings involved in that path and to the lead railway undertaking. In the case of a freight rail transport service, the lead railway undertaking shall forward the confirmation to freight customers.
- (5) A train path confirmed by the applicant in accordance with point (1) whose confirmation of receipt has been acknowledged by the receiving infrastructure manager in accordance with point (3) is considered as allocated and corresponding capacity rights are to be considered by both parties as granted.

#### 2.3.5. *Path details refused*

- (1) The 'PathDetailsRefusedMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where the path offered by the infrastructure manager in accordance with point 2.3.3 is refused, the applicant shall send back a 'PathDetailsRefusedMessage'.

#### 2.3.6. *Path cancelled*

- (1) The 'PathCanceledMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) To cancel all or part of a path that has been confirmed in accordance with point 2.3.4, the applicant shall send a 'PathCanceledMessage' to the infrastructure manager which is responsible for the capacity rights granted.

#### 2.3.7. *Path not available*

- (1) The 'PathNotAvailableMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a path allocated is no longer available or has been changed, the infrastructure manager responsible for the path allocated shall send a 'PathNotAvailableMessage' to the applicant as soon as it becomes aware of such a change.
- (3) Where an alternative to a path that is no longer available or has been changed is available, each infrastructure manager responsible for the path allocated, or part of it, shall offer that alternative and send to the applicant a 'PathDetailsMessage' in accordance with point 2.3.3, which shall be read alongside the 'PathNotAvailableMessage' referred to in point (2). In such cases, the following conditions shall also apply:
  - (a) where such an alternative is offered, the applicant is not required to send a 'PathRequestMessage' under point 2.3.2;
  - (b) where such an alternative is not available, each infrastructure manager responsible for the path allocated, or part of it, shall immediately send the applicant a 'PathNotAvailableMessage'.

#### 2.3.8. *Receipt confirmation*

- (1) The 'ReceiptConfirmationMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) The recipient of the messages referred to in points 2.3.2, 2.3.3, 2.3.5, 2.3.6, and 2.3.7 shall acknowledge receipt by sending a 'ReceiptConfirmationMessage' to the telematics stakeholder which sent the original message.

### 2.3.9. *Capacity allocation coordination process*

Aspects relating to the interoperability of data for the electronic form of the information disclosed in case of conflict resolution referred to in Article 46 of Directive 2012/34/EU are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

### 2.3.10. *Working timetable*

Each infrastructure manager shall integrate the paths that are considered as allocated in accordance with point 2.3.4, points (3) and (5), and make them available as part of its working timetable data in accordance with Article 5 under the conditions of the Creative Commons BY-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.

## 2.4. **Planned capacity restrictions**

### 2.4.1. *Coordination of planned capacity restrictions*

Aspects relating to the interoperability of data sharing for to the coordination of planned capacity restrictions are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

### 2.4.2. *Consultation of stakeholders affected by planned capacity restrictions*

Aspects relating to the interoperability of data sharing for the consultation of stakeholders affected by planned capacity restrictions in accordance with Articles 43 and 53 of Directive 2012/34/EU are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

### 2.4.3. *Publication of planned capacity restrictions*

Aspects relating to the interoperability of data sharing for the publication of planned capacity restrictions in accordance with Articles 43 and 53 of Directive 2012/34/EU are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

### 2.4.4. *Temporary changes to the nominal infrastructure characteristics resulting from a planned capacity restriction*

The publication of temporary changes of nominal infrastructure characteristics through temporary values of the network parameters in the RINF pursuant to OPE TSI, as referred to in Appendix A to this Annex, may be automated through a common European API used to share data relating to temporary capacity restrictions in accordance with points 2.4.1, 2.4.2, and 2.4.3.

## 2.5. **Train preparation**

### 2.5.1. *Train composition*

- (1) The 'TrainCompositionMessage' for freight rail transport services and the 'PassengerTrainCompositionMessage' for passenger rail transport services, referred hereafter as 'train composition messages', shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Any railway undertaking responsible for the operation of a train shall send a train composition message to confirm that the composed train is in running order pursuant to OPE TSI, as referred to in Appendix A, to the infrastructure manager responsible for the network of departure solely in relation to the sections of the path where the train is to run.
- (3) In the case of an intermodal transport service, the freight railway undertaking responsible for the operation of a train that is part of a path arriving at a rail freight service facility where the composed train is to be unloaded shall send a 'TrainCompositionMessage' to the operator of that rail freight service facility.

- (4) Each infrastructure manager, solely in relation to the sections of the rail transport service operated on its network according to a path, shall grant access pursuant to Articles 4 and 5 to train composition data it receives.
- (5) Where an infrastructure manager grants access to train composition data pursuant to Articles 4 and 5, it shall consistently reuse the information contained in 'train composition messages' received from railway undertakings pursuant to point (2) of that point and from station managers pursuant to point 4.7.1.1(3), and grant access to that data for use under the conditions of the Creative Commons BY-NC-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.
- (6) Where a railway undertaking shares train composition data with an infrastructure manager or an operator of rail freight service facilities in accordance with points (2) or (3), it may request that the commercial use of that data is subject to a contractual agreement unless such use is covered by the open licence used by the infrastructure manager sharing that data pursuant to Article 5 and point 2.5.1(5).
- (7) Where access to train composition data is restricted from the public pursuant to Article 5, paragraphs (3) or (4), each infrastructure manager shall ensure that other telematics stakeholders can access that data pursuant to Article 4 through the common Union web UI referred in Article 5(1).
- (8) In the cases referred to in Article 5(6), train composition data shall only be sent bilaterally by the railway undertaking to relevant telematics stakeholders pursuant to Article 4.
- (9) Where, before or after departure, the composition of a train has been modified, the railway undertaking responsible for the operation of that train shall send an updated 'train composition message' with a reference to the location where the composition changed.
- (10) Where disruption or emergencies arising during train operation entail a change in the parameters of the train composition, with possible repercussions on the train traffic data referred to in point 2.6, the railway undertaking responsible for that train shall send a new 'train composition message' or communicates the new train composition in accordance with Appendix C to the OPE TSI.
- (11) The 'TrainCompositionMessage' shall contain parameters providing for compliance of the composition of the train with the specific rules for the operation of freight wagons on quieter routes pursuant to NOI TSI, as referred to in Appendix A to this Annex. The identification of quieter routes intended for operation shall be consistent with the details of the path allocated as specified in point 2.3.
- (12) The 'TrainCompositionMessage' shall make it possible to identify any intermodal loading unit loaded on freight wagons.
- (13) The 'TrainCompositionMessage' shall make it possible to identify freight wagons transporting dangerous goods. Where at least one freight wagon is part of a train that transports dangerous goods, the access to the train composition data shall be restricted from the public pursuant to Article 5(3) for this entire train.
- (14) The 'train composition message' shall allow to identify where a rail transport service is operated for the armed forces, if relevant.
- (15) The 'PassengerTrainCompositionMessage' shall include seating maps, at least for trains where it is possible to reserve a seat, and the location of on-board facilities such as classes, coaches accessible to PRM and bike spaces, where available.

The 'PassengerTrainCompositionMessage' shall constitute an appropriate format and technical means respectively within the meaning of Articles 9(3) and 10(4) of Regulation (EU) 2021/782 to grant digital access to information related to on-board services and facilities as part of information during the journey referred to in the Part II of Annex II to that Regulation and meeting corresponding obligations under Articles 9(2) and 10(5) of that Regulation.

- (16) The 'train composition messages' shall include the information required to support the energy settlement process pursuant to Regulation (EU) No 1301/2014 ('ENE TSI'), as referred to in Appendix A. It shall include in particular the European vehicle number of the traction units that is part of that train and that is referred to as consumption point id of the on-board energy measurement systems pursuant to Regulation (EU) No 1302/2014 ('Loc&Pas TSI'), as referred to in Appendix A, and the total mass of the train. This information shall be part of the train composition message at departure time pursuant to paragraph (2), or at the latest 48 hours after departure in case of anomaly. The infrastructure manager shall share that data with relevant energy settlement systems pursuant to ENE TSI.
- (17) Where the recipient of a 'train composition message' use the data contained in that message for the safety of operations in accordance with point 1.1, paragraphs (2) and (3), or where agreed with the data holder of that message, the recipient shall acknowledge its reception by sending a 'ReceiptConfirmationMessage' in accordance with the specifications referenced in Appendix C, index [1], to the original sender.

#### 2.5.2. *Train ready*

- (1) Where a railway undertaking responsible for the movement of a train is ready to timely access the network in accordance with the working timetable and associated allocated path, including when this path has been modified by the infrastructure manager upon request of this railway undertaking pursuant to point 2.3.1(8), the obligations laid down in this point shall be deemed to have been fulfilled.
- (2) Where either Railway Mobile Radio (RMR) systems or 'Start of mission' procedure in ETCS L2 in accordance with the Annex to Implementing Regulation (EU) 2023/1695 ('CCS TSI'), as referred to in Appendix A, are available as reported in the RINF and mandated for use by the infrastructure manager responsible for the network of departure through its network statement, the obligations laid down in point 2.5.2 shall be deemed to have been fulfilled.
- (3) Where either Railway Mobile Radio (RMR) systems or 'Start of mission' procedure in ETCS L2 in accordance with the Annex to the CCS TSI, as referred to in Appendix A, are notified by the infrastructure manager responsible for the network of departure through the RINF as functions to be rolled out within 5 years after the milestone set out in Appendix G, alternatives means to the obligations laid down in points (6), (7) and (8) may be mandated for use by the infrastructure manager responsible for the network of departure through its network statement.
- (4) Where a railway undertaking responsible for the movement of a train is ready to access the network following a delay compared to the working timetable and associated allocated path, it shall inform the infrastructure manager responsible for the network of departure in accordance with points (6), (7) and (8).
- (5) Where a railway undertaking responsible for the movement of a train is ready to access the network in advance of the working timetable and associated allocated path, it may inform the infrastructure manager responsible for the network of departure in accordance with points (6), (7) and (8).
- (6) The 'TrainReadyMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (7) Where a railway undertaking responsible for the movement of a train is to inform the infrastructure manager pursuant to OPE TSI, as referred to in Appendix A, about the status of that train in terms of its readiness to access the network, this railway undertaking shall send a 'TrainReadyMessage' before departure to the infrastructure manager responsible for the network of departure.
- (8) Where the infrastructure manager receiving a 'TrainReadyMessage' pursuant to paragraph (4) uses the data contained in that message for the safety of operations in accordance with point 1.1, paragraph (3), or for energy settlement purposes, or where agreed with the sending undertaking, the infrastructure manager shall acknowledge receipt.

### 2.5.3. *Train readiness forecast*

- (1) Where a railway undertaking is not ready to start a train according to the working timetable or its allocated path, including when this path has been modified by the infrastructure manager upon request of this railway undertaking pursuant to point 2.3.1(8), or is delayed due to any anomaly affecting that train or its operation having possible repercussions on the train's running prior to departure, it shall, in order to provide forecast information about its readiness to access the network, send to the infrastructure manager responsible for the network of departure a 'TrainReadyMessage' bearing the status 'NotReady', including:
  - (a) an estimate of how long the delay will last via the elements 'TrainDelay' and 'TrainReadyTime';
  - (b) an assessment of its cause via the element 'DelayCause'
- (2) A new 'TrainReadyMessage' shall be sent as soon as new or updated information is available.
- (3) Where the infrastructure manager receiving a 'TrainReadyMessage' pursuant to paragraph (1) uses it for the safety of operations in accordance with point 1.1, paragraph (3), or where agreed with the sending undertaking, the infrastructure manager shall acknowledge receipt.

## 2.6. **Reporting of train traffic data**

### 2.6.1. *General*

- (1) Whereas working timetable data reflects the paths allocated and confirmed pursuant to point 2.3, train traffic data, including information about train running and train forecast, contains the data necessary to dynamically update the working timetable.
- (2) The following messages containing train traffic data, referred to hereafter as 'train traffic messages', shall be in accordance with the specifications referenced in Appendix C, index [1]:
  - (a) the 'TrainRunningInformationMessage' specified in point 2.6.3;
  - (b) the 'TrainRunningForecastMessage' specified in point 2.6.4;
  - (c) the 'TrainDelayCauseMessage' specified in point 2.6.5;
  - (d) the 'TrainRunningInterruptionMessage' specified in point 2.6.6.
- (3) Infrastructure managers and operators of rail freight service facilities, solely in relation to the sections of each rail transport service operated on their network according to a path, and where relevant other data holders:
  - (a) shall grant access pursuant to Articles 4 and 5 to train traffic data based on the information contained in 'train traffic messages';
  - (b) unless not required by and bilaterally agreed with a railway undertaking, shall send 'train traffic messages' to railway undertakings in relation to the rail transport services they operate;
  - (c) shall send 'train traffic messages' to other infrastructure managers in accordance with Article 4 in the case of a rail transport service subject to multi-network processes;
  - (d) may send 'train traffic messages' to other telematics stakeholders in accordance with Article 4, upon request of that stakeholder and where bilaterally agreed as a service.

In the cases referred to in Article 5(5), the subpoint (a) of this point shall not apply and subpoint (b) of this point shall be mandatory to apply.

