

TAP TSI

Telematics Applications for Passenger Services Technical Specifications for Interoperability

Project:	TAP Phase Two Transition
Release:	1.0 - To TAP Steering Committee
Delivery Date:	28 April 2013
Author:	TAP Phase Two Project Team
Owner:	TAP Phase Two Project Team
Client:	DG MOVE
Document Ref:	TAP TSI Master Plan
Version No:	1.0

Table of contents

Executive Summary	4
1 Background	5
2 Conclusions	7
3 Approach & Turnout.....	8
3.1 Companies Responding	8
3.2 Consolidation Phase and Final Master Plan Delivery	10
3.3 Methodology Applied.....	11
3.3.1 Weighting	11
3.3.2 Determining Target Dates	11
3.3.3 Geographical Overview of Implementations at Infrastructure Managers	11
3.3.4 Geographical Overview of Implementations at Railway Undertakings	12
4 The TAP TSI Master Plan.....	13
4.1 Summary of Overall Implementation and Target Dates	13
4.2 Implementation of the TAP TSI Requirements	15
4.2.1 Common Requirements/ Central Availability	16
4.2.2 Making (Own) Reference Data Available	16
4.2.3 Path Request	17
4.2.4 Train Preparation.....	20
4.2.5 Train Running	22
4.2.6 Passenger Information	28
4.2.7 Timetable Data	31
4.2.8 Tariff Data.....	32
4.2.9 Reservation	35
4.2.10 PRM Assistance	44
4.2.11 Retail Architecture	46

Executive Summary

This Master Plan document summarises the consolidation of the individual TAP TSI implementation plans established by RUs, IMs and SMs in Q3 2012 and Q1 2013. Overall, 40 RUs, IMs and groups - representing a total of over 70 licensed railways - have submitted their plans in time for the consolidation exercise performed by the TAP TSI project team between January and April 2013.

The turnout represents a good mix of RUs (incl. some newcomers) and IMs, covering the majority of the EU rail network both in terms of passenger kilometres and track kilometres, respectively.

The TAP TSI Master Plan constitutes a solid view of individual companies' master plans. Some companies, however, submitted draft plans that are still subject to final management sign-off. Furthermore, most companies made the implementation dependent on prerequisites such as the availability of reliable central components and stable baseline documents. This needs to be taken into account when maintaining the Phase One deliverables and Technical Documents.

The Master Planning methodology applied is closely aligned with the TAF TSI Master Plan regarding the RU/ IM functions. A number of **RU/IM functions** are already implemented on some networks, but complete implementation of all functions across RUs and IMs is expected to take until 2021.

As regards the **retail functions**, too, a number of functions have already been implemented by several RUs. The general time band for compliance is mid-2015 to mid-2017, largely as estimated by the Phase One project. Full implementation is to take until end-2017 or somewhat later. The target date for compliance with the timetable data exchange obligation is Q3 2016, i.e. by then at least 80% of submitters plan to be compliant with this mandatory function. As regards the other retail functions where compliance can be achieved by other bilaterally agreed means than the TAP Technical Documents, it needs to be noted that not all submitting RUs responded to all functions.

Likewise, not all RUs are concerned by all functions. The summary graphs in this document are calculated based on the respondents to the specific functions in question.

A number of submitters mention the risk of insecure funding for their implementation activities. The project team recommends that companies seek public co-funding, such as from TEN-T. The submitters also point out that any post-Phase One modification of the baseline documents may lead to future revisions in the individual railway implementation plans.

The project team believes that this Master Plan document provides a solid basis for updating the milestones in the Regulation when it is revised between now and autumn 2013.

1 Background

The implementation of the TAP TSI requires appropriate planning. The need for a Master Plan is stated in the TAP TSI Regulation (Commission Regulation (EU) No 454/2011 of 5 May 2011) itself:

“7.2. Phase one – detailed IT specifications, governance and master plan

Phase one has three objectives:

1. (...)
2. (...)
3. ***To draw up a roadmap of the activities deemed necessary in order to implement the system, including appropriate milestones for the monitoring of the progress of its implementation by the Commission, the European Railway Agency, the Member States and the stakeholders concerned.***

7.2.3. Deliverables

(...)

The master plan shall include:

1. *The identification of the activities necessary to achieve the implementation of the system.*
2. *A migration plan which includes a set of phases that is conducive to intermediate and verifiable tangible results, from the current framework of stakeholders' information and communication systems to the system itself.*
3. *A detailed milestone plan.*
4. *A risk assessment of the crucial phases of the master plan.*
5. *An assessment of the total lifecycle costs (LCC) associated with the deployment and operation of the system, together with a subsequent investment plan and the relevant cost-benefit analysis.”*

The overall top-down Master Plan was delivered at end of Phase One by the TAP TSI project. It has subsequently been assessed by ERA and was finally approved by the TAP TSI Steering Committee. In the following, all railway undertakings and infrastructure managers falling under the TAP TSI were asked to establish their own planning of the activities needed for their compliance with the Regulation.

This task has been performed, under the coordination of the TAP TSI project team, during the TAP Phase Two transition period from end-September 2012 to end-April 2013.

The official go instruction was given by the TAP TSI Steering Committee on 3 July 2012, when it was agreed that the stakeholders would be invited to a kick-off information session on 25 September 2012. During the summer of 2012 the TAP TSI project team developed an implementation planning template for implicated stakeholders to populate with their individual implementation timelines.

Subsequently, the Steering Committee co-chairs invited the stakeholder associations, National Safety Authorities, National Contact Points and other stakeholders to the Master Planning Kick-off meeting on 25 September 2012. The letter also informed that the consolidated Master Plan was due on 30 April 2013.

The Master Planning Kick-off meeting focused on the TAP TSI obligations and the TAF TSI Master Plan was presented as an example. Furthermore, the TAP TSI implementation planning approach, templates and timeline were introduced.

Over 80 participants from industry associations, Member States, Commission services and individual RUs and IMs attended the meeting. RUs/ IMs that are not members of any industry association and that did not attend were supposed to be informed by their Member States, who had been reminded by the Commission of their obligations in the

information cascade during previous RISC meetings. At the meeting the project team also informed the RUs that they needed to establish their plans on the basis of the Phase One deliverables and the B30 message catalogue and that any post-Phase One modification may lead to future revisions in the individual railway implementation plans. It was pointed out that the railways would need to rely on the above deliverables as a stable baseline.

The deadline indicated to the RUs for the first submission of their individual implementation Master Plans was 31 December 2012. Before that date the project team was available to provide clarifications on how to fill up the template. Subsequently, the railways set up internal project teams to study the requirements and to establish individual implementation timelines.

Detailed information was given to the TAP TSI Common Support Group of the sector on 15 November 2012 and a dedicated all-day Q&A session was held in Brussels at CER the same day. Furthermore, an all-day session was held in Bratislava with stakeholders from the Slovak Republic and Hungary. Questions and answers have been made available on the public TAP TSI project website (<http://tap-tsi.uic.org/>).

The quality of the submissions was generally very good, most respondents having filled out the template correctly in their initial submission. Some details had to be clarified by the project team in direct contact with some of the companies.

Between January and mid-April (so-called consolidation phase), the TAP TSI project team performed an in-depth analysis of the individual submissions, raised and clarified questions and recommended modifications to several submitters in order to even out inconsistencies and to bring implementation dates closer to each other.

At the TAP TSI Steering Committee on 17 April, the consolidation was acknowledged in principle and the time since has been spent on compiling the document at hand as well as on integrating last-minute submissions received.

This document summarises the result of this exercise, puts individual submissions into perspective and serves as the basis for the revision of the Regulation as regards the Master Planning provisions. It does not repeat the TAP TSI requirements and implementation concepts, but mentions the Basic Parameters and reference documents based on which individual planning was performed.

Disclaimer:

Please note the following for all information given in this document:

- Information provided is from the consolidation phase January to April 2013
- Some companies reported that their final Master Plan is not yet internally approved. Changes due to alignments with late reporters may occur
- The analysis takes into account all individual implementation plans submitted by 24 April 2013
- This document serves as orientation, reference point and analysis of the submitted plans. The document as such does not constitute any requirement for parties that fall under the TAP TSI
- While great care and effort has been spent, errors cannot be excluded taking the magnitude and complexity of the consolidation work into account
- Deliverables 4 (risk assessment) and 5 (total lifecycle costs) as stipulated in Chapter 7.2.3 of the Regulation had already been delivered to the Commission as part of the Phase One project delivery. They are therefore not covered in this Master Plan document.

2 Conclusions

The good participation of railways throughout the Master Planning process and the high turnout demonstrates the rail sector's commitment to a functioning TAP TSI. Thanks to the individual planning efforts undertaken between end-September 2012 and April 2013, the vast majority of the EU rail network is covered.

There is a good mixture of company sizes, geographies and tariff systems (NRT, IRT) amongst the responding railways.

The target dates for TAP TSI implementation underline willingness to implement the Regulation ASAP whilst respecting economic considerations.

Essentially, reference files as prerequisite for being compliant with many RU/IM and retail functions will be implemented by 2015.

RU/IM-specific conclusions:

- A number of functions are already implemented on some networks
- Full implementation (100% of all functions) takes place until 2021
- Major concerns provided in the individual submissions relate to lack of knowledge of the obligations and/ or standards by all relevant partners. There is a need for the national contact points to cascade information on TAP TSI down to all national stakeholders, including those who are not members of any European-level association.

Retail-specific conclusions:

- A number of functions are already implemented by several RUs
- General time band for compliance is mid-2015 to mid-2017 - largely as estimated by the Phase One project
- Full implementation (100% of obligations) likely to take until end-2017 or somewhat later. One RU (based outside of the EU) expects to only become compliant by approx 2020 due to new distribution and passenger IT systems currently being implemented.

A number of submitters mention the risk of insecure funding for their implementation activities. The project team recommends that companies seek public co-funding, such as from TEN-T.

The submitters point out that any post-Phase One modification of the baseline documents may lead to future revisions in the individual railway implementation plans.

3 Approach & Turnout

3.1 Companies Responding

Over 40 railways and groups of railways have submitted their individual plans, covering over 70 individual railway undertakings (RUs) and infrastructure managers (IMs). Nearly all responses were provided in the planning template provided by the TAP TSI project team.

A) For RU/IM functions, the following stakeholders have submitted their plans:

- RUs:
 - CD (CZ)
 - CFL (LU)
 - CFR Calatori (RO)
 - CP (PT)
 - DB Bahn (covering all DB passenger RUs in Germany) (DE)
 - DSB (DK)
 - Eurostar (UK)
 - GW Trains Regio (CZ)
 - MAV (HU)
 - ÖBB (AT)
 - PKP Intercity (PL)
 - RENFE (ES)
 - SBB (CH)
 - SJ (SE)
 - SNCB (BE)
 - SNCF (covering all SNCF rail passenger transport services in France as well as SNCF participations such as Thalys and TGV Lyria) (FR)
 - Trenitalia (IT)
 - VR (FI)
 - ZSSK (SK)
- IMs/SMs
 - ADIF (ES)
 - Banedanmark (DK)
 - CFL (LU)
 - DB Netz (DE)
 - DB Station & Service (DE)
 - FTA (FI)
 - GySEV (HU)
 - Infrabel (BE)
 - MAV (HU)

- Network Rail (UK)
- ÖBB Infrastruktur (AT)
- PKP PLK (PL)
- ProRail (NL)
- RFI (IT)
- SBB (CH)
- SNCF Gares & Connexions (FR)
- SZDC (CZ)
- Trafikverket (SE)
- ZSR (SK)

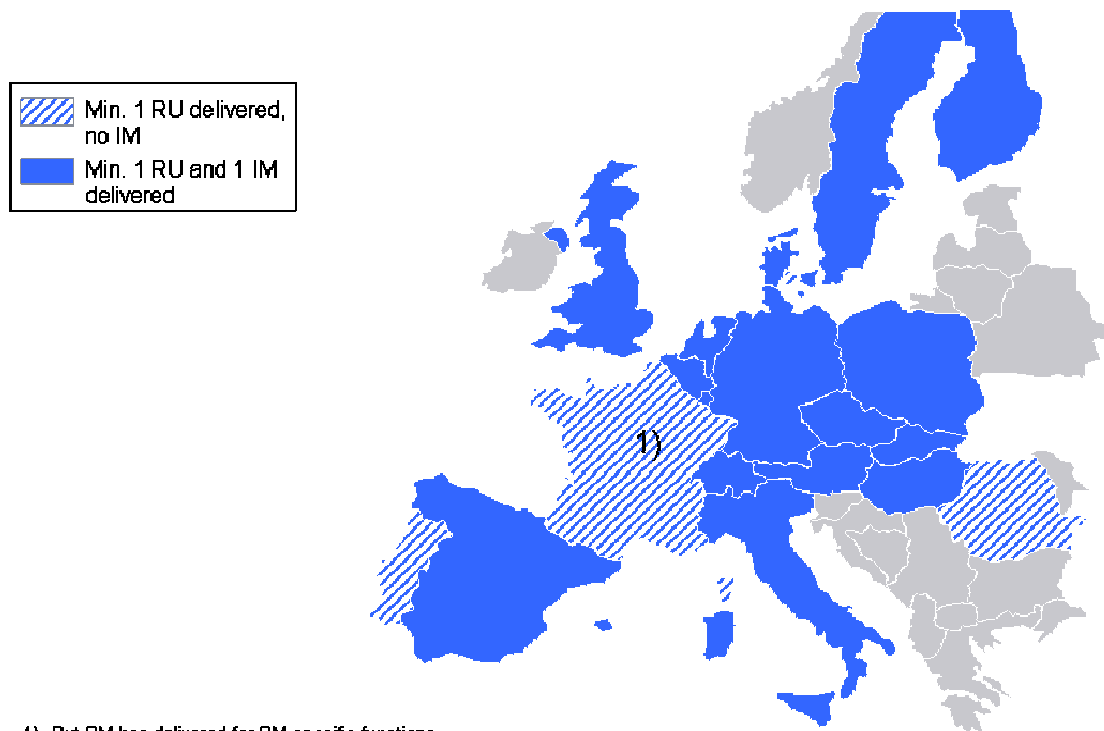
B) For Retail functions, the following stakeholders have submitted their plans:

- Arriva DK (DK)
- ATOC (covering all its member TOCs) (UK)
- CD (CZ)
- CFL (LU)
- CFR Calatori (RO)
- CP (PT)
- DB Bahn (covering all DB passenger RUs in Germany) (DE)
- DSB (DK)
- Eurostar (UK)
- GW Trains Regio (CZ)
- MAV Start (HU)
- NIR (UK)
- NS (NL)
- ÖBB (AT)
- PKP Intercity (PL)
- RENFE (ES)
- SBB (CH)
- SJ (SE)
- SNCB (BE)
- SNCF (covering all SNCF rail passenger transport services in France as well as SNCF participations such as Thalys and TGV Lyria) (FR)
- Stockholmståg (SE)
- Trenitalia (IT)
- VR (FI)
- ZSSK (SK)

In terms of geographical coverage the individual company implementation plans submitted cover:

- over 80% of market share for IMs (based on track km)
- over 90% of RUs (based on passenger km)

of IMs and RUs in EU 27 plus Switzerland and Norway (all figures based on 2011 UIC market statistics).



1) But SM has delivered for SM-specific functions

3.2 Consolidation Phase and Final Master Plan Delivery

The Master Plan identifies all the activities necessary to achieve the implementation of the TAP TSI sub-system as required by the Regulation.

The consolidation phase and final agreement of the Master Plan were concluded 11 months after the delivery of the top-down Master Plan produced by the Phase One project. This was a major achievement not only in regards to inter-partner synchronisation, but also as regards the improvement of the rail passenger services in Europe.

The rollout plan will not place any undue burden on those companies who have submitted an individual plan under the terms of the revision of the Regulation. It will allow those companies to come into line with the target dates proposed and develop more detailed milestones to achieve those dates.

This approach has been supported by both the Sector and the Commission and was approved at the TAP TSI Steering Committee meeting on 3 July 2012. Moreover, on 31 October 2012, ERA considered the Phase One deliverables “fit for purpose”, including the top-down Master Planning delivered by the Phase One project.

The consolidated Master Plan at hand is aligned with the final TAF TSI Master Plan for the RU and IM functions. Once this TAP TSI Master Plan has been approved, the TAP TSI Steering Committee will oversee and coordinate the implementation effort.

3.3 Methodology Applied

This Master Plan is based on individual stakeholder responses submitted to the project team between December 2012 and 24 April 2013. The methodology used is broadly in line with the TAF TSI Master Plan.

3.3.1 Weighting

In order to determine the completeness of the implementation of each function, companies' responses were weighted in terms of their market share. In the case of Infrastructure Managers, each company was assessed in terms of their total network length in track kilometres. Station Managers were assessed by the number of passengers travelled. In the case of Railway Undertakings, each company was assessed in terms of their total traffic flow in passenger kilometres.

Weightings are based on figures in UIC statistics 2011, the most reliable and recent set of data available. These statistics, however, are incomplete as not all IMs and RUs have reported their data into the UIC statistics. Further not all IMs and RUs have submitted their plans, further distorting the weightings. Nonetheless, if a company who had not reported into the UIC statistics did submit a plan, their market share was determined based on publicly available data and added into the overall figures. Although not complete, the weighting provides a reliable and pragmatic way of analysing and assessing the responses.

3.3.2 Determining Target Dates

The target milestones for implementation of each function addressed in this Master Plan were based on the year in which 80% of the weighted respondents have realised such function. This approach is in line with the decision of the TAP Steering Committee of 17 April 2013.

Percentages shown on graphs per function inform about the progression in time of the cumulative weight of the RUs or IMs able to use the standards defined in TAP TSI. Companies can be compliant with the Regulation at an earlier date as the use of other agreed standards is permissible for some of the Basic Parameters. Some companies have responded that they are already compliant in some functional areas.

Note that for the RU/IM functions, the Master Plan analysis is independent of the implementation of the new identifiers, usually referred to as "Train ID". Companies were asked to report the implementation date of the function (with or without Train ID, whatever the earliest).

The outliers have been identified and the TAP TSI project team continues to offer assistance to these companies in helping them reduce the time gap.

3.3.3 Geographical Overview of Implementations at Infrastructure Managers

A geographical analysis has been produced for the mandatory RU/IM functions. It serves to identify geographical areas in which mandatory TAP TSI standards are implemented according to common timelines and where these can be used for interoperable train services. This allows Infrastructure Managers to pursue joint efforts for common implementation projects. It further allows Railway Undertakings to see when and where train services can use the TAP TSI standards, irrespective of the target dates.

A country is coloured according to the timelines of submitting IMs. It does not mean that all RUs in a country (if more than one are operating in a given country, but not all having submitted their implementation plans) will implement at that specific date.

3.3.4 Geographical Overview of Implementations at Railway Undertakings

A geographical analysis has also been produced for the mandatory RU/IM functions. The geographical analysis serves to identify geographical neighbouring RUs implementing mandatory TAP TSI standards according to common timelines and where RUs are able to exchange information for interoperable train services. This allows partner RUs to pursue joint efforts for common implementation projects. It further allows Infrastructure Managers to identify when their customers are ready to communicate about train services using the TAP TSI standards, irrespective of the target date.

A country is coloured according to the timelines of submitting RUs. It does not mean that all RUs in a country (if more than one are operating in a given country, but not all having submitted their implementation plans) will implement at that specific date.

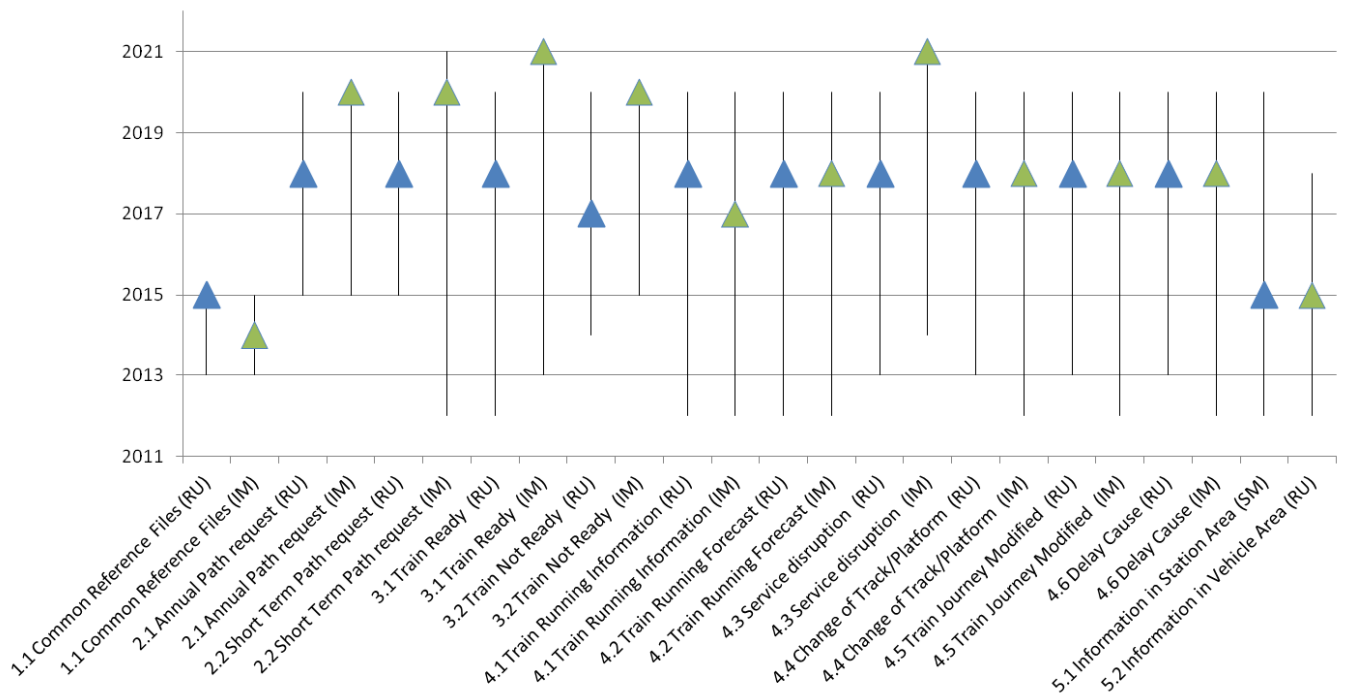
4 The TAP TSI Master Plan

4.1 Summary of Overall Implementation and Target Dates

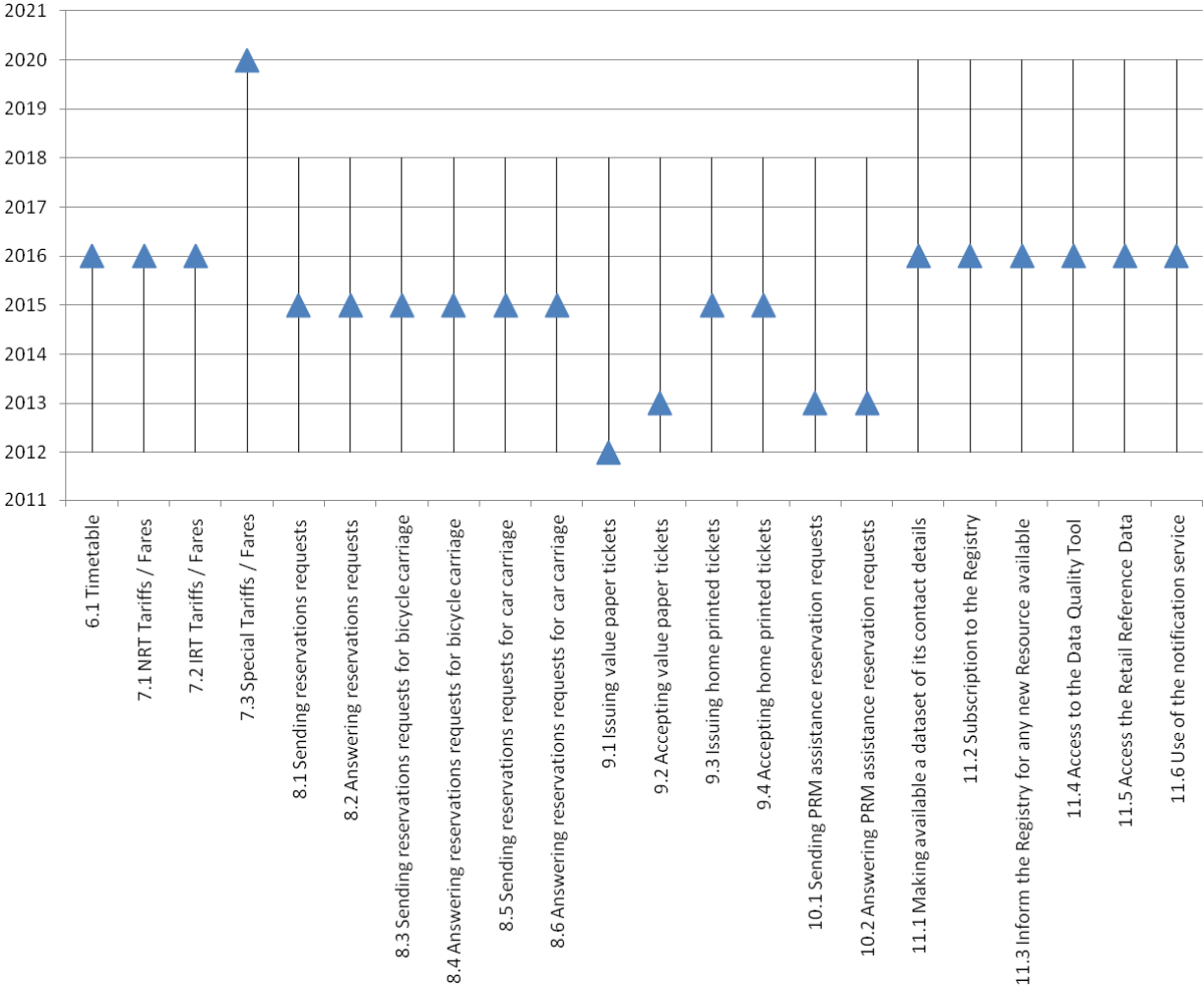
The tables below show the responses of the RUs and IMs that have submitted their individual implementation plans. The straight vertical lines show the time band per function from minimum to maximum year of implementation. The triangles represent the target date for RUs (blue triangles) and IMs (green triangles). The target dates indicate when at least 80% of the market (figures based on the responding companies) are supposed to be compliant.

Note that as regards the percentages of completion, the summary view per function only takes those companies into account that have responded to that specific function. It needs to be borne in mind that not all railways are concerned by IRT tariffs or reservation for bicycle and car carriage, to name but a few.

RU/IM:



Retail:



4.2 Implementation of the TAP TSI Requirements

The structure of the evaluation and consolidation follows the structure of the Master Planning template populated by the railways, notably as regards clustering the Basic Parameters of the Regulation into groups of activities (functions).

a) RU/ IM part:

TAP-TSI Implementation Plan -- RU/IM part	Reference to TAP TSI & Phase One Results	Relevant for
Activity 0 - Common Requirements / Central availability 0.1 Common Reference File database available (assumption from Phase One Project)		sector
Activity 1 - Making (own) reference data available 1.1 Common Reference Files filled (with own data)	TAP BP 4.2.19 / RU/IM Implementation Guide chapter 9	IM/RU/ SM
Activity 2 - Path request 2.1 Annual Path request Function (optional) 2.2 Short Term Path request Function	RU/IM Implementation Guide chapter 12 TAP BP 4.2.17 / RU/IM Implementation Guide chapter 12	IM/RU IM/RU
Activity 3 - Train Preparation 3.1 Train Ready Function 3.2 Train Not Ready Function (optional)	TAP BP 4.2.14 / RU/IM Implementation Guide chapter 13 TAP BP 4.2.14 / RU/IM Implementation Guide chapter 13	RU/IM RU/IM
Activity 4 - Train Running 4.1 Train Running Information 4.2 Train Running Forecast 4.3 Service disruption Function 4.4 Change of Track/Platform Function 4.5 Train Journey Modified Function 4.6 Delay Cause	TAP BP 4.2.15 / RU/IM Implementation Guide chapter 14, 18 TAP BP 4.2.15 / RU/IM Implementation Guide chapter 14, 18 TAP BP 4.2.16 / RU/IM Implementation Guide chapter 15, 18 TAP BP 4.2.12 / RU/IM Implementation Guide chapter 16, 19 TAP BP 4.2.12 / RU/IM Implementation Guide chapter 17, 19 TAP BP 4.2.13, 15 / RU/IM Implementation Guide chapter 18	IM/RU IM/RU IM/RU IM/RU IM/RU IM/RU
Activity 5 - Passenger Information 5.1 Information in Station Area (at least for stations where international trains stop) 5.2 Information in Vehicle Area (at least for international trains)	TAP BP 4.2.12 / RU/IM Implementation Guide chapter 19 TAP BP 4.2.13 / RU/IM Implementation Guide chapter 19	SM RU

b) Retail part:

TAP-TSI Implementation Plan -- Retail part	Reference to TAP TSI & Phase One Results	Relevant for
Activity 6 - Timetable data 6.1 Timetable made available in B4 format to other RUs, PAs, 3rd Parties	TAP BP 4.2.1 / TD B.4 / Timetables Implementation Guide	RU
Activity 7 - Tariff data 7.1 NRT Tariffs / Fares for international and foreign sales made available in B1 format to PAs, authorised RUs and authorised 3rd parties 7.2 IRT Tariffs / Fares for international and foreign sales made available in B2 format to Pas, authorised RUs and authorised 3rd parties 7.3 Special Tariffs / Fares for international and foreign sales made available in B3 format to Pas, authorised RUs and authorised 3rd parties	TAP BP 4.2.2 / TD B.1 / Tariffs Implementation Guide TAP BP 4.2.2 / TD B.2 / Tariffs Implementation Guide TAP BP 4.2.2 / TD B.3 / Tariffs Implementation Guide	RU RU RU
Activity 8 - Reservation 8.1 Sending reservations requests (Reservation only or Global price products) to agreed RUs in B5 format 8.2 Answering reservations requests (Reservation only or Global price products) from agreed RUs and agreed 3rd parties in B5 format 8.3 Sending reservations requests for bicycle carriage to agreed RUs in B5 format 8.4 Answering reservations requests for bicycle carriage from agreed RUs and agreed 3rd parties in B5 format 8.5 Sending reservations requests for car carriage to agreed RUs in B5 format 8.6 Answering reservations requests for car carriage from agreed RUs and agreed 3rd parties in B5 format	TAP BP 4.2.9.1 / TD B.5 / Reservation Implementation Guide TAP BP 4.2.9.2 / TD B.5 / Reservation Implementation Guide TAP BP 4.2.7.2 / TD B.5 / Reservation Implementation Guide TAP BP 4.2.7.3 / TD B.5 / Reservation Implementation Guide TAP BP 4.2.8.2 / TD B.5 / Reservation Implementation Guide TAP BP 4.2.8.3 / TD B.5 / Reservation Implementation Guide	RU RU RU RU RU RU

TAP-TSI Implementation Plan -- Retail part	Reference to TAP TSI & Phase One Results	Relevant for
Activity 9 - Ticketing		
9.1 Issuing value paper tickets for international and foreign sales in B6 format	TAP BP 4.2.11.1 / TD B.6 / Direct Fulfilment Implementation Guide	RU
9.2 Accepting value paper tickets for international and foreign sales in B6 format	TAP BP 4.2.11.1 / TD B.6 / Direct Fulfilment Implementation Guide	RU
9.3 Issuing home printed tickets (A4 tickets via e-mail delivery) for international and foreign sales in B7 format	TAP BP 4.2.11.2 (3rd method) / TD B.7 / Indirect Fulfilment Implementation Guide	RU
9.4 Accepting home printed tickets (A4 tickets via e-mail delivery) for international and foreign sales in B7 format	TAP BP 4.2.11.2 (3rd method) / TD B.7 / Indirect Fulfilment Implementation Guide	RU
Activity 10 - PRM assistance		
10.1 Sending PRM assistance reservation requests via IT communication to agreed RUs, IMs and SMs in B10 format	TAP BP 4.2.6.2 / TD B.10 / PRM assistance Implementation Guide	RU
10.2 Answering PRM assistance reservation requests via IT communication from agreed RUs and 3rd parties in B10 format	TAP BP 4.2.6.3 / TD B.10 / PRM assistance Implementation Guide	IM/RU/ SM
Activity 11 - Retail architecture		
11.1 making available a dataset of its contact details	TAP BP 4.2.3	RU
11.2 Subscription to the Registry	TAP BP 4.2.21.1 / General Architecture	RU
11.3 Inform the Registry for any new Resource available (timetable or Fares/tariffs, public keys for print@home)	TAP BP 4.2.21.1 / General Architecture	RU
11.4 Access to the Data Quality Tool (recommended)	TAP BP 4.2.21.1 / General Architecture	RU
11.5 Access the Retail Reference Data (Codes list, location codes, Company codes, country codes)	TAP BP 4.2.21.1 / General Architecture	RU
11.6 Use of the notification service offered by the Registry (recommended to be aware of changes)	TAP BP 4.2.21.1 / General Architecture	RU

The above tables provide an overview of the activities that the railways have been asked to assess in terms of their implementation. The tables also identify the sources of reference, based on which company implementation planning was to be performed. Note that all reference documentation as listed above plus additional supporting material have been made publicly available at <http://tap-tsi.uic.org/What-s-new,4.html>. Website statistics show that they have been widely consulted. Lastly, the tables indicate whether an activity is relevant for IMs/SMs only or RUs only, or for both.

4.2.1 Common Requirements/ Central Availability

4.2.1.1 Common Reference File Database Available

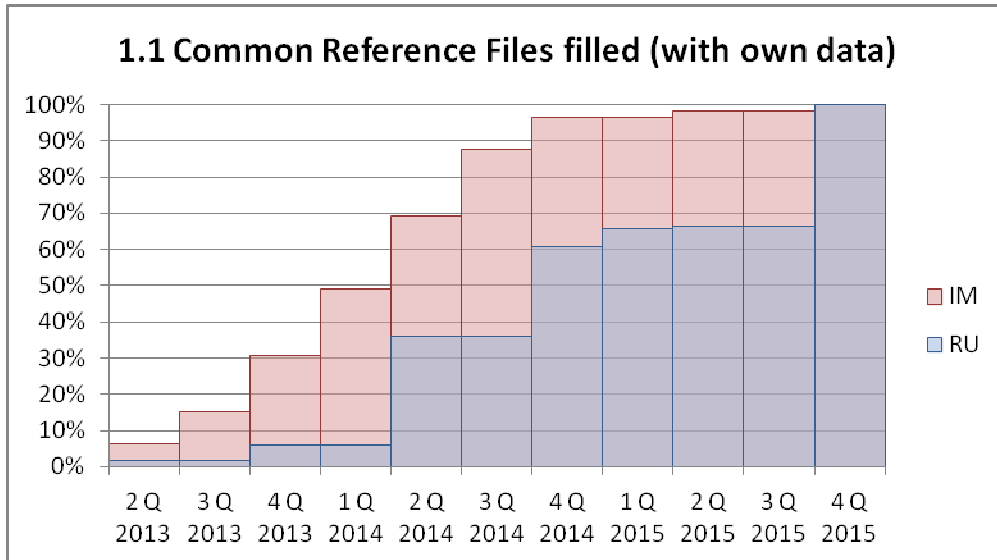
Function type	Prerequisite
Target Implementation Milestone	Done (common use of TAF function)
Impact	All stakeholders

The database holding the reference data is in common use with TAF TSI. The Central Repository Domain (CRD) has already been developed in TAF TSI and is hence also available for TAP TSI.

4.2.2 Making (Own) Reference Data Available

4.2.2.1 Common Reference Files Filled (with own data)

Function type	Prerequisite
Target Implementation Milestone	2014 (IMs data), 2015 (RUs data)
Impact	RU and IM

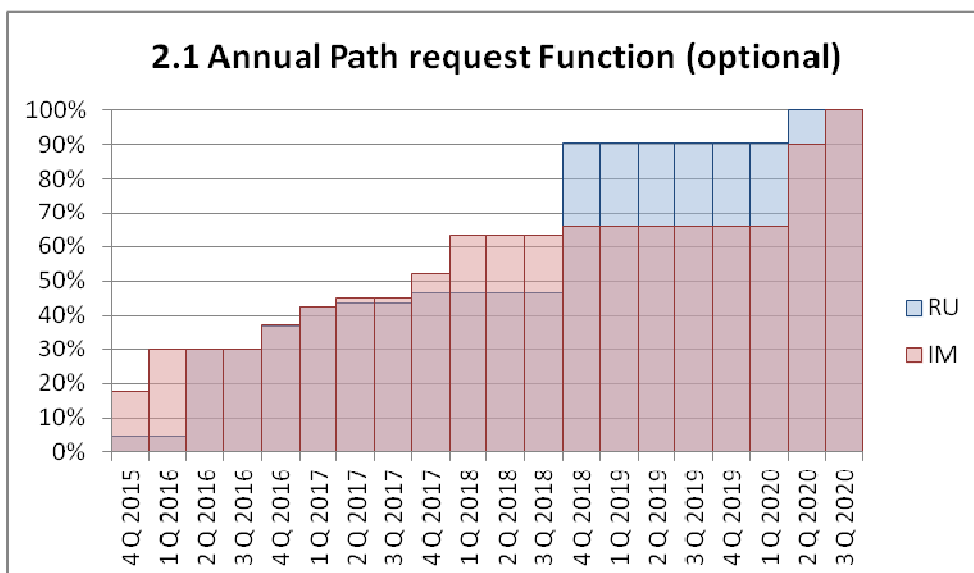


Every RU/IM message exchange uses the reference data and can hence not be executed before this data is available. The IMs' location data is the basis for all other location data. As the location data is in common use with TAF TSI, IMs are planning to deliver the main data by 2014, with full implementation in 2015.

4.2.3 Path Request

4.2.3.1 Annual Path Request Function (optional)

Function type	Milestone
Target Implementation Milestone	2020 (IM), 2018 (RU)
Impact	RU and IM



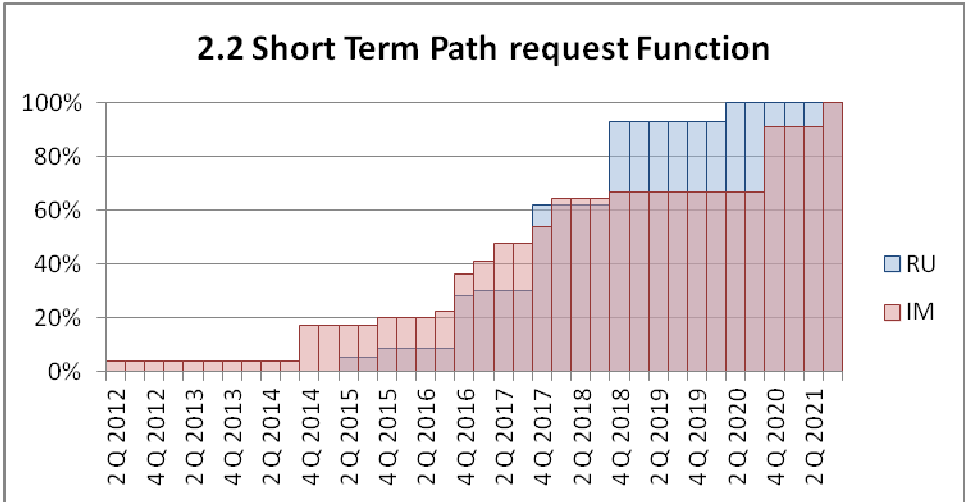
The implementation of the Path Request function for annual path requests is not required by the Regulation and is an optional recommendation. The function is in common use with

TAF. IMs are planning to handle this function by 2020. RUs are planning to handle this function mainly by 2018, with full implementation by 2020.

Some companies informed that paths for international train services can be handled earlier than the target date by using available pan-European applications.

4.2.3.2 Short Term Path Request Function

Function type	Milestone
Target Implementation Milestone	2020 (IM), 2018 (RU)
Impact	RU and IM



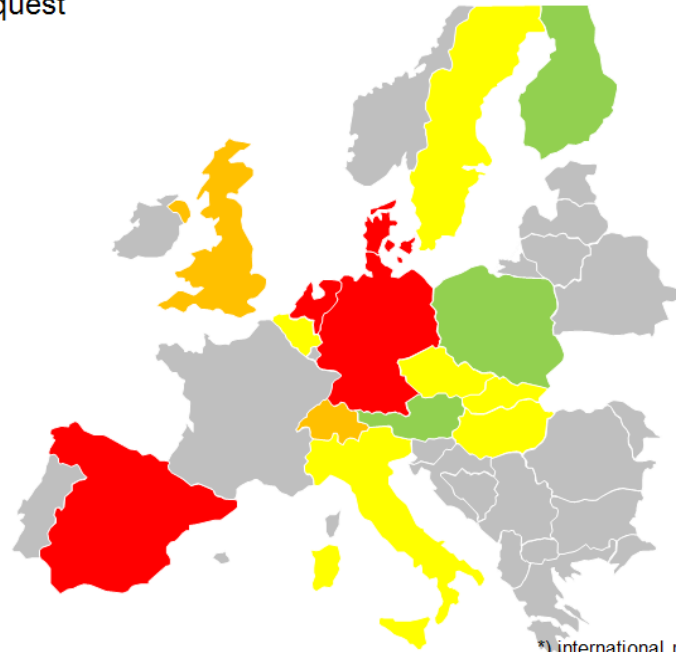
The Path Request function for Short term Path Requests is in common use with TAF TSI. IMs are planning to handle this function mainly in 2020, with full implementation in 2021. RUs are planning to handle this function mainly by 2018, with full implementation in 2020.

Some companies informed that paths for international train services can be handled earlier than the target date by using pan-European applications available.

Short Term Path Request

IM only

2014-2015
Finland
Poland
Austria
2016-2017
Belgium
Italy
Slovakia
Hungary
Sweden
Czech
2018
Switzerland
UK
2020-2021
Germany*
Netherlands
Spain
Denmark



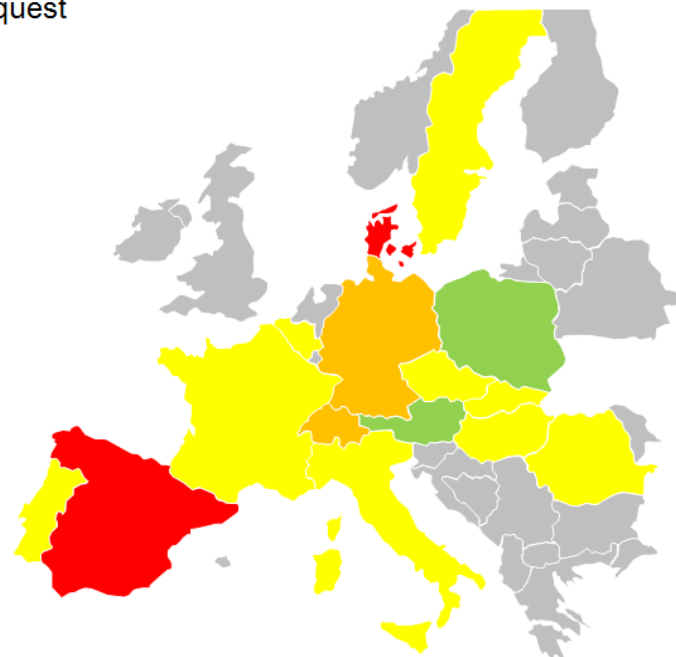
*) international requests earlier via PCS

Geographically speaking, the first IMs implementing the Short Term Path Request functions are the ones in Poland, Finland and Austria. A first geographical zone commonly using the Short Term Path Request function will be established by 2017 ranging from Poland to Italy.