- (4) Where an infrastructure manager or an operator of rail freight service facilities grants access to train traffic data pursuant to Article 5, it shall consistently reuse the information contained in 'train traffic messages' and grant access to that data under conditions of the Creative Commons BY-SA 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.
- (5) Where the shunting and stabling of freight wagons is performed as single wagonload transport in a rail freight service facility, train traffic data shall be shared pursuant to Articles 4 and in accordance with point 3.2.1.
- (6) Where freight wagons are operated as a block train in a rail freight service facility, the operator of that facility shall share train traffic data pursuant to Articles 4 and 5 based on 'train traffic messages' referred in point (2). For that purpose, a reference to the identifier of that train for the associated path departing from that facility shall be used. Where that facility is the final destination of that block train, the identifier of that train for the associated path arriving to that facility shall be used.
- (7) 'Train traffic messages' shall constitute appropriate technical means within the meaning of Article 10(4) of Regulation (EU) 2021/782, of meeting the obligations under Article 10 of Regulation (EU) 2021/782, and of providing traffic and travel information of passenger rail transport services.
- (8) Where an infrastructure manager or a passenger railway undertaking shares via national access points dynamic travel and traffic data in accordance with Article 5 of Commission Delegated Regulation (EU) 2017/1926, it shall consistently reuse the data contained in 'train traffic messages' and apply the specifications set out in point 4.9 (d).

#### 2.6.2. Reporting points

Messages containing train traffic data, shall be sent at least at the following reporting points, and at any other point where the train is passing through, as agreed between the infrastructure manager or the operator of rail freight service facilities, and the railway undertaking or the intermodal transport operator in relation to a train:

- (a) departure points;
- (b) points where responsibility for capacity management or traffic management changes between consecutive infrastructure managers or allocation bodies, or between infrastructure managers and operators of rail freight service facilities ('point of handover');
- (c) points where responsibility for the operation of a train changes between consecutive railway undertakings, intermodal transport operators, or any combination between them ('point of interchange');
- (d) points where the train arrives at and departs from rail passenger stations and rail freight service facilities and any other intermediary stops scheduled;
- (e) destination points.

#### 2.6.3. Train running information

- (1) The 'TrainRunningInformationMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) To report about the train position in real time pursuant to OPE TSI, as referred to in Appendix A, the infrastructure manager or the operator of rail freight service facilities shall send a 'TrainRunningInformationMessage' upon departure from and arrival of a train at reporting points.

#### 2.6.4. Train forecast information

- (1) The 'TrainRunningForecastMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].

- (2) To provide information about deviations from scheduled dates and times whenever they occur pursuant to OPE TSI, as referred to in Appendix A, and therefore to provide an estimate of the date and time of departure or arrival of a train from or at a reporting point, the infrastructure manager or operator of rail freight service facilities shall send a 'TrainRunningForecastMessage'.
- (3) For delays at departure point or additional delays between two reporting points that are estimated to last more than 15 minutes for freight trains or more than 5 minutes for passenger trains, or as otherwise required by the performance monitoring regime pursuant to OPE TSI, as referred to in Appendix A, a new 'TrainRunningForecastMessage' shall be sent.
- (4) 'TrainRunningForecastMessage' shall make it possible to gauge, *ex post*, the accuracy of the estimate made by means of this forecast and shall include its expected accuracy in accordance with the methodology set out in Appendix E.

#### 2.6.5. *Train delay cause*

- (1) The 'TrainDelayCauseMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) As soon as the cause of delay is known, including in the case of a first assumption, and where there is an update on the cause of delay, the infrastructure manager or the operator of rail freight service facilities shall send a 'TrainDelay CauseMessage' to provide information about deviations from scheduled times pursuant to OPE TSI, as referred to in Appendix A, whenever they occur for that train.

#### 2.6.6. *Service disruption information*

- (1) The 'TrainRunningInterruptionMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) To provide information about disruption to a rail transport service ('service disruption') due to an unplanned stop, and describing this disruption and its location pursuant to OPE TSI, as referred to in Appendix A, the infrastructure manager or operator of rail freight service facilities shall send the following messages:
  - (a) where the length of the delay is not known: a 'TrainRunningInterruptionMessage';
  - (b) where the length of the delay is known:
    - (i) a 'TrainRunningForecastMessage' in accordance with point 2.6.4;
    - (ii) a 'TrainDelayCauseMessage' in accordance with point 2.6.5.
- (3) To provide information about service disruption arising from the operation of a train, the railway undertaking responsible for that train shall send the messages referred to in point (2) (a) and (b) to the infrastructure manager or operator of rail freight service facilities responsible for the network where the service disruption occurred. Where relevant, the receiving infrastructure manager or operator of rail freight service facilities shall send updated information in accordance with point 2.6.1.

#### 2.6.7. *Path modification in operation*

- (1) In the event of modifications to a path beyond the threshold referred to in point 2.3.1(8), the infrastructure managers or operators of rail freight service facilities responsible for this path shall notify the railway undertakings concerned about the intended modifications of that path on their respective network.
- (2) Without prejudice to point (3), aspects relating to the interoperability of data sharing in relation to the information referred to in point (1) are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B.

- (3) If the agreed continuation of a passenger rail transport service involves the rerouting via a different route, its partial cancellation, or the removal or addition of intermediate stops, the infrastructure manager responsible for that rail transport service shall send a 'PathDetailsMessage', as referred to in point 2.3.3, containing information relating to the path section modification in accordance with point 2.6.1.

## 2.7. Historic record of train related data

To record data pertaining to the running of both passenger and freight trains pursuant to OPE TSI, as referred to in Appendix A, after train arrival at destination, each infrastructure manager and each operator of rail freight service facilities shall grant access to an historic record of the following data pursuant to Articles 4 and 5 via a common Union web user interface ('web UI'), at the latest from 24 hours and for at least 12 months:

- (a) working timetable, as referred to in point 2.3.10
- (b) reference train identifier as referred to in point 2.1.2;
- (c) for passenger trains only: passenger train identification number of the train as the 'RetailServiceId' in combination with the reference train identifier referred to in point 2.1.2;
- (d) reporting locations and associated train status, as part of train running information referred to in point 2.6.3;
- (e) actual running date and time, as part of train running information referred to in point 2.6.3;
- (f) delay and cause of delay, if any, as part of train running information and train delay cause information referred to in points 2.6.3 and 2.6.5 respectively;
- (g) train composition, as referred to in point 2.5.1, that for freight rail transport services shall be limited to:
  - (i) the European vehicle number of all vehicles in the train;
  - (ii) the position of all vehicles in the train;
  - (iii) in the case of intermodal transport, the type of the intermodal loading units and their identifier.

## 2.8. Data sharing with other stakeholders

Infrastructure managers, operators of rail freight service facilities and railway undertakings shall share data in accordance with Article 4 and the requirements laid down in Section 2 of this Annex with other telematics stakeholders responsible for managing connections with other modes of transport.

## 3. MANAGEMENT OF FREIGHT WAGONS AND THEIR LOAD

The provisions of this Section lay down the requirements for interoperable data sharing required to carry out the processes referred to in Article 2(1), point (b).

### 3.1. Electronic rail freight transport information

#### 3.1.1. Electronic consignment note ('eCN')

- (1) The 'ConsignmentNoteMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].

- (2) A consignment note exchanged electronically by means of a 'ConsignmentNoteMessage' signed using means that comply with the requirements for qualified electronic seals in accordance with Regulation (EU) No 910/2014 of the European Parliament and of the Council (\*) shall be considered as an electronic record of data, that is an electronic consignment note ('eCN'), equivalent to a paper-based consignment note.
- (3) The electronic consignment note shall be exchanged as follows:
  - (a) based on consignment information provided by the freight customer to the lead railway undertaking as single point of contact, the lead railway undertaking shall send a 'ConsignmentNoteMessage' to all railway undertakings involved in the rail transport service,
  - (b) the lead railway undertaking may share the information contained in the 'ConsignmentNoteMessage' with the relevant telematics stakeholders pursuant to Article 4.
- (4) An electronic consignment note sent pursuant to point (3) is considered sufficient for the recipients to be able to perform their parts of the contract of carriage until arrival at destination or interchange with the next stakeholder.
- (5) Where the lead railway undertaking sends data to the competent authorities pursuant to Article 4 of Regulation (EU) 2020/1056, it shall consistently reuse the data contained in the 'ConsignmentNoteMessage' referred to in this point, and where relevant in the 'TrainCompositionMessage' referred to in point 2.5.1.

### 3.1.2. *Reservation, payment and invoicing systems for freight rail transport services*

Aspects relating to the interoperability of data sharing and associated systems for the reservation, payment and invoicing of freight rail transport services, including services based on intermodal oriented timetable integrating buffer times and milestones in multi-modal freight terminals, are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B.

### 3.2. **Movements of freight wagons and their load**

- (1) Railway undertakings involved in the same freight rail transport service operated as single wagonload transport shall mutually exchange information and individually ensure the monitoring of the location and status of the freight wagons, or set of freight wagons, for which they are responsible for the data relating to the movements of freight wagons and their load set out in points 3.2.1 to 3.2.3.
- (2) The lead railway undertaking shall have an overview of the current location and status of the freight wagons or set of freight wagons, and their load, using the information provided by the railway undertakings involved in the same freight rail transport service operated as single wagonload transport.
- (3) The current location and status of the load, intermodal loading units in particular, shall be monitored based on the location and status of the freight wagons onto which the load is positioned.
- (4) Freight railway undertakings may contribute to the development of common Union web UIs referred to in Article 14(6) and Article 21 for granting access to data relating to the movements of freight wagons and their load. Where a group of freight railway undertakings jointly provide for use such common Union web UIs, that application shall grant access to data relating to the movements of freight wagons and their load to relevant telematics stakeholders pursuant to Article 4 and for use of that data under the conditions of the Creative Commons BY-NC-SA 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.

(\*) Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC (OJ L 257, 28.8.2014, p. 73, ELI: <http://data.europa.eu/eli/reg/2014/910/oj>).

### 3.2.1. Wagon running information

#### 3.2.1.1. Geo-localisation of freight wagons

- (1) Where geo-localisation devices are fitted on freight wagons, the data holder of geo-localisation based positioning data shall grant access to that data to other telematics stakeholders using these freight wagons, or where relevant other telematics stakeholders, pursuant to Article 4.
- (2) Aspects relating to the interoperability of data sharing in relation to the geo-localisation-based positioning of freight wagons are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

#### 3.2.1.2. Wagon status

- (1) The 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) For telematics stakeholders involved in a freight rail transport service operated as single wagonload transport to have continuous knowledge of the current location and status of freight wagons:
  - (a) the railway undertaking responsible for the movement of a freight wagon or set of freight wagons shall send a 'WagonStatusMessage' to the lead railway undertaking;
  - (b) the lead railway undertaking shall send a 'WagonStatusMessage', upon request, to other relevant telematics stakeholders pursuant to Article 4, in particular to the other railway undertakings involved in that freight rail transport service operated as single wagonload transport.
- (3) Where a telematics stakeholder sends a 'WagonStatusMessage', it shall specify to which event type that message relates to in accordance with points 3.2.1.3 to 3.2.1.13.
- (4) Unless a common wagon and intermodal loading unit operation database in accordance with point 3.3.3 is available, or common Union web UIs referred in point 1.7.2 have been used, 'WagonStatusMessage' shall be exchanged bilaterally pursuant to Article 4 via a telematics application referred to in Article 14 and point 1.7.
- (5) To have continuous knowledge of the current location and status of freight wagons in a freight rail transport service not operated as single wagonload transport, telematics stakeholders involved in that transport service may voluntarily apply the requirements set out in points 3.2.1.2 to 3.2.1.13 based on contractual provisions.

#### 3.2.1.3. Wagon ready for movement

- (1) The event type 'Wagon Ready To Pull' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where the loader or where relevant the filler of a freight wagon, both of which are defined in Article 3 of Directive (EU) 2016/798, have informed the lead railway undertaking that their load, if any, is ready for movement without prejudice to the role of the railway undertaking as referred to in the Article 4 of Directive (EU) 2016/798, and therefore that the freight wagon can be pulled or pushed from a specified loading or unloading location, the lead railway undertaking shall, without jeopardising the safety of the load in accordance with OPE TSI, as referred to in Appendix A to this Annex, send a 'WagonStatusMessage', with the event type 'Wagon Ready To Pull' in accordance with point 3.2.1.2 (2) of this Annex, to the outbound railway undertaking expected to pull or push that freight wagon from this location.

- (3) In the case of intermodal transport, where an operator of rail freight service facilities is responsible for loading or unloading a set of freight wagons, it shall send to the lead railway undertaking a 'TrainRunningInformationMessage' referred to in point 2.6.1, subpoint (6), and in point 2.6.3, containing the location and status of the train, and confirming the train closure, that is to say that the loaded or unloaded set of freight wagons parked at the reporting point is ready for movement without jeopardising the safety of the load in accordance with OPE TSI.
- (4) In other cases, aspects relating to the interoperability of data sharing in relation to the readiness of the load for movement between the loader or the filler of a freight wagon that is part of a single wagonload transport, one the one hand, and the lead railway undertaking, one the other hand, are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

#### 3.2.1.4. Wagon pulled

- (1) The event type 'Wagon Pulled' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a freight wagon has been pulled or pushed from a specified loading or unloading location, the outbound railway undertaking responsible for that freight wagon shall send a 'WagonStatusMessage' with the event type 'Wagon Pulled', in accordance with point 3.2.1.2 (2).