Short Term Path Request

RU only

2015
Poland
Austria
2016 - 2017
Italy
Portugal
Romania
Belgium
Slovakia
Hungary
Sweden
Czech Republic
France
2018
Germany
Switzerland
2020 - 2021
Spain
Denmark

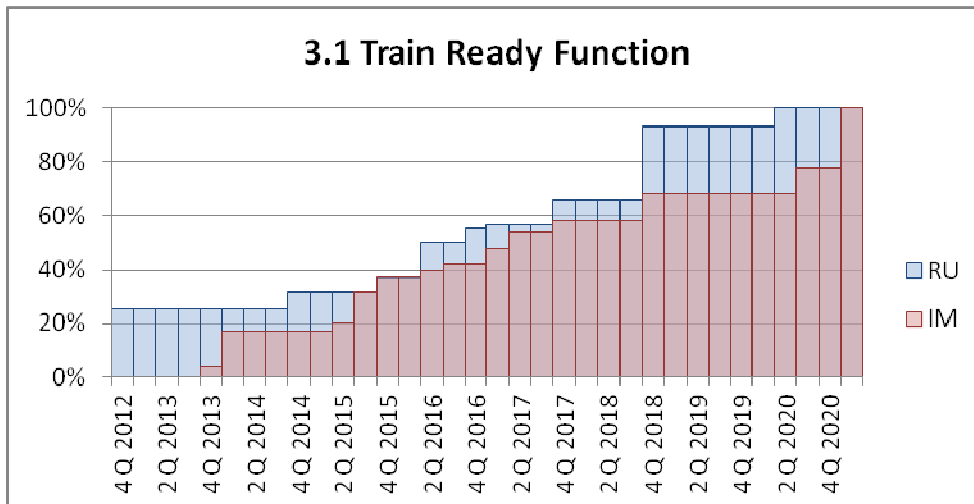


Geographically speaking, the first RUs implementing the Short Term Path Request functions are in Poland and Austria. A first geographical zone commonly using the Short Term Path Request function will be established by 2017 ranging from Romania to France.

4.2.4 Train Preparation

4.2.4.1 Train Ready Function

Function type	Milestone
Target Implementation Milestone	2021 (IM), 2018 (RU)
Impact	RU and IM



The Train Ready function is in common use with TAF TSI. IMs are planning to have this function fully implemented in 2021. RUs are planning to handle this function mainly by 2018, with full implementation in 2020.

Some companies informed that in conformity with the Regulation, other existing standards such as GSM-R¹ are used to fulfil this function.

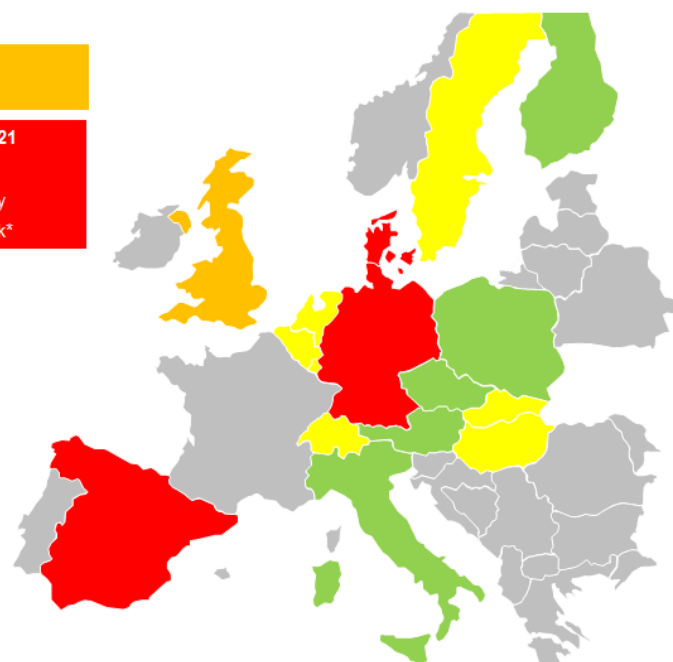
Train Ready

2014-2015
Poland
Czech Republic
Austria
Italy
Finland

2016-2017
Belgium
Netherlands
Luxembourg
Slovakia
Hungary
Sweden
Switzerland

2018
UK

2020-2021
Spain
Germany
Denmark*

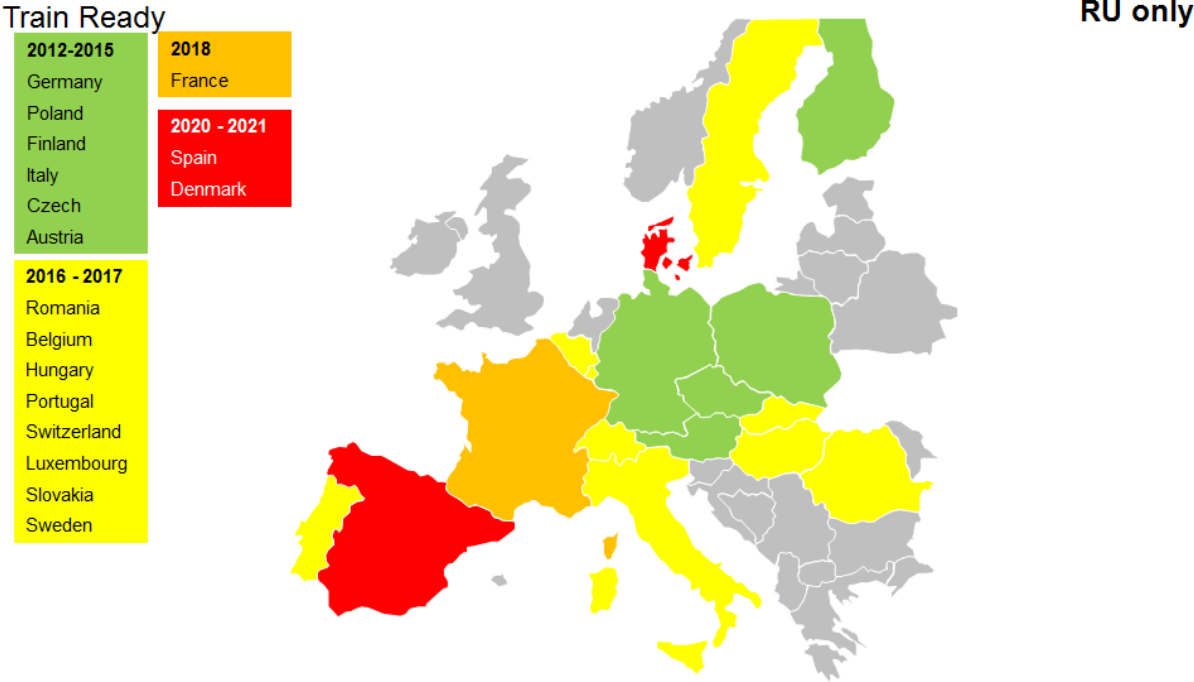


IM only

*) procedural the reception of train ready is operational in 2013

¹ Global System for Mobile Communications - Rail

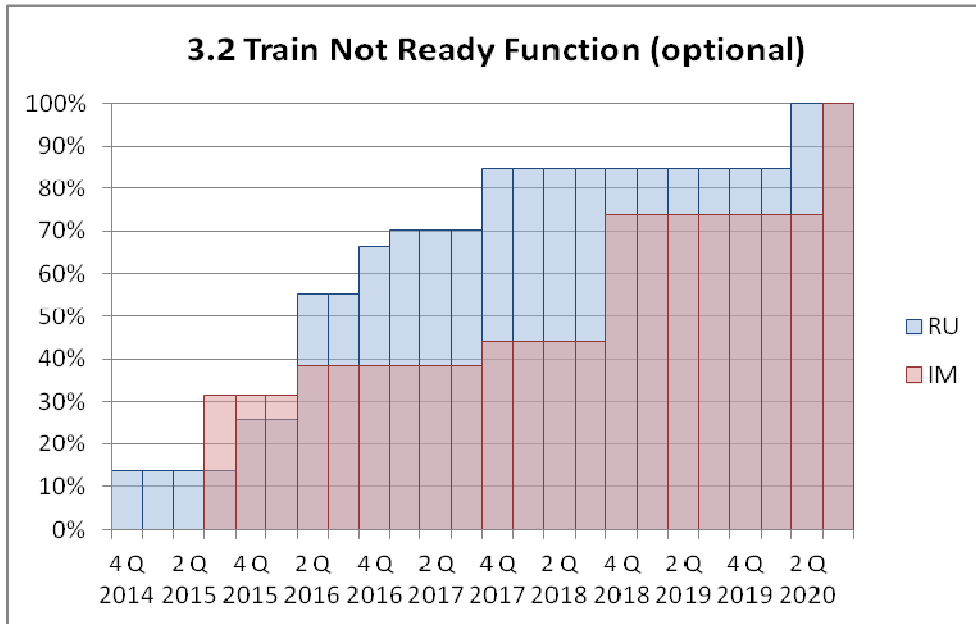
Geographically speaking, the first IMs implementing the Train Ready functions range from Finland via Poland, the Czech Republic, Austria to Italy by 2015.



Geographically speaking, the first RUs implementing the Train Ready functions range from Finland via Poland, Germany, the Czech Republic to Austria.

4.2.4.2 Train Not Ready Function (optional)

Function type	Milestone
Target Implementation Milestone	Implemented on voluntary basis
Impact	RU and IM

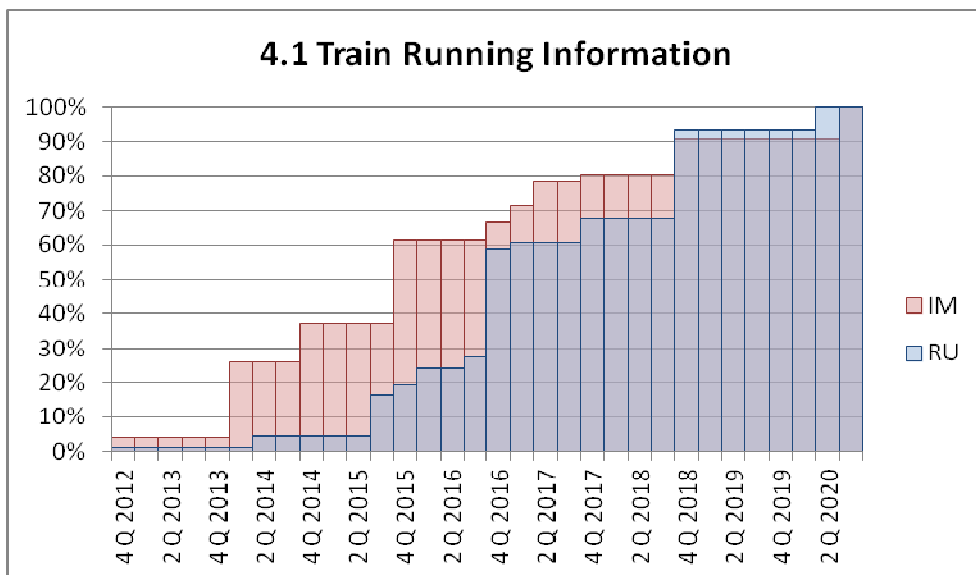


The implementation of the Train Not Ready function is not required by the Regulation and is an optional possibility. Those IMs and RUs that intend to use it are planning to handle this function by 2020.

4.2.5 Train Running

4.2.5.1 Train Running Information

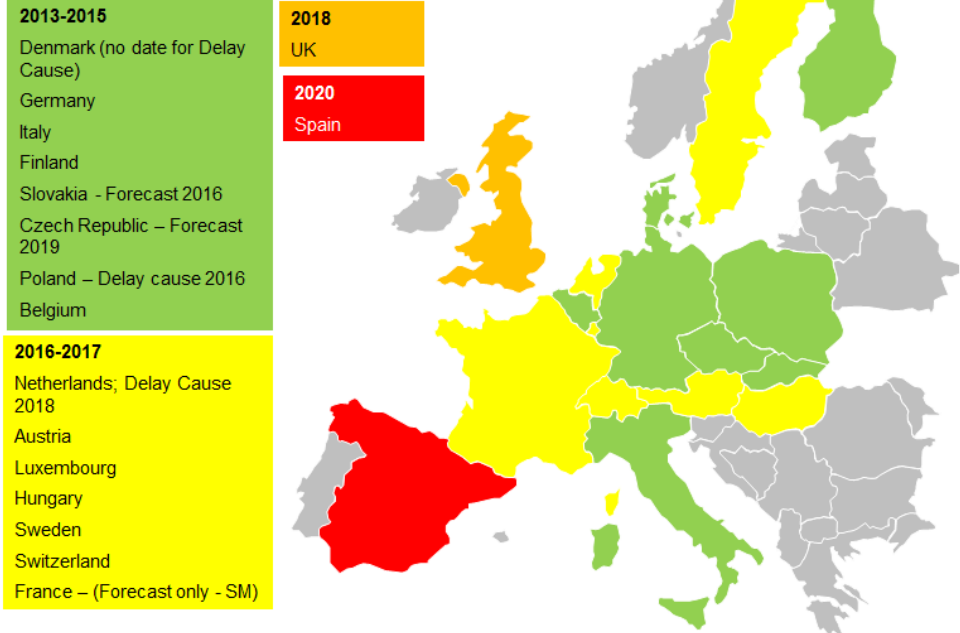
Function type	Milestone
Target Implementation Milestone	2017 (IM), 2018 (RU)
Impact	RU and IM



The Train Running Information function is in common use with TAF TSI. IMs are planning to provide this function by 2017 with the full implementation in 2020. RUs are planning to handle this function mainly by 2018, with full implementation in 2020.

Train-Running Information & Forecast, Delay Cause

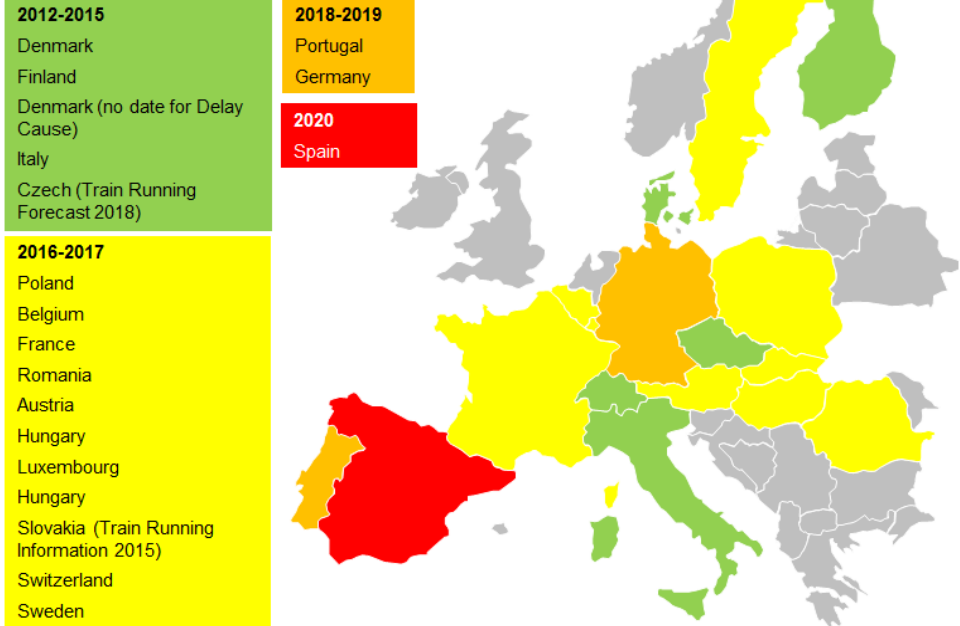
IM only



A first geographical zone of IMs commonly providing the Train Running and Delay Cause functions will be established until 2015 covering parts of central Europe from Belgium to Slovakia, plus Finland and Italy.

Train-Running Information&Forecast, Delay Cause

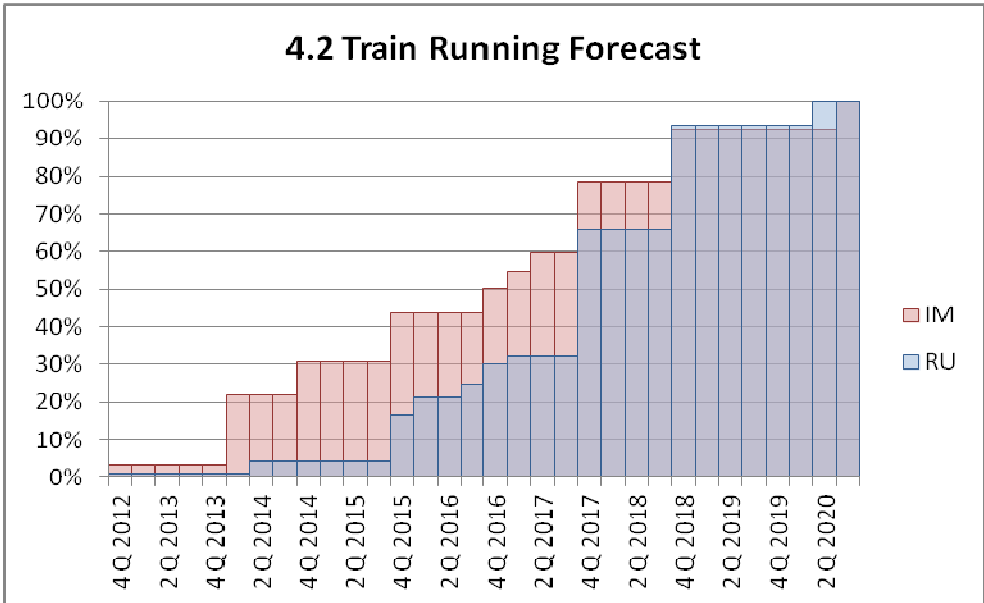
RU only



A first geographical zone of RUs commonly implementing the Train Running and Delay Cause functions will be established until 2015 covering Switzerland and Italy, Denmark, the Czech Republic and Finland. The vast majority of countries ranging from Romania to France will be ready by 2017.

4.2.5.2 Train Running Forecast

Function type	Milestone
Target Implementation Milestone	2018
Impact	RU and IM

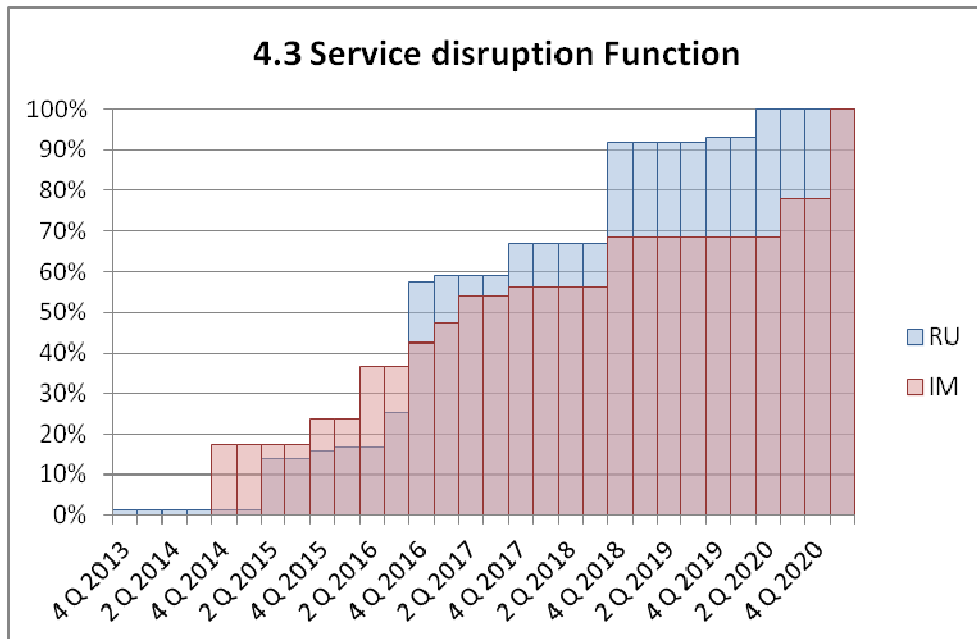


The Train Running Forecast function is in common use with TAF TSI. IMs are prepared to provide this function by 2018 with the full implementation in 2020. RUs are planning to handle this function mainly by 2018, with full implementation in 2020.

Note that the geographical analysis is presented in the chapter of “Train Running Information”.

4.2.5.3 Service Disruption Function

Function type	Milestone
Target Implementation Milestone	2021 (IM), 2018 (RU)
Impact	RU and IM

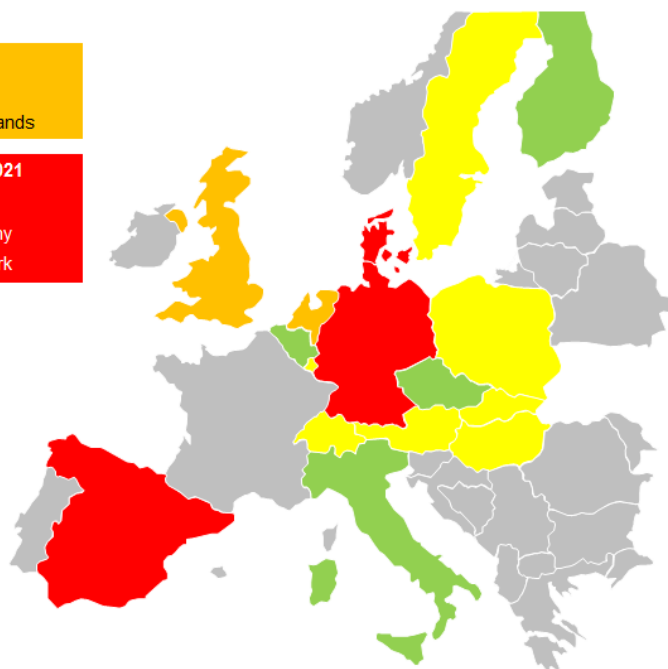


The Service Disruption function is in common use with TAF TSI. IMs are planning to provide this function by 2021. RUs plan to handle this function mainly by 2018, with full implementation in 2020.

Service Disruption

2014-2015
Belgium
Finland
Italy
Czech Republic
2016-2017
Poland
Austria
Hungary
Slovakia
Sweden,
Switzerland
Luxemburg

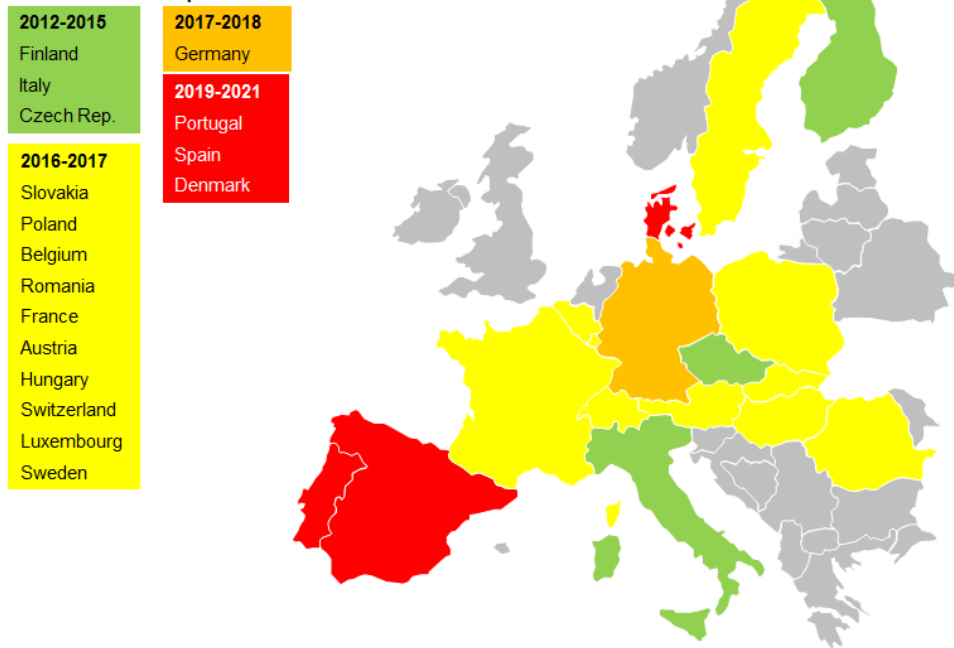
2018
UK
Netherlands
2020-2021
Spain
Germany
Denmark



IM only

The first implementation of Service Disruption functions will be done by IMs in Finland, Belgium, the Czech Republic and Italy. A first geographical zone of IMs commonly providing the Service Disruption functions will be established by 2017 ranging from Poland to Italy.

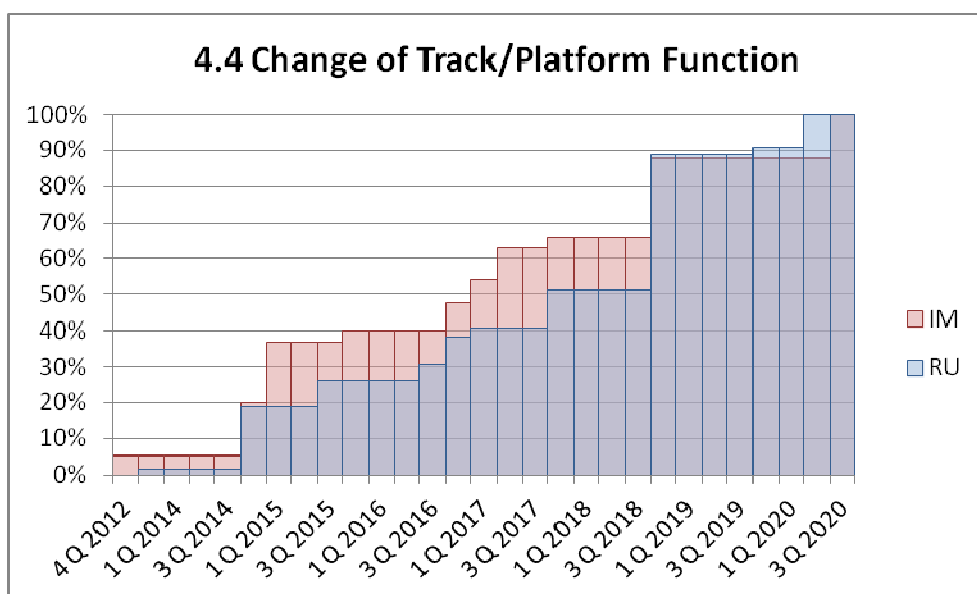
Service Disruption



The first implementation of Service Disruption functions will be done by RUs in Finland, the Czech Republic and Italy. A first geographical zone of RUs commonly using the Service Disruption functions will be established until 2017 ranging from Romania to France.

4.2.5.4 Change of Track/ Platform Function (optional)

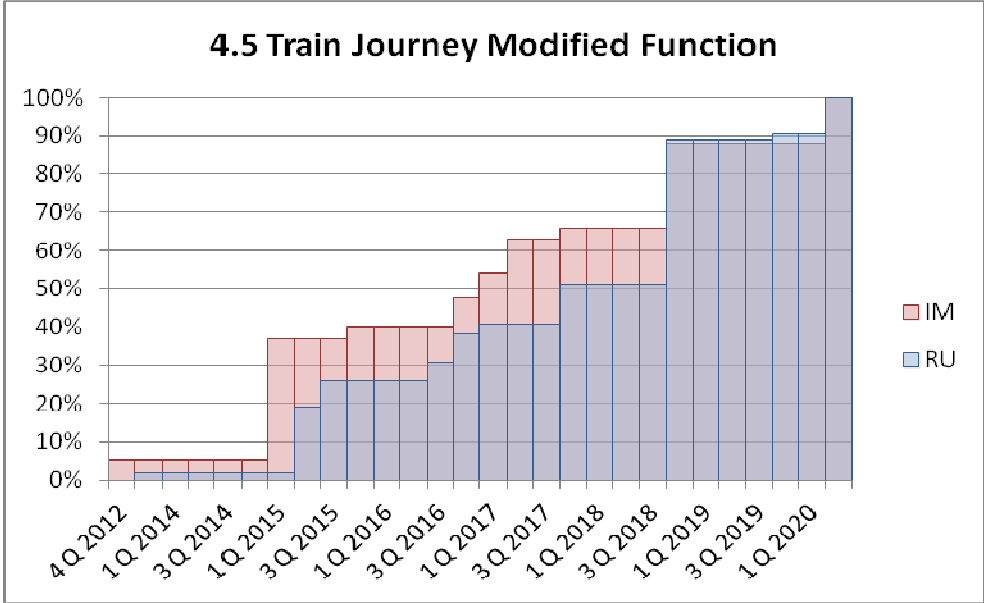
Function type	Milestone
Target Implementation Milestone	Implemented on voluntary basis
Impact	RU and IM



The implementation of the Change of Track function is not required by the Regulation and is an optional possibility to transmit the information required in “Information in Station”. IMs and RUs that reported to use it are planning to handle this function mainly by 2018.