#### 3.2.1.5. Wagon departure from origin

- (1) The event type 'Wagon Left Origin' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a freight wagon has left with a train a rail freight service facility of origin, the outbound railway undertaking responsible for that train shall send a 'WagonStatusMessage' with the event type 'Wagon Left Origin', in accordance with point 3.2.1.2 (2).

#### 3.2.1.6. Wagon arrival at intermediate location

- (1) The event type 'Wagon Arrival' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a freight wagon arrived at a specified intermediate location with a train, the railway undertaking of arrival responsible for that train shall send a 'WagonStatusMessage' with the event type 'Wagon Arrival', in accordance with point 3.2.1.2 (2).

#### 3.2.1.7. Wagon departure from intermediate location

- (1) The event type 'Wagon Departure' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a freight wagon left a specified intermediate location with a train, the outbound railway undertaking responsible for that train shall send a 'WagonStatusMessage' with the event type 'Wagon Departure', in accordance with point 3.2.1.2 (2).

#### 3.2.1.8. Wagon handed over

- (1) The event type 'Wagon Handed Over' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where the responsibility for a freight wagon's movement has changed between successive railway undertakings and where the freight wagon has been physically handed over by the railway undertaking of arrival to the next undertaking at a specified point of interchange, the railway undertaking of arrival shall send a 'WagonStatusMessage' with the event type 'Wagon Handed Over', in accordance with point 3.2.1.2 (2).

#### 3.2.1.9. Wagon taken over

- (1) The event type 'Wagon Taken Over' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where the responsibility for a freight wagon's movement has changed between successive undertakings and where the freight wagon has been physically taken over by the railway undertaking of departure from the previous railway undertaking at a specified point of interchange, the railway undertaking of departure shall send a 'WagonStatusMessage' with the event type 'Wagon Taken Over', in accordance with point 3.2.1.2(2).

#### 3.2.1.10. Wagon irregularity

- (1) The event type 'WagonJourneyIrregularity' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where an irregular event relating to the freight wagon or its load requires an action to be taken that may interrupt its transportation, the railway undertaking responsible for that freight wagon shall send a 'WagonStatusMessage' with the event type 'WagonJourneyIrregularity', in accordance with point 3.2.1.2 (2), to provide information on the event including further details about the nature of the irregularity and its consequences.

#### 3.2.1.11. Wagon irregularity rectified

- (1) The event type 'Wagon Journey Rectified' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a freight wagon journey irregularity has been rectified, the railway undertaking responsible for that freight wagon shall send a 'WagonStatusMessage' with the event type 'Wagon Journey Rectified', in accordance with point 3.2.1.2 (2).

#### 3.2.1.12. Wagon arrival at destination

- (1) The event type 'Wagon Reached Destination' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a freight wagon arrived with a train at a rail freight service facility of destination, the railway undertaking of arrival responsible for that train shall send a 'WagonStatusMessage' with the event type 'Wagon Reached Destination', in accordance with point 3.2.1.2(2).

#### 3.2.1.13. Wagon delivered

- (1) The event type 'Wagon Delivered' of the 'WagonStatusMessage' shall be in accordance with the specifications referenced in Appendix C, index [1].
- (2) Where a freight wagon has been delivered to the loading or unloading location, the railway undertaking of arrival responsible for this freight wagon or set of freight wagons shall send a 'WagonStatusMessage' with the event type 'Wagon Delivered', in accordance with point 3.2.1.2 (2).

#### 3.2.2. *Intermodal loading unit movement*

Aspects relating to the interoperability of data sharing in relation to the movement of intermodal loading units are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

#### 3.2.3. *Wagon forecast information*

- (1) The wagon forecast message ('WagonETI\_ETAMessage') shall be in accordance with the specifications referenced in Appendix C, index [1].

- (2) To provide other telematics stakeholders involved in a rail transport service operated as single wagonload transport with wagon forecast information, either confirming agreed timings or notifying any changes, each railway undertaking shall send, as part of the 'WagonETI\_ETAMessage', the wagon forecast information at destination ('ETA') or the wagon forecast information at point of interchange ('ETI') to:
  - (a) the lead railway undertaking;
  - (b) the next railway undertaking, if any, to which the freight wagon will be handed over at point of interchange.
- (3) Each railway undertaking, shall monitor the physical transport of a load and, no later than the time of departure from the origin, or from the last point of interchange, shall calculate wagon forecast information relating to the following event types and reporting points:
  - (a) at the next point of interchange: 'wagon handed over' specified in point 3.2.1.8;
  - (b) at destination: 'wagon delivered' specified in point 3.2.1.13.
- (4) Each railway undertaking shall calculate and update wagon forecast information based at least on the following information:
  - (a) the information contained in the following messages received from infrastructure managers and operators of rail freight service facilities:
    - (i) the 'PathDetailsMessage' specified in point 2.3.3;
    - (ii) the 'TrainRunningInformationMessage' specified in point 2.6.3;
    - (iii) the 'TrainRunningForecastMessage' specified in point 2.6.4;
  - (b) the information ('ETA' or 'ETI') contained in 'WagonETI\_ETAMessage' received from the previous railway undertaking, if any, from which freight wagons were taken over at a point of interchange.
- (5) Where a railway undertaking shares or grants access to wagon forecast information, it shall ensure that the quality of this information is sufficient for the lead railway undertaking to assess its accuracy in accordance with point 1.5 and the *ex post* measurement methodology set out in Appendix E.
- (6) The lead railway undertaking shall compare the wagon forecast information ('ETA') based on 'WagonETI\_ETAMessage' received from a railway undertaking with the timings agreed with the freight customers ('ArrivalTimeAtLocation'), and inform the railway undertakings involved.

### 3.3. Freight-specific reference data

#### 3.3.1. General

- (1) To support train preparation in accordance with point 2.5 and freight wagon operation in accordance with point 3.2.1, each vehicle keeper shall ensure rolling stock reference data sharing through standardised and federated rolling stock reference databases as referred to in point 3.3.2.
- (2) To support the operation of intermodal transport in accordance with point 3.2.2:
  - (a) each keeper of intermodal loading units ('ILUs') shall ensure ILU reference data sharing through standardised and federated ILU reference databases as referred to in point 3.3.3;
  - (b) each keeper of freight wagons and each keeper of ILUs may ensure data sharing of the operational status of their freight wagons and ILUs through the standardised and federated freight wagon and ILU operation databases, respectively, as referred to in point 3.3.4.
- (3) Telematics stakeholders responsible for freight-specific reference data pursuant to points (1) and (2) shall manage their reference data in accordance with Articles 8(4) and 10 and grant access to them for use under the conditions of the Creative Commons BY-ND 4.0 licence or any other equivalent or less restrictive open licence.

### 3.3.2. Rolling stock reference databases

- (1) Under the coordination of the Agency, vehicle keepers shall cooperate to set up, manage and maintain standardised and federated rolling stock reference databases ('RSRDs') at Union level in accordance with the specifications referenced in Appendix C, index [103].
- (2) Vehicle keepers are responsible for populating and maintaining rolling stock reference data in an RSRD in accordance with the specifications referenced in Appendix C, index [103], and shall ensure data quality. To that end, vehicle keepers shall ensure that data shared are up to date and reflect accurately the status of the processes that the vehicle shall undergo in accordance with the applicable legislation.
- (3) For the purpose of point (1), vehicle keepers shall reuse in the RSRD any rolling stock reference data from the following registers:
  - (a) the European Vehicle Register (EVR) set up by the Agency in accordance with Article 47 of Directive (EU) 2016/797 and Commission Implementing Decision (EU) 2018/1614<sup>(5)</sup>, in particular 'administrative data' referred to in point (5)(a) of this section and 'design data' referred to in point (5)(b) of this section;
  - (b) the European register of authorised types of vehicles (ERATV) set up in accordance with Article 48 of Directive (EU) 2016/797 and Commission Implementing Decision 2011/665/EU<sup>(6)</sup>, in particular 'design data' referred to in point (5)(b) of this section.
- (4) To minimise the volume of data shared for operational purposes and to increase the efficiency of freight wagon operations referred to in point 3.3.1, vehicle keepers shall ensure that RSRDs make the rolling stock reference data easily and fairly accessible to telematics stakeholders pursuant to Article 4 and under the conditions of the Creative Commons BY-ND 4.0 licence or any other equivalent or less restrictive open licence.
- (5) Reference data shared in a RSRD shall be grouped as follows:
  - (a) administrative data:  
Vehicle reference data referred to in point (3) (a) of this point, relating to the authorisation of the vehicle and its registration in accordance with Articles 21 and 22 of Directive (EU) 2016/797;
  - (b) design data:  
Vehicle reference data specified in points (3) (a) and (3) (b) relating to the technical characteristics of the rolling stock, especially data required by railway undertakings for the management of capacity and traffic in relation to their trains in accordance with Section 2, and for the management of freight wagons in accordance with Section 3.

### 3.3.3. Intermodal loading unit reference databases

- (1) Under the coordination of the Agency, keepers of intermodal loading units ('ILU keepers') shall cooperate to set up, manage and maintain standardised and federated reference databases for intermodal loading units (ILUs) in accordance with points (3), (4) and (5) and the specifications referenced in Appendix C, indexes [103] and [1].
- (2) ILU keepers shall be responsible for populating and maintaining quality data in the databases referred to in point (1). To that end, ILU keepers shall ensure that data shared are up to date and reflect accurately the status of the processes that the ILU undergoes in accordance with the applicable legislation.

<sup>(5)</sup> Commission Implementing Decision (EU) 2018/1614 of 25 October 2018 laying down specifications for the vehicle registers referred to in Article 47 of Directive (EU) 2016/797 of the European Parliament and of the Council and amending and repealing Commission Decision 2007/756/EC (OJ L 268, 26.10.2018, p. 53, ELI: [http://data.europa.eu/eli/dec\\_impl/2018/1614/oj](http://data.europa.eu/eli/dec_impl/2018/1614/oj)).

<sup>(6)</sup> Commission Implementing Decision 2011/665/EU of 4 October 2011 on the European register of authorised types of railway vehicles (OJ L 264, 8.10.2011, p. 32, ELI: [http://data.europa.eu/eli/dec\\_impl/2011/665/oj](http://data.europa.eu/eli/dec_impl/2011/665/oj)).

- (3) Reference data shall be made public through the databases referred to in point (1) and shall include the following data:
  - (a) the identifier of ILUs, including all types of semi-trailers, in accordance with the specifications referenced in Appendix C, index [2];
  - (b) the ILU type (container, swap body or semi-trailer) and its compatibility with freight wagons and routes in accordance with the specifications referenced in Appendix C, index [2];
  - (c) relevant load characteristics, weights and dimensions.
- (4) To minimise the volume of data shared for operational purposes and to increase the efficiency of ILU movements referred to in point 3.2.2, ILU keepers shall ensure that the databases referred to in point (1) make the ILU reference data easily and fairly accessible to telematics stakeholders pursuant to Article 4 and under the conditions of the Creative Commons BY-ND 4.0 licence or any other equivalent or less restrictive open licence.
- (5) Reference data shared in accordance with point (3) shall be grouped as follows:
  - (a) administrative data:

ILU reference data relating to the certification of ILUs and their registration in accordance with the technical specifications referenced in Appendix C, index [2];
  - (b) design data:

ILU reference data relating to the technical characteristics of ILUs, in particular data required by operators of rail freight service facilities and railway undertakings for train preparation in accordance with point 2.5 and ILU movements in accordance with point 3.2.2.

### 3.3.4. *Wagon and intermodal loading unit operational databases*

#### 3.3.4.1. General

- (1) To ensure the tracking of train movement in accordance with point 2.6 and of freight wagon and intermodal loading unit (ILU) movement in accordance with point 3.2 and associated communications between the lead railway undertaking and other railway undertakings involved, the railway undertaking may break the train movement data shared with infrastructure managers and operators of rail freight service facilities involved and the lead railway undertaking in accordance with point 2.6 down into freight wagon movement data in accordance with point 3.2.1 and data relating to the movement of ILUs in accordance with point 3.2.2. In such cases, these data shall be shared in accordance with points (4) to (8) of this point.
- (2) Operational communications between the lead railway undertaking and other railway undertaking involved shall be based on reference data shared through:
  - (a) the rolling stock reference databases referred to in point 3.3.2 of this Annex, in particular vehicle numbers as registered in the European Vehicle Register (EVR) in accordance with Implementing Decision (EU) 2018/1614;
  - (b) the ILU reference databases referred to in point 3.3.3 of this Annex, in particular ILU numbers in accordance with point 3.3.3 (3) (a) of this Annex.
- (3) Train traffic data shared in accordance with point 2.6 by railway undertakings shall also be based on, when available, the operational status data of freight wagons referred to in point 3.3.4.
- (4) To minimise the volume of data shared for operational purposes and for freight customer information and to increase the efficiency of the management of freight wagons and ILUs as referred to in point 3.2, each railway undertaking may cooperate to set up, manage, and maintain standardised and federated wagon and intermodal loading unit operational ("WIMO") reference databases in accordance with the specifications referenced in Appendix C, index [102].

- (5) The WIMO databases shall make the operational status data of freight wagons and ILUs referred to in point 3.3.4 easily and fairly accessible to all telematics stakeholders pursuant to the Article 4(1), including vehicle keepers and fleet managers, and to the freight customers that are referred to in the contract of carriage. Corresponding data sharing shall be achieved through a telematics application in accordance with Article 14 and point 1.7.
- (6) Each railway undertaking shall be responsible for populating and maintaining quality data about freight wagon status in WIMO databases. To that end, each railway undertaking shall ensure that data shared are up to date and reflect accurately the status of the processes that freight wagons and ILUs undergo pursuant to applicable legislation.
- (7) The WIMO databases shall contain real-time data relating to the movement of a freight wagon or an ILU from departure until its final delivery at freight customer sidings. The data shall include wagon running information referred to in point 3.2.1 and wagon forecast information referred to in point 3.2.3.
- (8) Train traffic data, wagon running and forecast information, and information relating to the movement of ILUs, shall be shared through the WIMO databases by railway undertakings at the latest at the release time of the freight wagon or the ILU by the freight customer that is referred to in the contract of carriage. The release time is the first entry shared by the railway undertaking of departure at the rail freight service facility of origin (the 'outbound railway undertaking') in the WIMO databases for the movement of a freight wagon or an ILU for an identified freight rail transport service.

#### 3.3.4.2. Loading of the freight wagon

The outbound railway undertaking shall register the status 'loading of the freight wagon' and grant access to it in the WIMO databases. It shall apply this status until the termination of the loading is notified to it by the freight customer that is referred to in the contract of carriage.

#### 3.3.4.3. Loaded freight wagon on journey

The outbound railway undertaking shall register the status 'loaded freight wagon on journey' and grant access to it in the WIMO databases upon departure from origin, in accordance with point 3.2.1.5, of a freight wagon that is loaded.

#### 3.3.4.4. Empty freight wagon on journey

The outbound railway undertaking shall register the status 'empty freight wagon on journey' and grant access to it in the WIMO databases upon departure from origin, in accordance with point 3.2.1.5, of a freight wagon that is empty.

#### 3.3.4.5. Unloading of the freight wagon

The railway undertaking of arrival at a rail freight service facility of destination (the 'inbound railway undertaking') shall register the status 'unloading of the freight wagon' and grant access to it in the WIMO databases. It shall apply this status until the termination of the unloading is notified to it by the freight customer that is referred to in the contract of carriage.

#### 3.3.4.6. Empty freight wagon under fleet management control

The inbound railway undertaking shall register the status 'empty freight wagon under fleet management control' in the WIMO databases to reflect the availability of an empty freight wagon with specified characteristics.

### 3.4. Data sharing with other stakeholders

Infrastructure managers, operators of rail freight service facilities and railway undertakings shall share data with other telematics stakeholders responsible for managing connections with other modes of transport in accordance with Article 4 and the requirements laid down in Section 3.

#### 4. RAIL TICKETING IN RELATION TO PASSENGER RAIL TRANSPORT SERVICES AND RAIL PASSENGER TRAVEL INFORMATION

##### 4.1. **General**

- (1) The provisions of Section 4 lay down the requirements for interoperable data sharing required to carry out the processes referred to in Article 2(1), point (c), for any passenger rail transport service operated in the Union.
- (2) Rights to access rail ticketing data are laid down in Articles 4 and 6.
- (3) Rail ticketing data shall consist of the following:
  - (a) passenger timetable data specified in point 4.2;
  - (b) tariff data shared specified in point 4.3;
  - (c) data relating to conditions of carriage specified in point 4.4.

##### 4.2. **Passenger timetable data**

###### 4.2.1. *Passenger timetable data*

The provisions of this point apply to all passenger rail transport services.

- (1) Passenger timetable data shared pursuant to Article 6(1) shall comply with the specifications referenced in Appendix C, indexes [P.2] and [P.4].
- (2) The passenger timetable data shall contain at least the following information:
  - (a) basic principles of train variants;
  - (b) passenger train identification number of a train as the 'RetailServiceId' in combination with the reference train identifier referred to in points 2.1.2 to 2.1.5;
  - (c) different possible ways of representing days of operation;
  - (d) train type, brand name and, where different than rail, the associated mode of transport;
  - (e) rail transport service relationships;
  - (f) coach groups attached to trains;
  - (g) train joining to and splitting from;
  - (h) through connections with a different train identifier connected ('connecting to');
  - (i) through connections with change of train identifier ('change of service number');
  - (j) details of rail transport services, including public time of arrival, public time of departure and public passing times;
  - (k) stops with passenger boarding or alighting restrictions;
  - (l) overnight trains;
  - (m) crossing of time zones;
  - (n) pricing regime and reservation details;
  - (o) organisation identifier of the data holder specified in point 1.2.1;
  - (p) service facilities as defined in Article 3, point (11), of Directive (EU) 2012/34;
  - (q) accessibility of the train in accordance with point 4.4.3.1, including scheduled existence of priority seats, wheelchair spaces, universal sleeping compartments;
  - (r) service extras;

- (s) connection times between passenger transport services specified in point 4.2.2;
  - (t) station list;
  - (u) existing direct, and indirect where known, online sales channels of distributors where live availability of rail products can be checked.
- (3) Each railway undertaking, or where relevant the data holder, shall grant access to all its passenger timetable data in accordance with Article 6(1) for use under the conditions of the Creative Commons BY-NC-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.
  - (4) No later than one week after the final working timetable of a passenger rail transport service has been published by the infrastructure managers concerned, each railway undertaking concerned, or where relevant the data holder, shall grant access to the annual passenger timetable data of that service in accordance with Article 6(1).
  - (5) No later than three weeks before an update to the annual passenger timetable of a passenger rail transport service takes effect, each railway undertaking concerned, or where relevant the data holder, shall update the annual passenger timetable data in relation to that service in accordance with Article 6(1). The annual passenger timetable data of that service shall also be updated where it is impacted by the discontinuation of passenger rail transport services pursuant to Article 8 of Regulation (EU) 2021/782. A railway undertaking, or where relevant the data holder, may under exceptional circumstances apply emergency updates within shorter deadlines to its annual passenger timetable of a passenger rail transport service.
  - (6) Each railway undertaking, or where relevant the data holder, shall grant access to passenger timetable data in accordance with Article 6(1) for at least 12 months after arrival of corresponding passenger rail transport service.
  - (7) Where a direct passenger rail transport service, with or without intermediate station stops, is operated or intended to be operated by several railway undertakings, the lead railway undertaking designated pursuant to Article 13 shall coordinate with all other railway undertakings operating that service to aggregate passenger timetable data for all stops served by that service. For each individual part of a passenger rail transport service operated by a single railway undertaking, this undertaking shall remain responsible for granting access pursuant to Article 6 to the data aggregated by the lead railway undertaking.
  - (8) Passenger timetable data shared pursuant to Article 6(1) shall constitute:
    - (a) an appropriate format and technical means respectively within the meaning of Articles 9(3) and 10(4) of Regulation (EU) 2021/782 to grant digital access to time schedules as part of pre-journey information referred to in the Part I of Annex II to that Regulation and meeting corresponding obligations under Articles 9(1) and 10(5) of that Regulation;
    - (b) a digital machine-readable format within the meaning of Article 4(1), point (b), of Commission Delegated Regulation (EU) 2017/1926 to grant access digitally to timetables and planned interchanges referred to in the point 1.1(d), subpoints (v) and (vi), of the Annex to that Regulation as part of static travel data.

#### 4.2.2. *Passenger timetable data of connection times*

- (1) Passenger timetable data of connection times shared pursuant to Article 6(2) shall comply with the specifications referenced in Appendix C, indexes [P.2] and [P.4].
- (2) The passenger timetable data of connection times shall contain at least the following information:
  - (a) connection times in the station (the 'default minimum connection time');

- (b) connection times between different locations in the station (e.g. parts of the station, platforms), if appropriate;
  - (c) connection times between the station and stations in the neighbourhood, if appropriate.
- (3) Each station manager, or where relevant the data holder, shall grant access to passenger timetable data of connection times in accordance with Article 6(2) for use under the conditions of the Creative Commons BY-NC-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.
  - (4) No later than one week after the final working timetable of a passenger rail transport service has been published by the infrastructure managers concerned, each station manager concerned, or where relevant the infrastructure manager or the data holder, shall grant access in accordance with Article 6(2) to the connection times that are applicable to that service for the upcoming annual passenger timetable.
  - (5) No later than three weeks before an update to the annual passenger timetable connection times takes effect, station managers, or where relevant infrastructure managers or data holders, responsible for those changes shall update the corresponding passenger timetable data in accordance with Article 6(2). A station manager, or where relevant an infrastructure manager or the data holder, may exceptionally apply emergency updates within shorter deadlines.
  - (6) Each station manager concerned, or where relevant the infrastructure manager or the data holder, shall grant access in accordance with Article 6(2) to data relating to its passenger timetable of connection times for at least 12 months after the end of validity of that data.
  - (7) Where a station manager, a railway undertaking, a distributor or a retailer combine or connect two or more passenger rail transport services, they shall use the connection times published in accordance with Article 6(2) and in accordance with points 4.2.2.2 and 4.2.2.3.
  - (8) Passenger timetable data of connection times shared pursuant to Article 6(2) shall constitute a digital machine-readable format within the meaning of Article 4(1), point (b), of Commission Delegated Regulation (EU) 2017/1926 to grant access digitally to default transfer times at interchanges referred to in the point 1.1 (d), subpoints (i) and (ii) of the Annex to that Regulation as part of static travel data.

4.2.2.1. Minimum connection times

- (1) Stations managers shall establish in accordance with the following table the minimum connection times pursuant to Article 15 considering the public arrival time of the inbound passenger transport service and the public departure time of the outbound passenger transport service, including the additional time that may be required for the check-in of passengers, bicycles, or luggage:

	Minimum connection time	Party responsible	Mandatory / optional
Within one station	Default minimum connection time in a station.	Station manager, or where relevant infrastructure manager	Mandatory
	Minimum connection time for a specific type of passenger transport service operated by a specific undertaking.		Optional

	Minimum connection time	Party responsible	Mandatory / optional
	Minimum connection time for a specific type of passenger transport service, regardless of the undertaking operating that type of service.		Optional
	Minimum connection time for a specific undertaking, regardless of the type of passenger transport service.		Optional
Between two stations	Default minimum connection time between two stations.	Station managers, or where relevant infrastructure managers, that are involved	Mandatory for stations belonging to the same meta station
	Minimum connection time for a specific type of passenger transport service operated by a specific undertaking.		Optional
	Minimum connection time for a specific type of passenger transport service, regardless of the undertaking operating that type of service.		Optional
	Minimum connection time for a specific undertaking, regardless of the type of passenger transport service.		Optional

- (2) For stations with a single platform that are not served by any scheduled passenger transport services other than rail, the minimum connection time in that station shall correspond to the duration of train stops in that station or be null.

#### 4.2.2.2. Connection times within one station

Connection times applicable within a single station shall be used as follows:

- (a) where a minimum connection time is established for a specific pair of outbound and inbound passenger transport services, it shall be applied by station managers, railway undertakings, distributors and retailers as the minimum connection time between those services;
- (b) where a minimum connection time is established between the outbound passenger transport services of a specific undertaking in relation to a specific type of service or brand name and the inbound passenger transport services of a specific undertaking in relation to a specific type of service or brand name, it shall be applied by station managers, railway undertakings, distributors and retailers as the minimum connection time between those specific services;
- (c) where a minimum connection time is established between the outbound passenger transport services of a specific type of service or brand name and the inbound passenger transport services of a specific type of service or brand name, regardless of the operating undertakings involved, it shall be applied by station managers, railway undertakings, distributors and retailers as the minimum connection time between those specific types of services;

- (d) where a minimum connection time is established between a specific outbound undertaking and a specific inbound undertaking, regardless of the type of service or brand name of the passenger transport services involved, it shall be applied by station managers, railway undertakings, distributors and retailers as the minimum connection time between the passenger transport services of those specific undertakings;
- (e) where none of the conditions set out in points (a) to (d) are met, the default minimum connection time specified for that station shall be applied by station managers, railway undertakings, distributors and retailers.

#### 4.2.2.3. Connection times between two stations

Connection times applicable between two stations shall be used as follows:

- (a) where a minimum connection time is established between a specific outbound undertaking in relation to a specific type of passenger transport service or brand name and a specific inbound undertaking in relation to a specific type of passenger transport service or brand name, it shall be applied by station managers, railway undertakings, distributors and retailers as the minimum connection time between those specific services;
- (b) where a minimum connection time is established between the outbound passenger transport services of a specific type of service or brand name and the inbound passenger transport services of a specific type of service or brand name, regardless of the operating undertakings involved, it shall be applied by station managers, railway undertakings, distributors and retailers as the minimum connection time between those specific types of services;
- (c) where a minimum connection time is established between a specific outbound undertaking and a specific inbound undertaking, regardless of the type or brand name of the passenger transport services involved, it shall be applied by station managers, railway undertakings, distributors and retailers as minimum connection time between the passenger transport services of those specific undertakings;
- (d) where a default minimum connection time is established between two stations, it shall be applied by station managers, railway undertakings, distributors and retailers as the minimum connection time between those stations;
- (e) where none of the conditions set out in points (a) to (d) are met, no minimum connection time may be applied.