4.2.5.5 Train Journey Modified Function (optional)

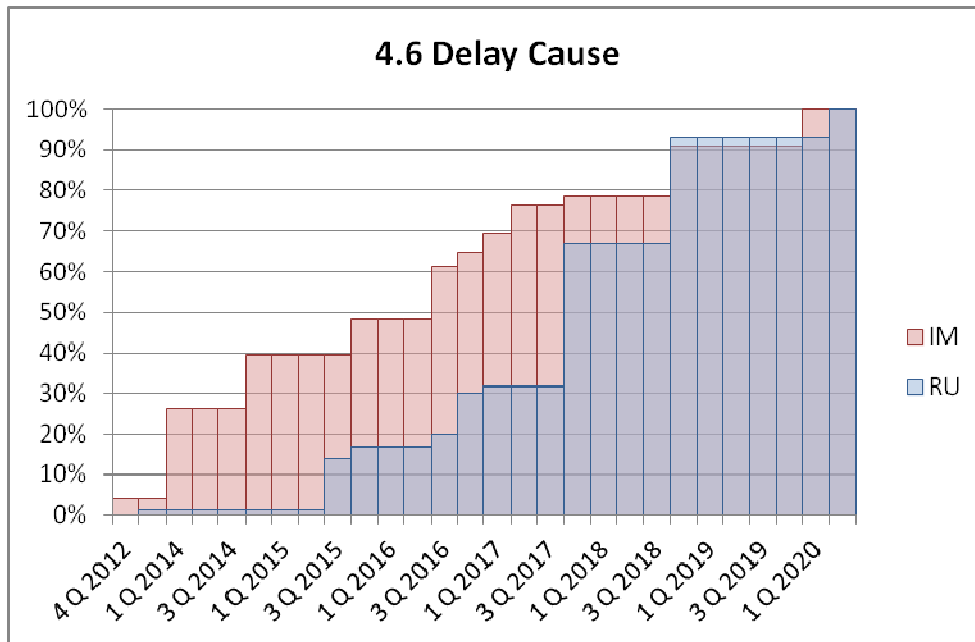
Function type	Milestone
Target Implementation Milestone	Implemented on voluntary basis
Impact	RU and IM



The implementation of the Train Journey Modified function is not required by the Regulation and is an optional possibility to transmit the information required in “Information in Stations” and “Information in Vehicles”. IMs and RUs that reported to use it are planning to handle this function mainly by 2018 with full implementation by 2020.

4.2.5.6 Delay Cause

Function type	Milestone
Target Implementation Milestone	2018
Impact	RU and IM



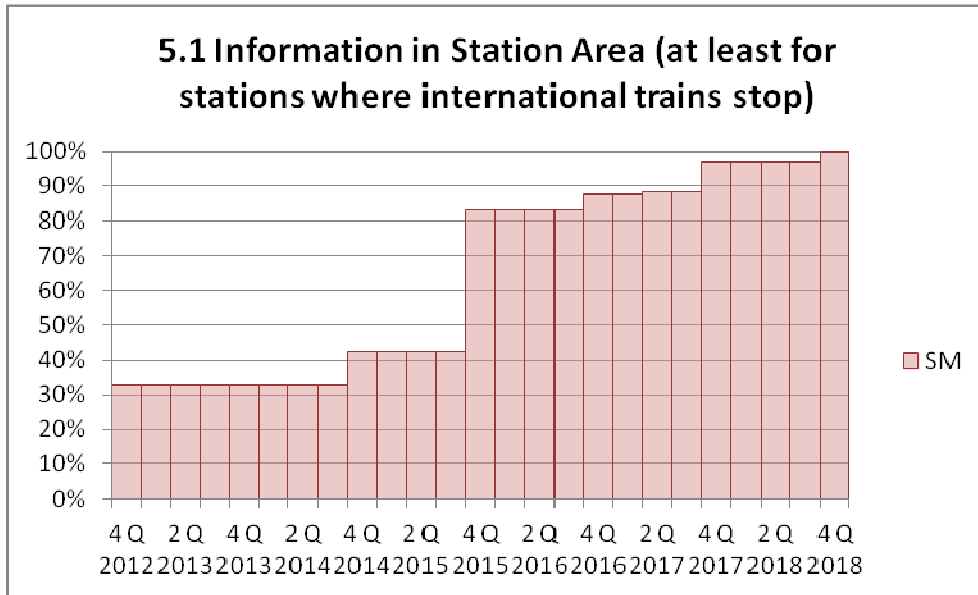
The Delay Cause function is in common use with TAF TSI and is functionally related to (non-exclusive) Train Running Information, Train Running Forecast, Service Disruption, Change of Track and/or Train Journey Modification. IMs and RUs are prepared to provide this function mainly by 2018 with full implementation in 2020.

Note that the geographical analysis is presented in the chapter of “Train Running Information”.

4.2.6 Passenger Information

4.2.6.1 Information in station area (at least for stations where international trains stop)

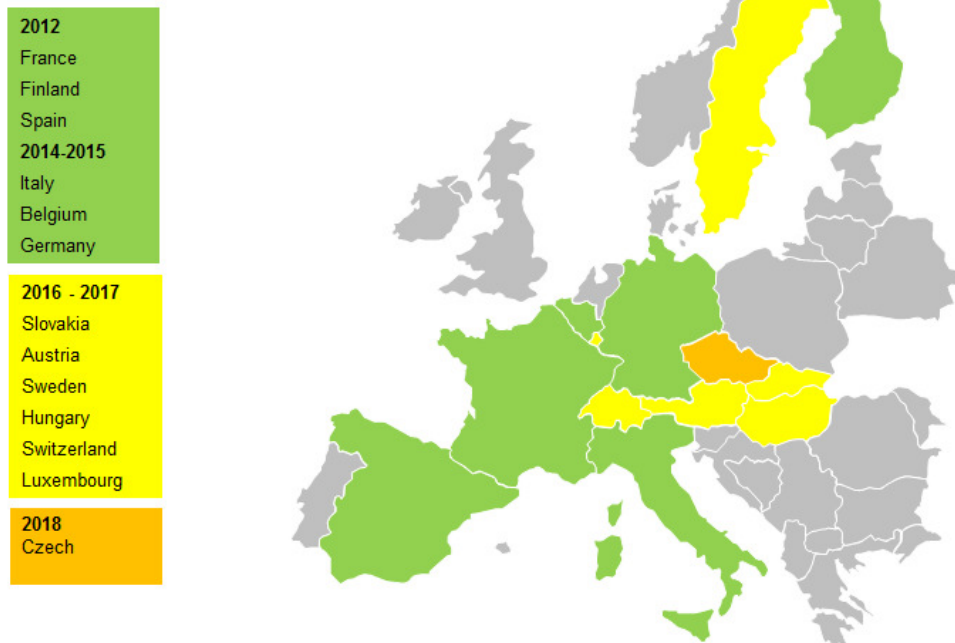
Function type	Milestone
Target Implementation Milestone	2015
Impact	IM/SM



The requirement relating to Information in Stations is a functional requirement for the information that needs to be provided. It does not require a specific technical implementation. Station Managers (the task of which can be performed by different actors, often the IM) are prepared to provide this function mainly by 2015 with full implementation in 2018.

Information in Stations

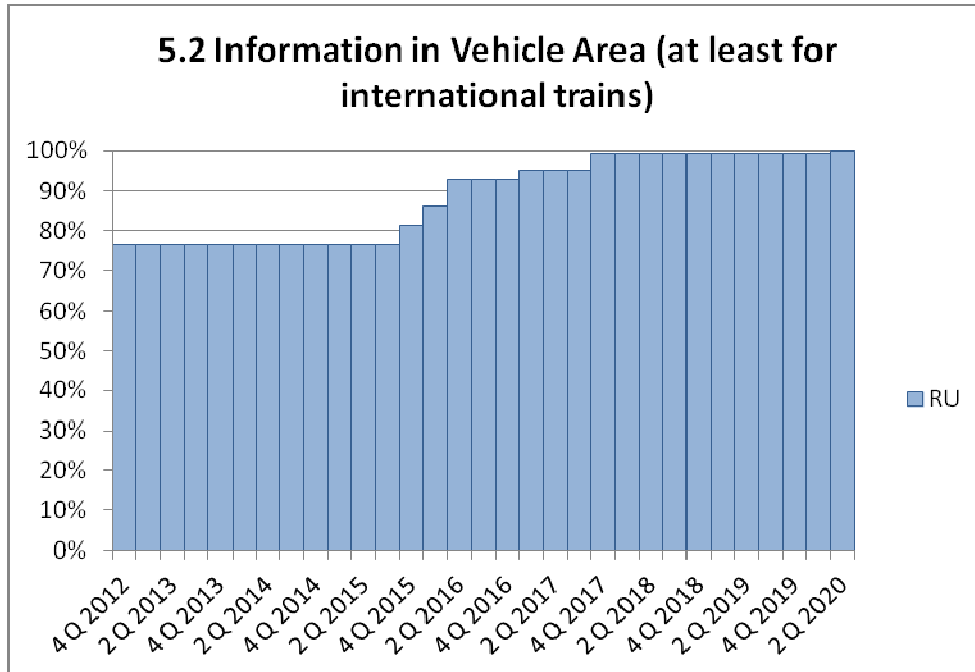
IM only



A large number of SMs in countries ranging from Germany to Spain have already implemented the Information in Stations function.

4.2.6.2 Information in Vehicle Area (at least for international trains)

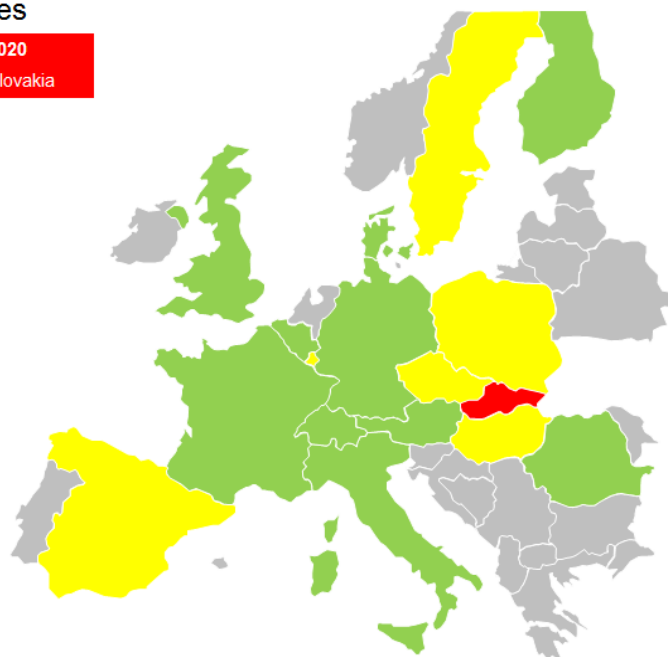
Function type	Milestone
Target Implementation Milestone	2015
Impact	RU



Information in Vehicles is a functional requirement for the information that needs to be provided. It does not require a specific technical implementation. Most RUs already provide the required information and the remaining ones are prepared to provide this function mainly by 2015 with full implementation in 2020.

Information in Vehicles

2012	2020
Switzerland	Slovakia
Denmark	
France	
Germany	
Belgium	
Finland	
UK	
2015	
Romania	
Austria	
Italy	
2016-2017	
Poland	
Spain	
Hungary	
Luxembourg	
Sweden	
Czech Rep. (partly 2018)	



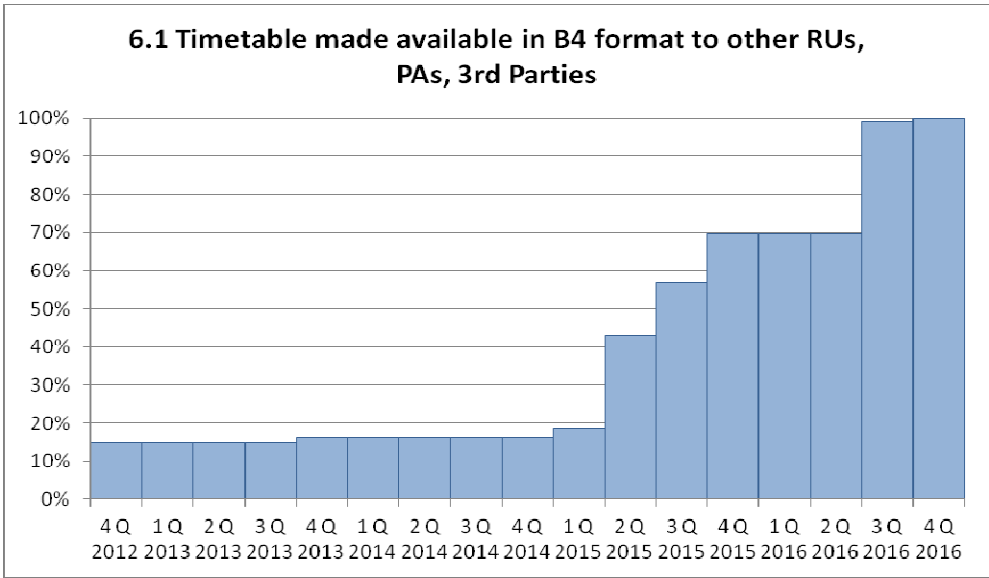
RU only

A large number of RUs, operating in countries ranging from the UK to Switzerland, have already implemented the Information in Vehicle function. Nearly all of the remaining ones will have it implemented by 2017.

4.2.7 Timetable Data

4.2.7.1 Timetable Made Available in B4 Format to Other RUs, Public Authorities and Third Parties

Function type	Timetables
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.1 • ERA Technical Document B4 • Timetable Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



The timetable data exchange Basic Parameter of the Regulation does not provide for any alternative means of compliance. Therefore, all RUs that took part in the Master Planning have provided a date by when they will be compliant.

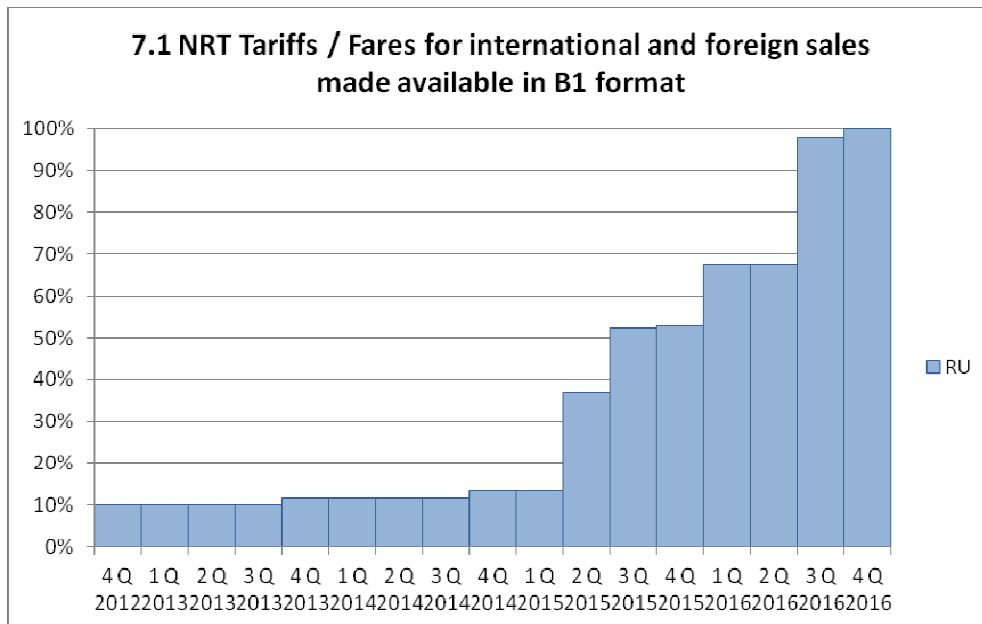
Most of the answering RUs are currently member of the UIC Merits community, and some consider using it to meet their TAP TSI obligations concerning making available their timetables.