#### 4.2.2.4. Calculation of connection time

Aspects relating to the interoperability of the calculation of the following aspects are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex:

- (1) connection time for passengers;
- (2) connection time adapted to persons with disabilities and persons with reduced mobility;
- (3) connection time adapted for passengers transporting a bicycle;
- (4) additional time for the check-in of passengers, bicycles or luggage.

### 4.3. **Tariff data**

#### 4.3.1. *Tariff data for passenger rail transport services*

- (1) Tariff data shared pursuant to Article 6(3) shall comply with the specifications referenced in Appendix C, indexes [P.3] and [B.16].

- (2) For direct access to and commercial use of tariff data pursuant to the second sentence of Article 6(3), and pending the future developments listed to in Article 23, points (c) and (e), the use of other data formats fully compatible and interoperable with the specifications referenced in Appendix C, indexes [P.7] may be agreed on contractual basis.
- (3) The tariff data shall contain passenger rail transport services, or part of such services, and at least the following information:
  - (a) all the existing tariffs and associated tables of prices, including common, special or discounted prices and travel passes, excluding those applicable to the employees of the data holder, or to employees of other companies provided they were commercially agreed as special business-to-business tariffs;
  - (b) information whether a price is yielded, that is subject to dynamic pricing such as yield management or capacity considerations, as well as information on the ranges applied to that price per category;
  - (c) a link to the applicable general and specific conditions of carriage in accordance with point 4.4;
  - (d) all pre-journey tariff related information necessary for retailers as set out in Annex II to Regulation (EU) 2021/782;
  - (e) all information necessary for issuers to issue tickets in accordance with the following specifications:
    - (i) point 4.5 where the tariff is subject to an availability check;
    - (ii) point 4.6 for security elements;
  - (f) the rules for ticket issuing and ticket inspections specified in point 4.3.2.
- (4) Each railway undertaking, or where relevant the data holder, shall grant access to all its existing tariff data in accordance with Article 6(3) for use under the conditions of the Creative Commons BY-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.
- (5) No later than one week after the final working timetable of a passenger rail transport service has been published by the relevant infrastructure managers, each railway undertaking, or where relevant the data holder, shall grant access to all the existing tariff data for that service in accordance with Article 6(3) to ensure that the service can be purchased in advance, without prejudice to other tariffs for the same rail passenger transport service which would be made available in accordance with their respective sales conditions.
- (6) At least six days before a tariff update for a passenger rail transport service takes effect, and without prejudice to other tariffs for the same service which would be made accessible in accordance with their respective sales conditions, the railway undertaking, or where relevant the data holder, that is responsible for those changes, shall grant access to corresponding data in accordance with Article 6(3).
- (7) Tariff data shared pursuant to Article 6(3) shall constitute:
  - (a) an appropriate format and technical means respectively within the meaning of Articles 9(3) and 10(4) of Regulation (EU) 2021/782 to grant digital access to conditions for all available fares as part of pre-journey information referred to in the Part I of Annex II to that Regulation and meeting corresponding obligations under Articles 9(1) and 10(5) of that Regulation;
  - (b) a digital machine-readable format within the meaning of Article 4(1), point (b), of Commission Delegated Regulation (EU) 2017/1926 to grant access digitally to basic common standard and special fares referred to in the point 1.2 (c)(i) and point 1.3(a) of the Annex to that Regulation as part of static travel data.

#### 4.3.2. *Management of rules for ticket issuing and ticket inspections*

- (1) To implement the rules for ticket issuing and ticket inspection consistently between railway undertakings, distributors, issuers and ticket control organisations, each railway undertaking shall grant access to:
  - (a) the conditions of carriage specified in point 4.4;
  - (b) the rail ticketing and ticket check rules.
- (2) Each railway undertaking, or where relevant the data holder, shall share the description of rules for ticket issuing and ticket inspection as structured data in a machine-readable format with any distributor or any issuer that is authorised to re-link to the availability of its products, as well as with ticket control organisations.

Aspects relating to the technical interoperability of corresponding data sharing are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

#### 4.3.3. *Information about the online sales channels of railway undertakings*

Where a telematics stakeholder involved in journey planning as part of rail ticketing processes presents information resulting from journey planning based on data accessed under Articles 4 to 6 for rail products it is neither authorised to sell nor to distribute, it shall at least relink that information to the online sales channels referred to in point 4.2.1 (2) (u).

### 4.4. **Conditions of carriage**

#### 4.4.1. *General*

- (1) Data relating to the conditions of carriage shall contain the information listed in points 4.4.2 to 4.4.6.
- (2) Each railway undertaking shall, for the passenger rail transport services it operates, grant access to data relating to the conditions of carriage pursuant to Article 6(1) for use under the conditions of the Creative Commons BY-NC-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.
- (3) Each railway undertaking shall publish and display on its official website the conditions of carriage applicable to the passenger rail transport services it operates.
- (4) Where a retailer presents a passenger rail transport service, it shall display on its website and mobile applications the conditions of carriage based on data it has access to in accordance with point (2) or via a link to the publication of a relevant railway undertaking in accordance with point (3).
- (5) Website and mobile applications used to display the conditions of carriage pursuant to points (4) and (5) shall be perceivable, operable, understandable and robust in accordance with the requirements for accessibility set out in the specifications referenced in Appendix C, index [P.6].
- (6) The presentation of the conditions of carriage shall be displayed in a clearly identified manner and shall be accessible in accordance with Article 22 of Regulation (EU) 2021/782 and the specifications laid down in the Annex to Commission Regulation (EU) No 1300/2014 <sup>(7)</sup> (PRM TSI), as referred to in Appendix A to this Annex.

<sup>(7)</sup> Commission Regulation (EU) No 1300/2014 of 18 November 2014 on the technical specifications for interoperability relating to accessibility of the Union's rail system for persons with disabilities and persons with reduced mobility (OJ L 356, 12.12.2014, p. 110, ELI: <http://data.europa.eu/eli/reg/2014/1300/oj>).

- (7) At least six days before an update to the conditions of carriage of a passenger rail transport service takes effect, the railway undertakings responsible for those changes shall grant access to corresponding data pursuant to Article 6. The railway undertakings shall list the points which have been changed compared to the previous version. For each change, they shall maintain the access to the earlier version of the data for at least one year after it has ceased to apply.
- (8) Conditions of carriages shared pursuant to Article 6(1) shall constitute:
  - (a) an appropriate format and technical means respectively within the meaning of Articles 9(3) and 10(4) of Regulation (EU) 2021/782 to grant digital access to general conditions applicable to the contract as part of pre-journey information referred to in the Part I of Annex II to that Regulation and meeting corresponding obligations under Articles 9(1) and 10(5) of that Regulation;
  - (b) a digital machine-readable format within the meaning of Article 4(1), point (b), of Commission Delegated Regulation (EU) 2017/1926 to grant access digitally to the different conditions referred to in the point 1.3(a) of the Annex to that Regulation as part of static travel data.

#### 4.4.2. *Conditions for the carriage of passengers*

Each railway undertaking, or where relevant the retailer, shall draw the attention of passengers to the following information relating to conditions for carriage of passengers:

- (a) the railway undertaking's conditions of carriage;
- (b) information about passenger rights pursuant to Article 30 of Regulation (EU) 2021/782;
- (c) the accepted means of payment;
- (d) sales and after-sales conditions, especially for the exchange and reimbursement of tickets;
- (e) procedures for the submission of complaints without prejudice to and in compliance with Article 18 of Regulation (EU) 2021/782.

#### 4.4.3. *Conditions of carriage and assistance for persons with disabilities and persons with reduced mobility ('PRM')*

##### 4.4.3.1. *Accessibility of rolling stock*

Each railway undertaking, or where relevant the retailer, shall draw the attention of passengers to the following information relating to the accessibility of rolling stock:

- (a) the train types and train numbers where PRM facilities are available (the line number, where specific train numbers cannot be made publicly available);
- (b) the types and minimum quantities of PRM facilities in the trains as specified in the PRM TSI, referred to in Appendix A to this Annex, under normal operating conditions;
- (c) the methods for requesting assistance in boarding and disembarking from trains, in particular the following information:
  - (i) notice period;
  - (ii) points of contact for requesting assistance, including the email address and telephone number of the offices for PRM assistance;
  - (iii) operating hours;
  - (iv) conditions under which assistance is provided in accordance with Articles 23 and 24 of Regulation (EU) 2021/782;
- (d) the maximum size and weight of wheelchairs, including the weight of the passenger, permitted without prejudice to the PRM TSI, as referred to in Appendix A to this Annex;
- (e) transport conditions for accompanying persons and/or animals;

- (f) a link where the conditions of access to the station are available in accordance with point 4.4.3.2.

#### 4.4.3.2. Accessibility of stations

- (1) Each railway undertaking, or where relevant the retailer, shall draw the attention of passengers to information relating to the accessibility of stations of departure and arrival based on the accessibility data referred to in point (2), where available.
- (2) The entity in charge of collecting, maintaining and exchanging accessibility data in accordance with Article 7a of the PRM TSI, shall collect, convert and transfer that data to the European railway stations accessibility database ('ERSAD') hosted by the Agency in accordance with the PRM TSI, as referred to in Appendix A to this Annex. That data shall be transferred in accordance with the format set out in the specifications referenced in Appendix C, index [B.15], of this Annex, and under the access conditions of the Creative Commons BY-NC-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.

#### 4.4.4. Condition for the carriage of luggage

Each railway undertaking, or where relevant the retailer, shall draw the attention of passengers to information relating to the conditions for the carriage of luggage, including for the transport of luggage where a service for luggage registration is offered.

#### 4.4.5. Conditions for the carriage of bicycles

- (1) Each railway undertaking, or where relevant the retailer, shall draw the attention of passengers to the following information relating to conditions for the carriage of bicycles where the carriage of bicycles is offered in accordance with Article 6 of Regulation (EU) 2021/782:
  - (a) the types and numbers of trains on which the carriage of bicycles is available and where no train number is available for the public, the line number, including the types and the number of bicycles permitted;
  - (b) particular times and periods when the carriage of bicycles may be restricted, including the details of that restriction;
  - (c) any applicable tariffs for the carriage of bicycles;
  - (d) whether a specific reservation for a bicycle place in the train is required and the method to be used to reserve one, including the following:
    - (i) the notice period;
    - (ii) details of specific sales channels for the reservation of a bicycle place and operating hours, if applicable;
  - (e) up-to-date information on the availability of capacity for the carriage of bicycles.
- (2) Each railway undertaking shall indicate if the carriage of bicycles is not offered.

#### 4.4.6. Conditions for the carriage of cars, motorcycles and boats ('cars')

Each railway undertaking, or where relevant the retailer, shall draw the attention of passengers to the following information relating to conditions for the carriage of cars where a service for the carriage of cars is offered:

- (a) the types and numbers of trains on which the carriage of cars is available;
- (b) particular times and periods when the carriage of cars is available;
- (c) the standard tariffs for the carriage of cars, including tariffs for the accommodation of passengers where accommodation is offered by the railway undertaking;
- (d) the specific address and time for the loading of cars onto the train;

- (e) the specific address and time of arrival of the train at the station of destination for the unloading of cars from the train;
- (f) size, weight and other limitations for the carriage of cars.

#### 4.5. **Availability and reservations**

##### 4.5.1. *General*

- (1) Authorisation to provide a service for confirmed personalised arrangements, namely a reservation, such as transportation, accommodation or assistance, may upon request of the distributor be part of a single transaction combining both a transport contract and one or more specified types of assistance or specific types of accommodation.
- (2) Alternatively, a reservation may concern, in addition to the transport contract, only the selling of a reservation for a specified type of assistance or of any type of passenger accommodation such as a seat, couchette, sleeping compartment, priority seat or wheelchair space. It may also concern the reservation of a passenger rail transport service related to the carriage of luggage or a car or the reservation of a bicycle space.
- (3) The availability of a rail product shall refer to a rail product which can be purchased by a passenger at a given point in time for:
  - (a) a specified type of assistance;
  - (b) a specified type of accommodation;
  - (c) the carriage of luggage, a car or a bicycle;
  - (d) a specific price subject to yield management.
- (4) Where a tariff or a product is subject to an availability check, but is either sold out or not applicable for purchase by a passenger at a given point in time for a specific train, information about corresponding services shall remain available and offered by the distributor or the retailer upon request.
- (5) A distributor shall be able to combine in a fair, transparent and non-discriminatory manner the rail products obtained from one or more railway undertakings or other distributors, independently of the railway undertakings involved. The distributor shall be able to retrieve trip information from its journey planner and determine the associated prices or range of prices for each leg of the passenger journey, either as a whole or, where applicable, for parts of it. Both the journey planner and the pricing engine of the distributor shall be able to use data accessed pursuant to Articles 4 and 6 of this Regulation. Distributors shall be able to check the availability of rail products through the attributing system of the railway undertaking, and distributors shall allow those rail products to be reserved.
- (6) A retailer shall be able to combine in a fair, transparent and non-discriminatory manner the rail products obtained from one or more distributors.
- (7) Where a distributor or a retailer combines rail products, it shall instruct the issuers of the corresponding tickets to report, in accordance with point 4.6, to the railway undertakings that operate the transport services related to these tickets about the tickets' combinations.
- (8) Specifications relating to the combination of products by the distributor or the retailer, as well as corresponding communications between them, are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.
- (9) Except for the specifications relating to the APIs to be used by distributors to check the availability of or reserve a rail product that are set out in point 4.5, the specifications relating to the APIs used to distribute and sell a rail product are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

#### 4.5.2. *Availability and reservation request*

- (1) Any distributor shall ensure that its distribution system shares the requests from customers (retailers or clients) for availability or reservation of a specified rail product with the railway undertakings concerned through their attributing systems, in accordance with the specifications referenced in Appendix C, index [B.5] <sup>(8)</sup> and based on contractual provisions.
- (2) In accordance with Part III of Annex II to Regulation (EU) 2021/782, the different types of reservation requests shall be as follows:
  - (a) availability request;
  - (b) reservation request;
  - (c) partial cancellation request;
  - (d) full cancellation request.
- (3) An availability request shared pursuant to paragraph (1) and Article 6(4) shall constitute an appropriate technical means within the meaning of Article 10(4) of Regulation (EU) 2021/782 to grant digital access to operations on reservation systems referred to in the Part III of Annex II to that Regulation and meeting corresponding obligations under Article 10(5) of that Regulation.

#### 4.5.3. *Availability and reservation response*

- (1) Where a request for availability or reservation has been made by a distributor in accordance with point 4.5.2, the railway undertakings concerned shall ensure that their attributing systems share a response with the requesting distribution system of this distributor for the rail product it specified and in accordance with the specifications referenced in Appendix C, index [B.5] and based on contractual provisions.
- (2) The different types of reservation responses are as follows:
  - (a) reply about availability;
  - (b) confirmation of a reservation request;
  - (c) confirmation of a partial cancellation request;
  - (d) confirmation of a complete cancellation request;
  - (e) replacement proposal;
  - (f) negative reply.

#### 4.5.4. *Availability of and reservations for PRM assistance*

- (1) Each railway undertaking and each distributor shall ensure that their attributing system and their distribution system respectively allows to share data relating to the carriage and assistance of PRM in accordance with the specifications referenced in Appendix C, index [B.10].
- (2) Each railway undertaking shall ensure that its attributing system allows to issue a confirmation number for the reservation of PRM assistance for each departure and arrival of each passenger rail transport service reserved. A confirmation number gives the passenger the guarantee and confidence that the assistance will be provided and establishes the accountability and responsibility of the railway undertaking for the provision of assistance.

#### 4.5.5. *Availability of and reservations for bicycle places*

At least for passenger rail transport services where a reservation for bicycle places is required in accordance with Article 6(1) of Regulation (EU) 2021/782, each railway undertaking shall ensure that its attributing system is able to handle a check for the availability of or a reservation of bicycle places in accordance with the specifications laid down in points 4.5.2 and 4.5.3 of this Annex.

<sup>(8)</sup> For requests for availability or reservation of PRM assistance and subsequent responses, applicable specifications are instead laid down in point 4.5.4.

#### 4.5.6. *Availability and reservations for the carriage of cars*

At least for passenger rail transport services offering the carriage of cars, each railway undertaking shall ensure that its attributing system is able to handle a check for the availability of or a reservation for the carriage of cars in accordance with the specifications laid down in points 4.5.2 and 4.5.3.

#### 4.6. **Tickets issuing for product distribution**

The issuer is responsible to issue tickets in accordance with points 4.6.1, 4.6.2 and 4.6.3, including for the reporting of tickets it issued for a passenger transport service to the railway undertakings operating this transport service.

##### 4.6.1. *Security elements for electronic delivery*

- (1) Each issuer of a ticket or a reservation for a passenger rail transport service shall generate the security data in accordance with the specification referenced in Appendix C, index [B.12], as soon as the distribution status and sales transaction data have been successfully sent to the distribution system of the distributor.
- (2) To ensure that the authenticity of the security elements can be checked by relevant ticket control organisations, the issuer shall create those security elements for electronic delivery using a public key infrastructure (PKI) in accordance with point 1.3(b).

##### 4.6.2. *Dossier reference*

- (1) Each issuer shall produce a dossier reference in accordance with the specifications referenced in Appendix C, index [B.5], to report the tickets or reservations it issued to the railway undertakings concerned. Each issuer shall perform the following actions:
  - (a) link the dossier reference with all data concerning the ticket;
  - (b) register the dossier reference in the attributing system of the railway undertakings concerned;
  - (c) include the dossier reference on the ticket or reservation of the passenger.
- (2) Each issuer shall perform the process set out in point (1) as soon as the distribution status and sales transaction data have been successfully sent to the distribution system of the distributor.

##### 4.6.3. *Types and formats of tickets*

- (1) Each railway undertaking and ticket control organisation shall at least accept tickets issued electronically in accordance with the specifications referenced in Appendix C, index [B.11], except in the following cases:
  - (a) the ticket is not appropriate for the passenger journey being undertaken;
  - (b) the ticket control organisation has reasonable grounds to suspect fraud;
  - (c) the ticket is not being used in accordance with the conditions of carriage referred to in point 4.4.
- (2) Each issuer shall at least be able to use one of the types and formats of ticket, in accordance with the specifications referenced in Appendix C, index [B.11], to issue a ticket for the rail product purchased to the passenger.
- (3) The same types and formats of ticket shall be accepted by railway undertakings, both for sales performed by one of the railway undertakings involved ('direct sales') and for those performed by an independent issuer ('indirect sales').

##### 4.6.4. *Ticket control and ticket state modification*

Ticket control organisations that have received security certificates for issued tickets from the issuer shall share ticket control data and ticket state changes with ticket issuers in accordance with points 4.6.4.1 and 4.6.4.2.

#### 4.6.4.1. Ticket annotation

- (1) The messages to retrieve tickets online ('RetrieveTicketRequest'; 'RetrieveTrainTicketRequest') and the ticket annotation message ('AddAnnotationRequest') shall be in accordance with the specifications referenced in Appendix C, index [B.14].
- (2) A ticket control organisation shall send to the issuer of the ticket it controls a message to retrieve this ticket online ('RetrieveTicketRequest'; 'RetrieveTrainTicketRequest').
- (3) A ticket control organisation shall send a ticket annotation ('AddAnnotationRequest') to the issuer of the ticket it controls and to other ticket control organisations involved in the control of this ticket.

#### 4.6.4.2. Reimbursement or compensation request

- (1) The requesting distribution system of the distributor shall send reimbursement and compensation requests on behalf of passengers to the attributing system of the railway undertakings concerned in respect of the relevant ticket or through-ticket.
- (2) The structure of passengers' reimbursement or compensation requests shall comply with Commission Implementing Regulation (EU) 2024/949<sup>(\*)</sup>. The corresponding specifications for interoperable data sharing between a distributor and railway undertaking concerned are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.

### 4.7. Rail passenger travel information during the journey

#### 4.7.1. Information in the station

##### 4.7.1.1. General

- (1) Each station manager shall provide passengers in the station pursuant to Article 9(2) of Regulation (EU) 2021/782 with visual and spoken passenger travel information that is accessible in accordance with Article 22 of Regulation (EU) 2021/782 and the specifications laid down in the PRM TSI, as referred to in Appendix A of this Annex.
- (2) Each station manager, or where relevant the infrastructure manager or the data holder, shall integrate information they hold in relation to the station, including platforms and where relevant platform sections, where trains are intended to stop, in accordance with the specifications referenced in Appendix C, indexes [P.2] and [P.4], of this Annex with the following information in relation to the arrival and departure of trains:
  - (a) train traffic based on data contained in the messages received pursuant to point 2.6;
  - (b) train composition based on data contained in the messages received pursuant to point 2.5.1.
- (3) Each station manager, or where relevant the infrastructure manager or the data holder, shall grant access to the information integrated pursuant to point (2), to other telematics stakeholders in accordance with Article 4, and via national access points, for use under the conditions of the Creative Commons BY-ND 4.0 licence or any other equivalent or less restrictive open licence or any other equivalent or less restrictive access conditions mutually agreed upon by the involved stakeholders.

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<sup>(\*)</sup> Commission Implementing Regulation (EU) 2024/949 of 27 March 2024 establishing a common form for rail passengers' reimbursement and compensation requests for delays, missed connections and cancellations of rail services in accordance with Regulation (EU) 2021/782 of the European Parliament and of the Council (OJ L, 2024/949, 2.4.2024, ELI: [http://data.europa.eu/eli/reg\\_impl/2024/949/oj](http://data.europa.eu/eli/reg_impl/2024/949/oj)).

- (4) The provisions of point (1) apply without prejudice to the provisions of the PRM TSI, as referred to in Appendix A of this Annex, to stations where information systems, namely voice announcement systems or dynamic visual devices as displays, are renewed, upgraded or newly installed.
- (5) Each station manager, or where relevant the infrastructure manager or the data holder, shall decide in accordance with Article 15, paragraphs (3) and (4), on the following points:
  - (a) the type of information systems, namely voice announcement systems or dynamic visual devices as displays, installed;
  - (b) the point in time when the information is provided;
  - (c) the location in the station where the information systems are installed.

#### 4.7.1.2. Train departures

Each station manager shall provide passengers in the station with at least the following train departure information:

- (a) train type and train number;
- (b) stations of destination;
- (c) all intermediate station stops and their main connecting passenger transport services;
- (d) departure time;
- (e) departure platform or track;
- (f) correspondence between platform sections and carriage numbers, including where applicable associated on-board services and facilities.

#### 4.7.1.3. Train arrivals

Each station manager shall provide passengers in the station with at least the following train arrival information:

- (a) train type and train number;
- (b) stations of origin;
- (c) all intermediate station stops;
- (d) arrival time;
- (e) arrival platform or track.

#### 4.7.1.4. Deviations from scheduled information

- (1) Where a passenger rail transport service deviates from the working timetable, the infrastructure managers concerned shall provide station managers in due time with relevant traffic and travel information and deviations from the scheduled information as set out in point (3) and in accordance with the specifications referenced in Appendix C, index [1].
- (2) In the event of deviation from the scheduled information, each station manager shall provide passengers in the station with real-time running and forecast information. Corresponding deviations shall be clearly identified for the attention of the passengers in the station.
- (3) Deviations from the scheduled information shall include at least the following information based on train traffic data as set out in point 2.6:
  - (a) delays and reasons for delay, if known, as part of the train delay cause;
  - (b) change of track or platform, as part of the train running information;
  - (c) full or partial cancellation of a train and rerouting, as part of the train journey modification information.

#### 4.7.2. *Information in the vehicle*

- (1) Each railway undertaking shall provide passengers within the vehicle pursuant to Article 9(2) of Regulation (EU) 2021/782 with up-to-date customer information that is accessible in accordance with Article 22 of Regulation (EU) 2021/782 and the specifications laid down in the PRM TSI, as referred to in Appendix A of this Annex. Such information shall be integrated on the basis of train traffic data contained in the messages received pursuant to point 2.6 of this Annex.
- (2) The provisions of point (1) shall apply, without prejudice to the provisions of the PRM TSI, as referred to in Appendix A of this Annex, to new rolling stock and to renewed or upgraded rolling stock where information systems, namely voice announcement systems or displays, are renewed, upgraded or newly installed.
- (3) Each railway undertaking shall provide passengers in the vehicle with at least the following information:
  - (a) at station of departure and at any intermediate station stop:
    - (i) the train type and number;
    - (ii) the final destinations;
    - (iii) all intermediate station stops ahead;
    - (iv) the scheduled arrival time at final destination and at any intermediate station stop ahead;
  - (b) the estimated departure time, reasons for delay, if known, and other information about the disruption;
  - (c) the name of the next station before arrival at any intermediate station stop;
  - (d) before arrival at any major intermediate station stop and at the final destination:
    - (i) the name of the next station;
    - (ii) the scheduled arrival time;
    - (iii) the estimated arrival time, reasons for delay, if known, and other information about the disruption;
    - (iv) the next main connecting passenger transport services, at the discretion of the railway undertaking.
- (4) Each railway undertaking shall decide on:
  - (a) the type of information systems, namely displays and voice announcement systems, installed;
  - (b) the point in time when the information is provided;
  - (c) the location in a train where the information systems are installed.

#### 4.8. **Common reference data for rail ticketing**

- (1) The Agency shall manage the following common code lists for rail ticketing as common reference data in accordance with Articles 8 and 9 and the specifications referenced in Appendix C, index [105] and grant access to them for use under the conditions of the EUPL 1.2 licence:
  - (a) reference data for European reservation systems;
  - (b) reference data of codes for passenger timetable data;
  - (c) reference data of codes for tariff data;
  - (d) data catalogue elements;
  - (e) passenger code list;
  - (f) any other data and code lists needed for the use of the technical documents referenced in Appendix C.

- (2) Common code lists for rail ticketing shall be in accordance with the specifications referenced in Appendix C, index [1].