The UIC is negotiating the required adaptations with the supplier, and announced to expect the system to be ready by mid-2015. Therefore most RUs will implement this function in 2016. RUs that have indicated the use of other solutions to fulfil their TAP TSI timetable exchange obligations also reported they will generally be compliant by that date.

4.2.8 Tariff Data

4.2.8.1 NRT Tariffs/ Fares for international and foreign sales made available in B1 format to Public Authorities, authorised RUs and authorised Third Parties

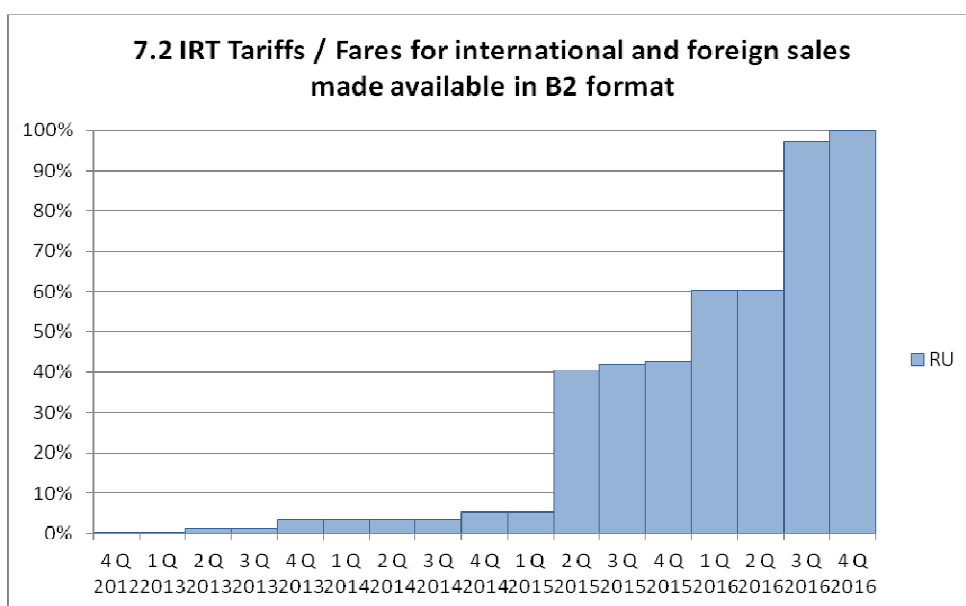
Function type	NRT Tariffs
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.2 • ERA Technical Document B1 • Tariffs Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



Many of the answering RUs are currently members of the UIC Prifis community using the Prifis tool. UIC is negotiating the required adaptations with the Prifis supplier, and announced to expect the system to be ready by mid-2015. Therefore most RUs will implement this function in 2015/ 2016. Other respondents mention alternative ways of ensuring compliance.

4.2.8.2 IRT Tariffs/ Fares for international and foreign sales made available in B2 format to Public Authorities, authorised RUs and authorised Third Parties

Function type	IRT Tariffs
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.2 • ERA Technical Document B2 • Tariffs Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)

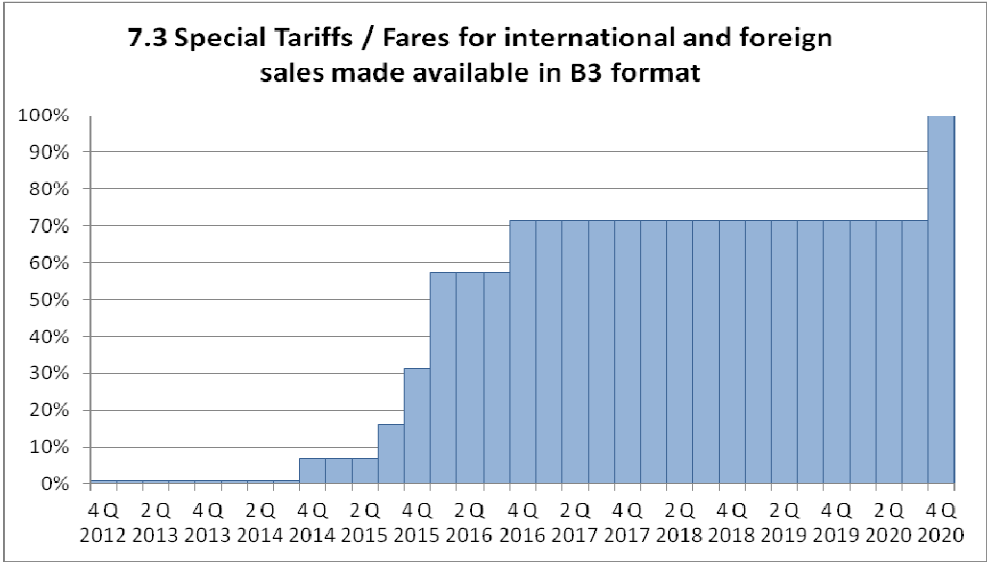


For IRT tariffs, there is currently a UIC system (Passport), but few RUs are using it. UIC is negotiating the required adaptations with the supplier, and announced it expected the system to be ready by mid-2015. Therefore most of the concerned RUs will implement this function in 2015/ 2016.

Note: The percentages given in the above table are only based on those railways that provide IRT.

4.2.8.3 Special Tariffs/ Fares for international and foreign sales made available in B3 format to Public Authorities, authorised RUs and authorised Third Parties

Function type	Special Tariffs
Target Implementation Milestone	2020
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.2 • ERA Technical Document B3 • Tariffs Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



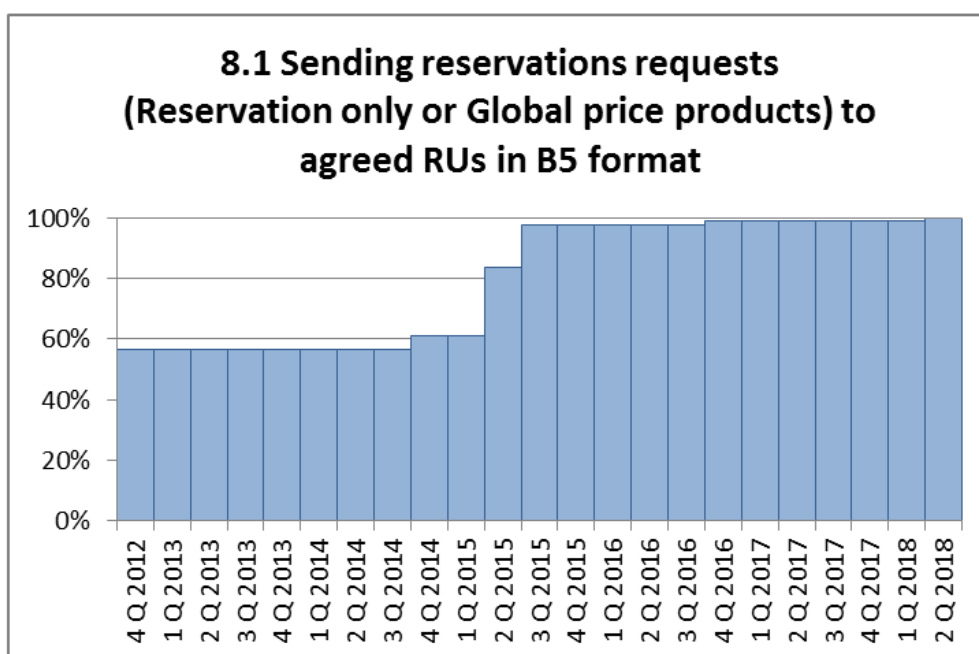
No railway has experience in using the B3 format to make available its special offers and only a few railways have estimated their implementation date given the complexity of adapting their systems to B3. The majority of those railways who have responded assume to be compliant by 2017 to 2020.

Note: The percentages given in the above table are only based on the number of railways (9, i.e. approx 1/3 of RUs participating in the Master Planning) that have submitted a date for the B3 requirements.

4.2.9 Reservation

4.2.9.1 Sending reservations requests (reservations only or global price products) to agreed RUs in B5 format

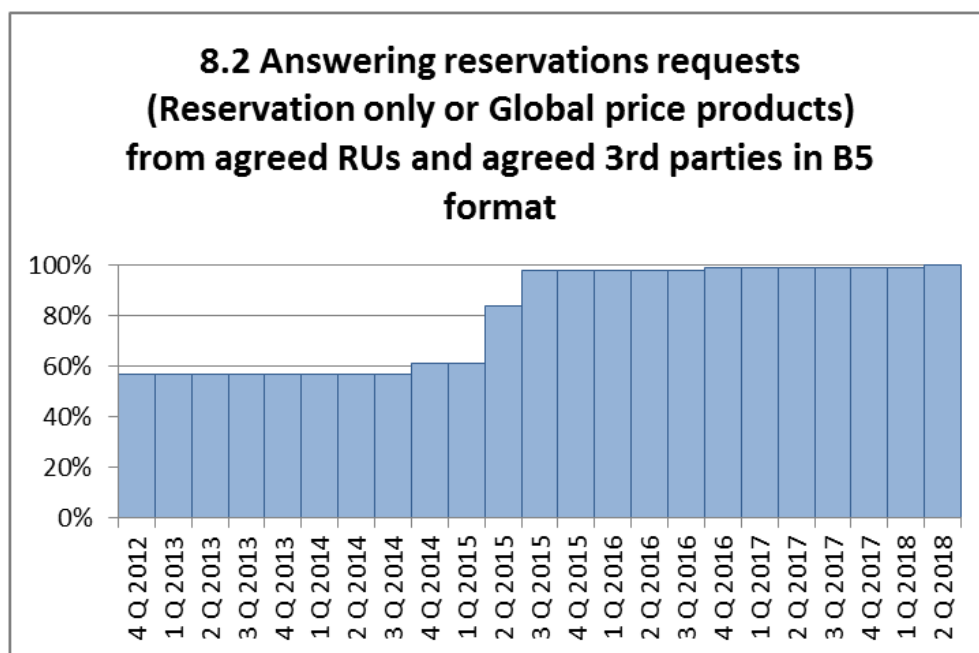
Function type	Reservation
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.9.1 • ERA Technical Document B5 • Reservation Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



More than 50% (by market share) of RUs already handle outgoing Reservation Requests in B5 format, with the remaining planning to implement by 2018.

4.2.9.2 Answering reservations requests (reservations only or global price products) from agreed RUs and agreed Third Parties in B5 format

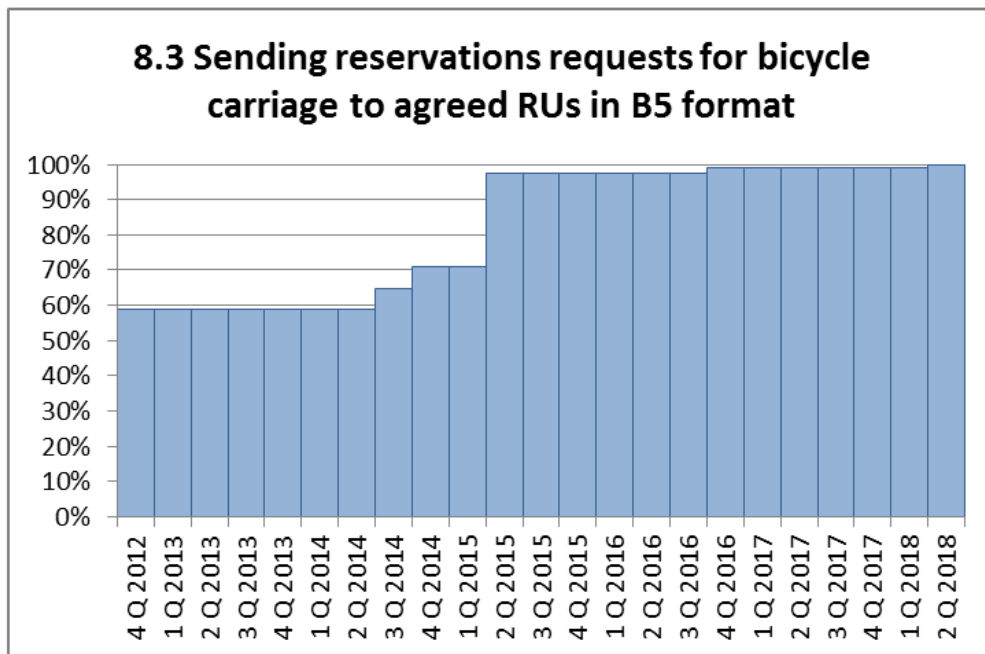
Function type	Reservation
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.9.2 • ERA Technical Document B5 • Reservation Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



Approx 50% (by market share) of RUs already handle incoming Reservation Requests in B5 format, with the remaining planning to implement by 2018.

4.2.9.3 Sending reservation requests for bicycle carriage to agreed RUs in B5 format

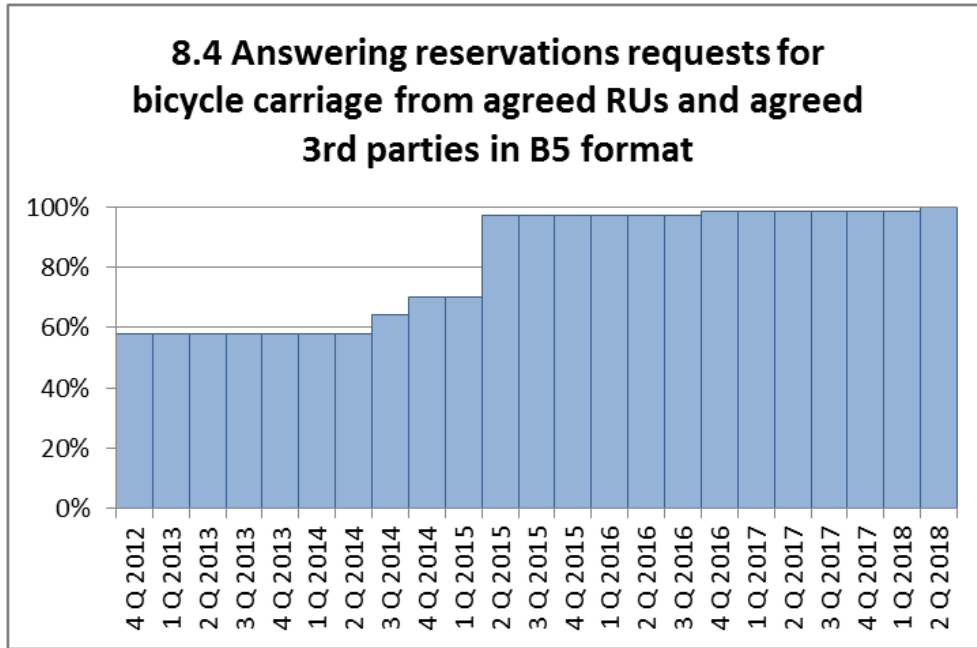
Function type	Reservation
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.7.2 • ERA Technical Document B5 • Reservation Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



While reservation related to bicycle carriage only applies to some RUs, sending and answering Reservation Requests for bicycle carriage in B5 format is already done by many RUs, with nearly everyone being compliant by 2015.