#### 4.9. **Data sharing with other stakeholders**

For the purpose of data sharing by infrastructure managers, station managers and railway undertakings with other telematics stakeholders that are responsible for the management of connections between passenger rail transport services and other modes of passenger transport and of other modes of transport managed as part of or in replacement of passenger rail transport services, the requirements laid down in Section 4 of this Annex apply to data shared pursuant to Article 4. Such data shall be compliant only with the following specifications referenced in Appendix C:

- (a) for reference locations specified in point 1.2.2: index [P.1];
- (b) for passenger timetable data specified in point 4.2: indexes [P.2] and [P.4];
- (c) for tariff data specified in point 4.3: indexes [P.3] and [B.16];
- (d) for data relating to passenger travel information during the train journey, including dynamic travel and traffic data in accordance with Article 5 of Delegated Regulation (EU) 2017/1926: index [P.5] based on information contained in the messages referred to in point 2.6.1(1).

### 5. LIST OF SPECIFIC CASES

#### 5.1. **General**

- (1) Railway undertakings subject to a positive self-assessment in accordance with Article 18 shall not be prevented by a specific case from accessing the corresponding network.
- (2) The specific cases as listed in point 5.2 describe special provisions that are needed and authorised on particular networks of each Member State and include interface requirements subject to specific cases declared in other acts adopted under Directives (EU) 2016/797 or (EU) 2016/798. Specific cases are classified as either of the following:
  - (a) 'P' case: permanent;
  - (b) 'T' case: temporary, where corresponding interoperability requirements shall be met by a specified date.

#### 5.2. **List of specific cases**

There are no specific cases indicated for this TSI.

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## Appendix A

**INTERFACES IN RELATION TO OTHER SUBSYSTEMS**

Interfaces of the 'telematics applications' subsystem in relation to other subsystems are described below.

## A.1 INTEROPERABILITY REQUIREMENTS RELATED TO ACCESSIBILITY

The table below sets out the links between the requirements in the Annex to this TSI (the 'Telematics TSI') and the Annex to Regulation (EU) No 1300/2014 (the 'PRM TSI').

Requirement	Reference in the Telematics TSI		Reference in the PRM TSI	
Facilities for persons with disabilities and persons with reduced mobility (PRM)	4.4.3.1	Accessibility of rolling stock	4.2.2	Rolling stock subsystem
Wheelchair	4.4.3.1	Accessibility of rolling stock	App. M	Wheelchair transportable by train
Accessibility data	4.4.3.2	Accessibility of stations	7.2.1.1	Inventory of assets – infrastructure
Customer information	4.4.1	Conditions of carriage	4.2.1.10	Visual information
	4.7.1	Information in the station	4.2.1.11	Spoken information
	4.7.2	Information in the vehicle	4.2.2.7	Customer information
			4.4.1	Operating rules – infrastructure subsystem
			4.4.2	Operating rules – rolling stock subsystem
	4.7.1.1(3)	Information in the station	7.1	Application of this [PRM] TSI to new infrastructure and rolling stock
4.7.2(2)	Information in the vehicle	7.2	Application of this [PRM] TSI to existing infrastructure and rolling stock	

## A.2 INTEROPERABILITY REQUIREMENTS RELATED TO CAPACITY MANAGEMENT, TRAIN PREPARATION AND TRAFFIC MANAGEMENT

The table below sets out the links between the requirements of the Annex to this TSI (the 'Telematics TSI') and the Annex to Implementing Regulation (EU) 2019/773 (the 'OPE TSI').

Requirement	Reference in the Telematics TSI		Reference in the OPE TSI	
Identification of trains	2.1	Object identifiers	4.2.3.2	Identification of trains

Requirement	Reference in the Telematics TSI		Reference in the OPE TSI	
Capacity allocation	2.3	Capacity allocation	4.2.3.1	Train planning and timetable
			4.2.3.2	Identification of trains
Temporary restrictions or modification	2.4.4	Publication of capacity restrictions	4.2.1.2.2	Route book
			4.8.1	Additional information on infrastructure
Train preparation	2.5.1	Train composition	4.2.2.5.2	Train composition
			4.2.2.7	Ensuring that the train is in running order
			Appendix J	Train composition
	2.5.2	Train ready	4.2.3.3	Train departure
Train reporting	2.5.3	Train readiness forecast	4.2.3.4.2	Train reporting
	2.6.3	Train running information		
	2.6.4	Train forecast information		
	3.2.3	Wagon forecast information	4.2.3.4.4	Operational quality
	Appendix E	Accuracy of forecast information for train and wagon movements		
	2.6.8	Historical record of train traffic data	4.2.3.5	Data recording
Freight wagon reporting	3.2.1.3	Wagon ready for movement	4.2.2.4.1	Safety of load

### A.3 INTEROPERABILITY REQUIREMENTS RELATED TO NOISE

The following table sets out the links between the requirements in the Annex to this TSI (the 'Telematics TSI') and the Annex to Regulation (EU) No 1304/2014 (the 'NOI TSI').

Requirement	Reference in the Telematics TSI		Reference in the NOI TSI	
Capacity allocation	2.3	Capacity allocation	Appendix D	Quieter routes
Train preparation	2.5.1	Train composition	4.4.	Specific rules for the operation of wagons on quieter routes
			7.2.2	Additional provisions for the application of this TSI to existing wagons

## A.4 INTEROPERABILITY REQUIREMENTS RELATED TO CONTROL-COMMAND AND SIGNALLING

The following table sets out the links between the requirements in the Annex to this TSI (the 'Telematics TSI') and in Annex I to Implementing Regulation (EU) 2023/1695 (the 'CCS TSI').

Requirement	Reference in the Telematics TSI		Reference in the CCS TSI	
Train preparation	2.5.2	Train ready	4.2.4.2	Voice and operational communication applications
			4.2.2	On-Board ETCS functionality

## A.5 INTEROPERABILITY REQUIREMENTS RELATED TO ENERGY

The following table sets out the links between the requirements in the Annex to this TSI (the 'Telematics TSI') and in the Annex to Commission Regulation (EU) 1301/2014 (the 'ENE TSI').

Requirement	Reference in the Telematics TSI		Reference in the ENE TSI	
Train preparation	2.5.1	Train composition	4.2.17	On-ground energy data collecting system

## A.6 INTEROPERABILITY REQUIREMENTS RELATED TO LOCOMOTIVES AND PASSENGER ROLLING STOCK

The following table sets out the links between the requirements in the Annex to this TSI (the 'Telematics TSI') and in the Annex to Commission Regulation (EU) No 1302/2014 (the 'Loc&Pas TSI').

Requirement	Reference in the Telematics TSI		Reference in the Loc&Pas TSI	
Train preparation	2.5.1	Train composition	4.2.8.2.8	On-board energy measurement system

## Appendix B

**LIST OF OPEN POINTS**

The following table sets out the requirements and testing procedures for the subsystem telematics that are open points in accordance with Article 4(6) of Directive (EU) 2016/797. The testing procedures to be applied to assess compliance with those requirements are also open points.

Telematics TSI point	Open point
<b>Requirements</b>	
1.1	Additional levels of integrity and dependability for data to be used for the safety of operations
1.7.1	Web user interfaces for capacity management, train preparation, and traffic management
1.7.2	Web user interfaces for the management of freight wagons and their load
2.1.7(3)	Identification of shunting movements
2.2	Strategic management of infrastructure capacity
2.3.1(4)	Planning of shunting movements and stabling
2.3.1(5)	Coordination of multi-network processes in the area of capacity management
2.3.1(8)	Time threshold for ad hoc request for the allocation of infrastructure capacity
2.3.9	Capacity allocation coordination process
2.4.1	Coordination of capacity restrictions
2.4.2	Consultation of stakeholders affected by planned capacity restrictions
2.4.3	Publication of capacity restrictions
2.6.7(2)	Path section modification
3.1.2	Reservation, payment and invoicing systems for freight rail transport services
3.2.1.1(4)	Geolocalisation-based positioning of freight wagons
3.2.1.3(5)	Load ready for movement
3.2.2	Movement of intermodal loading units
4.2.2.4	Calculation of connection times and additional times for check-in
4.3.2(2)	Management of rail ticketing and ticket check rules
4.5.1(7)	Combination of rail products by the distributor or the retailer, and communications between them
4.5.1(8)	APIs used to distribute and sell a rail product, except to check its availability or reserve it
4.6.4.2(2)	Reimbursement or compensation requests
<b>Testing procedures</b>	
Appendix D.3.B(1)	Testing procedures for tariff data
Appendix D.3.C(1)	Testing procedures for availability check and reservation

## Appendix C

## LIST OF REFERENCED STANDARDS AND TECHNICAL DOCUMENTS

## C.0 SEMANTIC VERSIONING OF TECHNICAL DOCUMENTS

- (1) While only baseline versions of technical documents are listed below, where the maintenance of a technical document triggers a minor or a maintenance release, it may be issued by the Agency as an acceptable means of compliance in accordance with Article 12(2).
- (2) Where an update of a technical document triggers a new baseline, that update shall include an indicative transition period for application pending further revision of this Regulation updating the references listed in Tables C.1 to C.4.

## C.1 LIST OF COMMON REFERENCED TECHNICAL DOCUMENTS

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[1]	<b>ERA Ontology – Version 4</b>		
	<b>Ontology of the rail system</b>		
		1.4	Domain: telematics
[2]	<b>ERA/TD/CCT – Version 2</b>		
	<b>Codification of combined transport</b>		
	Identifiers of ILUs	3.3.3(3)(a)	2.3.1
	Type of ILUs	3.3.3(3)(b)	3
	Compatibility of freight wagons with ILUs and routes		
	Certification and registration of ILUs	3.3.3(5)(a)	2.3.2
Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[100]	<b>ERA-TD-100 – Version 4</b>		
	<b>Figures and sequence diagrams of telematics messages</b>		
	Capacity allocation	2.3	2
	Train preparation	2.5	3
	Train traffic data	2.6	4, 5
	Consignment note	3.1.1	6
	Movement of freight wagons	3.2.1	7
	Availability and reservation	4.5	8
	Availability and reservation for PRM assistance	4.5.4	9
[103]	<b>ERA-TD-103 – Version 4</b>		
	<b>Reference data</b>		
	<b>Common reference data</b>		
	Organisations reference data	1.2.1	3, 5, 8
	Locations reference data	1.2.2	3, 4, 8
	<b>Freight specific reference data</b>		
	Rolling stock reference data	3.3.2	3, 6, 8
	Intermodal loading unit reference data	3.3.3	3, 7, 8

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[105]	<b>ERA-TD-105 – Version 4</b> <b>XSD Data and message model</b>		
	Data presentation	1.4(2)(a)	Telematics_catalogue
	<b>Common reference data for rail ticketing</b>		
	Reference data for European reservation systems	4.8	Passenger_codelist
	Reference data of codes for passenger timetable data		
	Reference data of codes for tariff data		
	Message-dataset catalogue		
	Passenger code list		
[106]	<b>ERA-TD-106 – Version 4</b> <b>Public key infrastructure (PKI)</b>		
	Asymmetric or symmetric encryption, public key infrastructure ('PKI')	1.3(b)	6, 7, 8, 9

C.2 LIST OF REFERENCED TECHNICAL DOCUMENTS SPECIFIC TO DATA SHARING IN RELATION TO CAPACITY MANAGEMENT, TRAFFIC MANAGEMENT, AND TRAIN PREPARATION

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[104]	<b>ERA-TD-104 – Version 4</b> <b>Common interface</b>		
	Application programming interface ('API')	1.7	all

C.3 LIST OF REFERENCED TECHNICAL DOCUMENTS TO DATA SHARING SPECIFIC FOR THE MANAGEMENT OF FREIGHT WAGONS AND THEIR LOAD

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[102]	<b>ERA-TD-102 – Version 4</b> <b>Common wagon and intermodal loading unit operational ('WIMO') database</b>		
	Common wagon and intermodal loading unit operational ('WIMO') database	3.3.4.1	all

C.4 LIST OF REFERENCED SPECIFICATIONS SPECIFIC TO RAIL TICKETING IN RELATION TO PASSENGER RAIL TRANSPORT SERVICES AND RAIL PASSENGER TRAVEL INFORMATION

C.4.A List of referenced standards

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[P.1]	<b>CEN/TS 16614-1:2025</b> <b>Public transport – Network and Timetable Exchange (NeTEx) – Part 1: Public transport network topology exchange format</b>		
	Sharing of reference location data with other modes of transport	4.9	all

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[P.2]	<b>CEN/TS 16614-2:2025</b> <b>Public transport – Network and Timetable Exchange (NeTEx) – Part 2: Public transport scheduled timetables exchange format</b>		
	Passenger timetable data for passenger rail transport services	4.2.1	all
	Passenger timetable data of connection times	4.2.2	
	Sharing of passenger timetable data with other modes of transport	4.9	
	Passenger travel information within the station	4.7.1	
[P.3]	<b>CEN/TS 16614-3:2025</b> <b>Public transport – Network and Timetable Exchange (NeTEx) – Part 3: Public transport fares exchange format</b>		
	Tariffs data for passenger rail transport services	4.3.1	all
	Tariffs data sharing with other modes of transport	4.9	
[P.4]	<b>CEN/TS 16614-4:2025</b> <b>Public transport - Network and Timetable Exchange (NeTEx) – Part 4: Passenger Information European Profile</b>		
	Passenger timetable data for passenger rail transport services	4.2.1	all
	Passenger timetable data of connection times	4.2.2	
	Passenger timetable data sharing with other modes of transport	4.9	
	Passenger travel information within the station	4.7.1	
[P.5]	<b>EN 15531-2:2022</b> <b>Public transport – Service interface for real-time information relating to public transport operations – Part 2: Communications infrastructure</b>		
	Sharing of data with other modes of transport in relation to passenger travel information during train journeys	4.9	all
[P.6]	<b>EN 301549:2021</b> <b>Accessibility requirements for ICT products and services</b>		
	<b>Accessibility of information intended for passenger</b>		
	Accessibility of websites and mobile applications used to present the conditions of carriage to passengers	4.4	all

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[P.7]	<b>EN 12896-1:2016 Public transport – Reference data model – Part 1: Common concepts</b>		
	Data presentation	1.4(2)(b)	all
	Tariff data formats fully compatible and interoperable	4.3.1(2)	

## C.4.B List of referenced technical documents

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[B.5]	<b>ERA/TD/B.5 – Version 4 Electronic reservation of seats/berths and electronic production of travel documents – Exchange of messages</b>		
	Availability and reservation	4.5.2, 4.5.3	2, 3, 4, 5
	Dossier reference	4.6.2	
[B.10]	<b>ERA/TD/B.10 – Version 4 Electronic reservation of assistance for persons with reduced mobility – Exchange of messages</b>		
	Availability of and reservation for PRM assistance	4.5.4	4, 5, 6, 7, 8
[B.11]	<b>ERA/TD/B.11 – Version 4 Layout for electronically issued rail passenger tickets</b>		
	Tickets type and format	4.6.3	2, 3, 4, 5, 6, 7, 8
[B.12]	<b>ERA/TD/B.12 – Version 4 Digital security elements for rail ticketing</b>		
	Security elements for electronic delivery	4.6.1	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
[B.14]	<b>ERA/TD/B.14 – Version 4 e-Ticket Exchange for Control</b>		
	Ticket annotation	4.6.4.1	2, 3, 4, 5, 6

Index	Characteristics to be assessed	Telematics TSI point	Mandatory standard point
[B.15]	<b>ERA/TD/B.15 – Version 4 European Passenger Information Railway Station Accessibility Profile</b>		
	Conditions of access to the station	4.4.3.2	2
[B.16]	<b>ERA/TD/B.16 – Version 4 European Rail Fares Information Profile</b>		
	Tariffs data for passenger rail transport services	4.3.1	All
[B.17]	<b>ERA/TD/B.17 – Version 4 Testing procedure for timetable data</b>		
	Compliance assessment testing procedure for passenger timetable data	Appendix D.3.A	2, 3, 4, 5, 6, 7, 8

## Appendix D

**TESTING PROCEDURES FOR COMPLIANCE ASSESSMENT**

## D.1 SELF-ASSESSMENT AND EVIDENCE-BASED DECLARATION FOR INDIVIDUAL IT MESSAGES

- (1) The telematics applications used by telematics stakeholders for the implementation of this Regulation shall be subject to a self-assessment of the compliance of the data shared against the requirements laid down in the Regulation. Self-assessment performed by telematics stakeholders and notified to the Agency in accordance with Article 18 shall be accompanied by the following information automatically compiled by the web application provided by the Agency:
  - (a) functions covered and reference to corresponding points of this Regulation, including general and structured description of the telematics applications used in relation to those functions;
  - (b) online documentation of messages (including their sequence) tested against the specifications referenced in the Regulation, and corresponding automated evidence-based declaration of compliance as referred to in point (6);
  - (c) the version of the specifications referenced in Appendix C, as implemented and subject to compliance assessment;
  - (d) files of the serialised messages and associated structured data elements shared as well as the SHACL or XSD files used to validate those messages.
- (2) For requests submitted to the Agency for correctness checks of the automated evidence-based declaration of compliance resulting from self-assessment in accordance with Article 18(8), the information referred to in subpoint (1) of this point shall also include background information and a timeline of the project to be assessed.
- (3) Where an existing self-assessment is to be renewed in accordance with Article 18(5), the self-assessment referred to in point (1) shall be limited to the elements affected by the changes self-assessed. The information compiled pursuant to point (1) shall also include a reference to the previous self-assessment or to the evaluation report delivered by the Agency in accordance with Article 18(7).
- (4) To facilitate the testing of messages referred to in point (1)(b) and their sequence, telematics stakeholders shall self-assess the compliance of individual messages deployed and used for the purposes of implementing this Regulation.
- (5) The Agency shall make available a web application for self-assessing message compliance where telematics stakeholders are to self-assess relevant files in accordance with point (1)(d) for automated testing against the specifications referenced in Appendix C, index [1].
- (6) After self-assessment, that web application shall issue an automated acknowledgment of receipt and a self-compliance assessment result to be used by the self-assessed telematics stakeholder as an evidence-based declaration of presumption of compliance for the messages or sequence of messages tested.

## D.2 EVALUATION OF THE CORRECTNESS OF SELF-ASSESSMENT

- (1) Where the Agency checks, pursuant to Article 18, paragraphs 6, 7, and 8, the correctness of the automated evidence-based declaration of presumption of compliance resulting from self-assessment, it shall report its evaluation on whether the telematics application used complies with this TSI. Its evaluation report shall cover at least the following aspects:
  - (a) compliance of all mandatory elements contained in the messages;
  - (b) compliance of the messages themselves;
  - (c) compliance of the sequence of messages.

### D.3 SPECIFIC TESTING PROCEDURES FOR RAIL TICKETING

#### D.3.A Passenger timetable

Testing procedures for assessment of compliance against the requirements laid down in point 4.2 of this Annex shall be in accordance with the specifications referenced in Appendix C, index [B.17].

#### D.3.B Tariffs

- (1) Testing procedures for assessment of compliance against the requirements laid down in point 4.3 of this Annex are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.
- (2) Pending the development of relevant testing procedures pursuant to Article 23, points (c) and (e), automatic converters and validators based on an open architecture may be used by telematics stakeholders to self-assess the compatibility and interoperability of the data shared and the processes implemented against the specifications set out in point 4.3.

#### D.3.C Availability check and reservation

- (1) Testing procedures for assessment of compliance against the requirements laid down in point 4.5 of this Annex are identified as an 'open point' in accordance with Article 4(6) of Directive (EU) 2016/797 and are listed in Appendix B to this Annex.
- (2) Pending the development of relevant testing procedures pursuant to Article 23, points (c) and (e), automatic validators based on an open architecture may be used by telematics stakeholders to self-assess the compatibility and interoperability of the data shared and the processes implemented against the specifications set out in point 4.5.

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## Appendix E

**ACCURACY OF FORECAST INFORMATION FOR TRAIN AND FREIGHT WAGON MOVEMENTS**

- (1) Since the train forecast information referred to in point 2.6.4 and the wagon forecast information referred to in point 3.2.3 refer to the predicted time of arrival of a train and of a freight wagon and its load, respectively, at an agreed reporting point, it will be used by stakeholders and customers involved in the rail transport service to plan subsequent operations or onward connections.
- (2) Since both the train forecast information referred to in point 2.6.4 and the freight wagon forecast information referred to in point 3.2.3 are an estimate that derive from the time originally planned in the working timetable +/- the deviation from the working timetable that occurred during the train operation, the originator of such a forecast shall:
  - (a) carry out an ex-post measurement of the accuracy of its forecast in accordance with Article 10 in order to create confidence in the data to be reused by the recipient for the planning of subsequent operation;
  - (b) ensure that the recipient of the forecast referred to in point (a) is informed of the expected accuracy of the forecast based on earlier train runs.
- (3) As an alternative to linear time-shifting methods commonly applied by some telematics stakeholders for the purposes of point (2) (a), others may apply different methods or use internal algorithm-based machine learning methods that may be integrated into an artificial intelligence to achieve more accurate and intelligent insights.
- (4) For the purpose of point (2), recurrent quality assurance checks on the accuracy of forecast information are laid down as follows:
  - (a) absolute error:  
The 'absolute error' is calculated as the absolute value of the difference between the actual date and time of arrival at a specified reporting point and the forecast date and time of arrival at that reporting point;
  - (b) relative error:  
To put the 'absolute error' at a specified reporting point in perspective with the duration of the remaining train journey, a 'relative error' is calculated as the ratio or percentage obtained by dividing the 'absolute error' by the 'duration of the remaining train journey';  
The 'duration of the remaining train journey' is calculated as the difference between the actual date and time of the arrival of a train at the reporting point and the time when the corresponding forecast information has been provided;
  - (c) accuracy:  
The 'accuracy' are calculated as the complement of the 'relative error' to 100 %.
- (5) Where a data holder, that is to say the originator of the data, performs recurrent quality assurance checks as referred to in point (3), it shall assess the accuracy of the data as a stochastic probability of the statistical values of the forecast information at a specified reporting point for a group composed of previous rail transport services.
- (6) A data holder shall perform quality assurance checks on the accuracy of train forecast information only once that train has arrived, or after that freight wagon and its load have been handed over or delivered at, the reporting point that is subject to the forecast. Quality assurance checks shall be based only on historical data.
- (7) Indicators resulting from the measurements referred to in point (3) shall be available through the common Union web UI referred to in Article 5.

## Appendix F

## ESSENTIAL REQUIREMENTS

TelematicsTSI point	Element of the telematics subsystem	Essential requirements as referred to in Annex III to Directive (EU) 2016/797					
		Safety	Reliability and availability	Health	Environmental protection	Technical compatibility	Accessibility
1.2	Common reference data		X			X	
1.3	Security		X			X	
1.4	Data presentation					X	
1.5	Data quality		X			X	
1.7	APIs		X			X	
	Web UIs		X	X		X	X
2.1	Object identifiers					X	
2.2	Strategic management of infrastructure capacity		X		X	X	
2.3	Capacity allocation		X		X	X	
2.4	Capacity restrictions	( <sup>a</sup> )	X		X	X	
2.5.1	Train composition	( <sup>a</sup> )	X		X	X	
2.5.2	Train ready	( <sup>a</sup> )	X			X	
2.5.3	Train readiness forecast	( <sup>a</sup> )	X			X	
2.6	Train traffic data	( <sup>a</sup> )	X			X	
3.1.1	Consignment note	( <sup>a</sup> )				X	
3.2	Movements of freight wagons and their load	( <sup>a</sup> )	X			X	
3.3	Freight-specific reference data		X		X	X	

TelematicsTSI point	Element of the telematics subsystem	Essential requirements as referred to in Annex III to Directive (EU) 2016/797					
		Safety	Reliability and availability	Health	Environmental protection	Technical compatibility	Accessibility
4.2	Passenger timetable data					X	X
4.3	Tariff data					X	
4.4	Conditions of carriage					X	X
4.5	Availability and reservation					X	X
4.6	Security elements for product distribution		X			X	
4.7	Passenger travel information during the train journey			X		X	X
4.8	Common reference data for rail ticketing		X			X	

(<sup>6</sup>) Where data stored or shared pursuant to this Regulation is intended to be used for the safety of operations, it shall be in accordance with point 1.1 and point 2.7.4 of Annex III to Directive (EU) 2016/797.

## Appendix G

**IMPLEMENTATION MILESTONES**

- (1) The subsystem shall be considered to have been deployed by a telematics stakeholder in accordance with this Regulation when the data sharing requirements and messages have been fully implemented in accordance with the specifications set out in this Annex and when corresponding telematics applications used for data sharing have been declared as compliant with this Regulation pursuant to Article 18 and point 1.6 of this Annex and are fully operational (first day of operation).
- (2) To fulfil the deadlines laid down in Article 16, paragraphs (2), (3) and (4), each telematics stakeholder shall deploy the telematics subsystem in accordance with the milestones set out in the following table:

Functions	Basic parameters	Milestone
<b>Capacity management</b>	2.1 – Object identifiers	4.3.2029
	2.3 – Capacity allocation	4.3.2029
<b>Train preparation</b>	2.5.1 – Train composition — Freight rail transport services — Passenger rail transport services	9.12.2029
	2.5.2 – Train ready	9.12.2029
	2.5.3 – Train readiness forecast	9.12.2029
<b>Traffic management</b>	2.6 – Train traffic data — Freight services — Passenger services	9.12.2029 10.12.2028
<b>Management of freight wagons and their load</b>	3.1.1 – Consignment note	9.12.2029
	3.2.1 – Wagon running information	9.12.2029
	3.2.3 – Wagon forecast information	9.12.2029
<b>Reference data</b>	1.2 – Common reference data — organisations — locations	13.12.2026
	3.3.2 – Rolling stock reference data	10.12.2028
	3.3.3 – Intermodal loading unit reference data	10.12.2028
	3.3.4 – Wagon and intermodal loading unit operational data	-/-
	4.8 – Common reference data for rail ticketing	10.12.2028
<b>Rail ticketing of passenger rail transport services</b>	4.2.1 – Passenger timetable data	14.12.2025
	4.2.2 – Passenger timetable data of connection times	12.12.2027
	4.3 – Tariff data	10.12.2028
	4.4 – Conditions of carriage	13.12.2026
	4.5 – Availability and reservations	10.6.2029
	4.6 – Security elements for product distribution	13.12.2026
<b>Passenger travel information</b>	4.7 – Passenger travel information during the train journey	12.12.2027