4.2.9.4 Answering reservation requests for bicycle carriage from agreed RUs and agreed Third Parties in B5 format

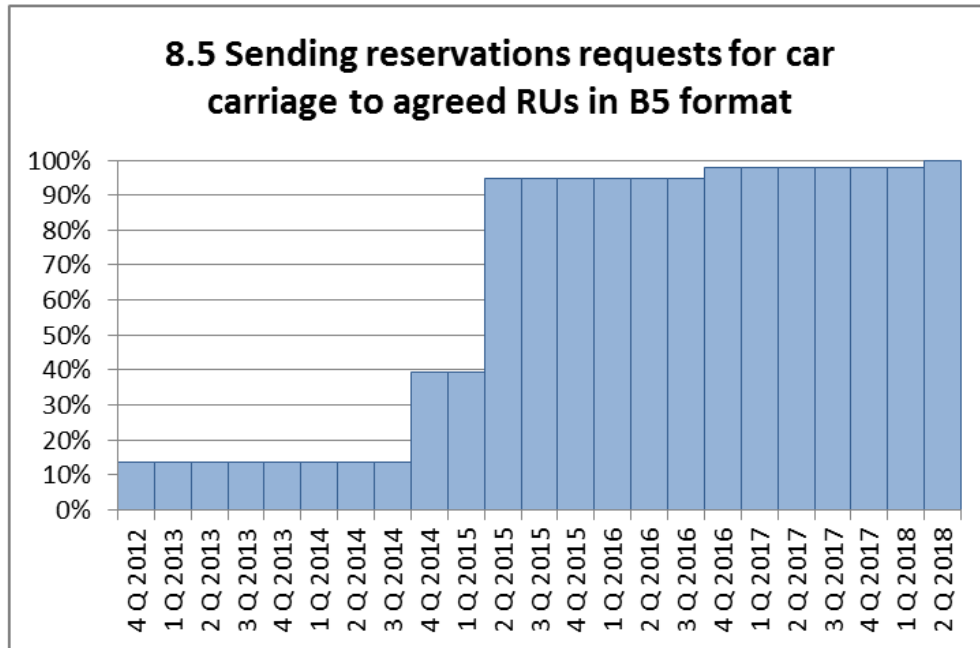
Function type	Reservation
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.7.3 • ERA Technical Document B5 • Reservation Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



Sending and answering Reservation Requests for bicycle carriage in B5 format is already done by many RUs, with nearly everyone being compliant by 2015.

4.2.9.5 Sending reservation requests for car carriage to agreed RUs in B5 format

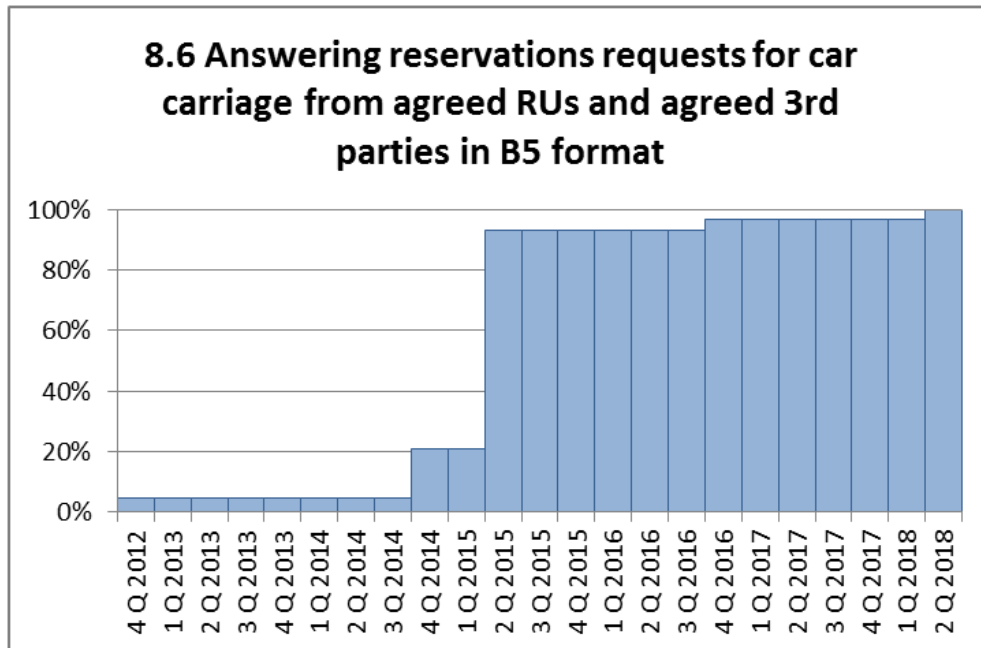
Function type	Reservation
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.8.2 • ERA Technical Document B5 • Reservation Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)



While reservation related to car carriage only applies to some RUs, most of them will be compliant by 2015.

4.2.9.6 Answering reservation requests for car carriage from agreed RUs and agreed Third Parties in B5 format

Function type	Reservation
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.8.3 • ERA Technical Document B5 • Reservation Application Guide (formerly known as Implementation Guide, Release 1.0 of 13 May 2012)

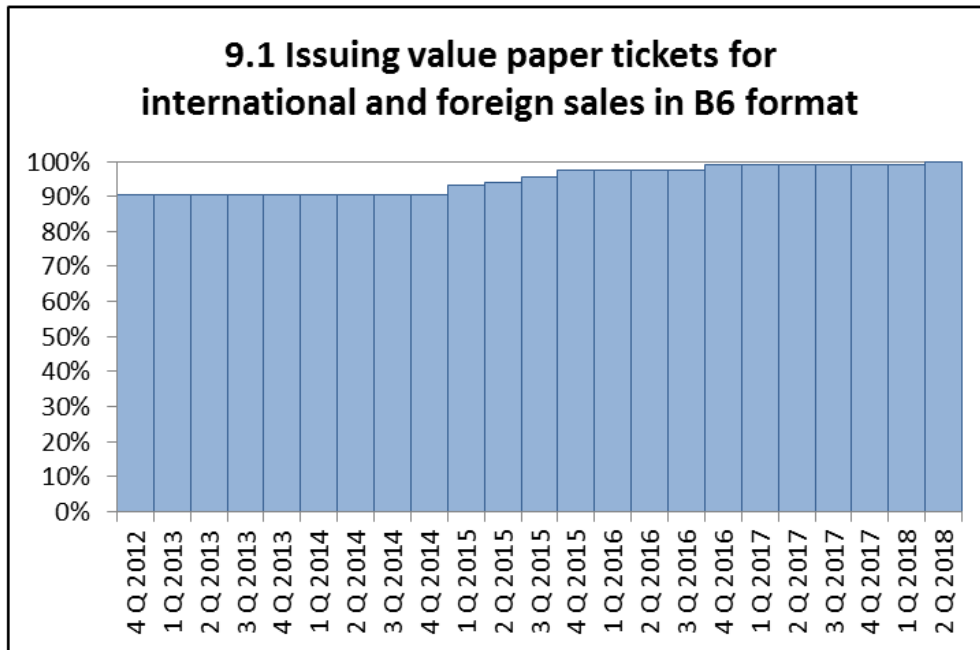


While reservation related to car carriage only applies to some RUs offering car carriage services, most of them will be compliant by 2015.

4.2.9.7 Ticketing

4.2.9.8 Issuing value paper tickets for international and foreign sales in B6 format

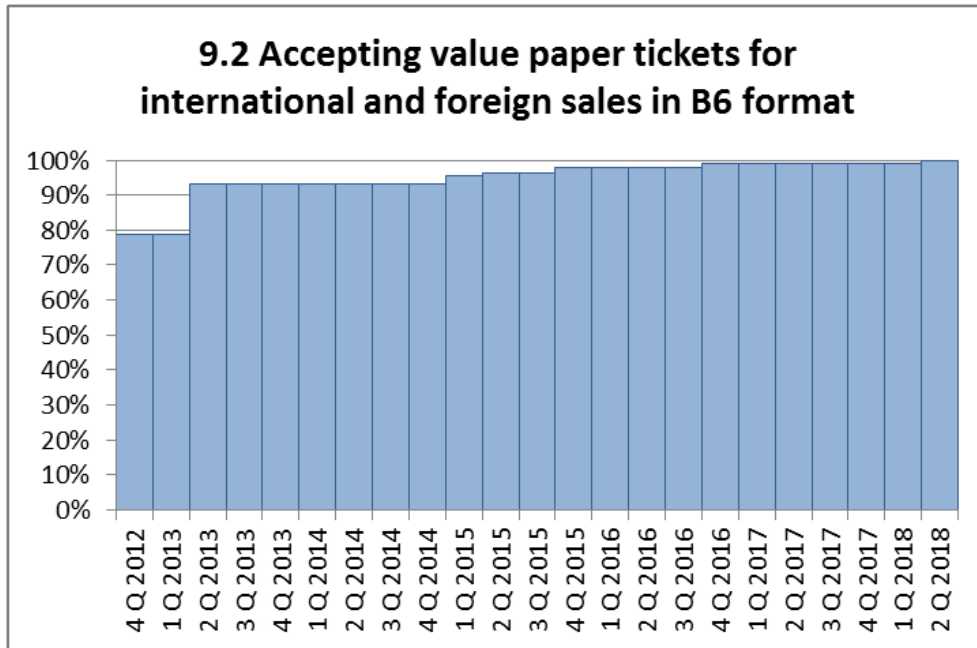
Function type	Ticketing
Target Implementation Milestone	2012
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.11.1 • ERA Technical Document B6 • Fulfilment Application Guides (formerly known as Implementation Guides, Release 1.0 of 13 May 2012)



Most RUs already comply with B6, with nearly everyone being compliant by 2016.

4.2.9.9 Accepting value paper tickets for international and foreign sales in B6 format

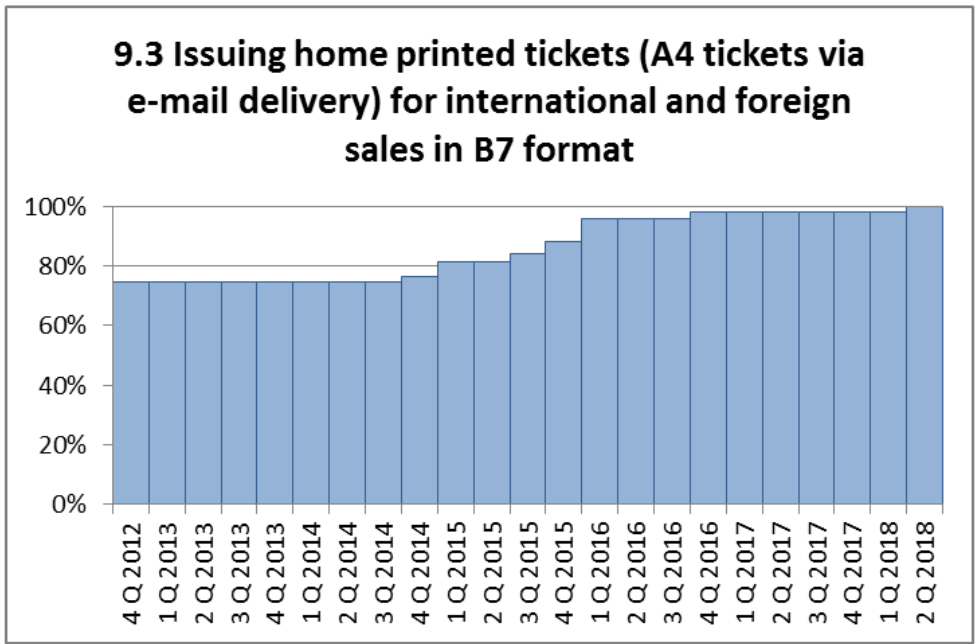
Function type	Ticketing
Target Implementation Milestone	2013
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.11.1 ERA Technical Document B6 Fulfilment Application Guides (formerly known as Implementation Guides, Release 1.0 of 13 May 2012)



Most RUs already comply with B6, with nearly everyone being compliant by 2015.

4.2.9.10 Issuing home printed tickets (A4 tickets via e-mail delivery) for international and foreign sales in B7 format

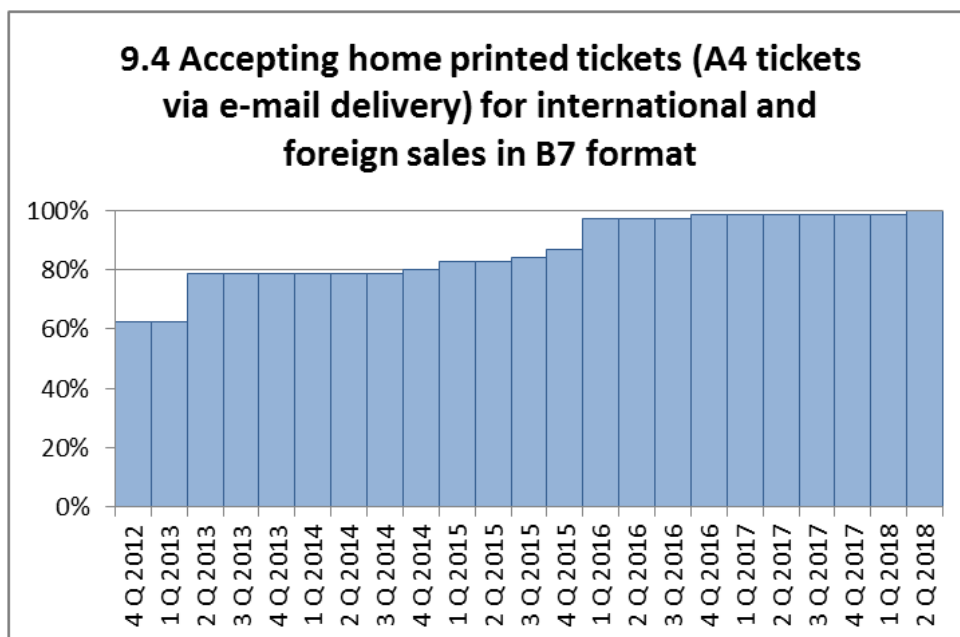
Function type	Ticketing
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.11.2 • ERA Technical Document B7 • Fulfilment Application Guides (formerly known as Implementation Guides, Release 1.0 of 13 May 2012)



The issuing of home printed tickets in B7 format is already widely used by RUs, with a gradual implementation by the others until approx 2016.

4.2.9.11 Accepting home printed tickets (A4 tickets via e-mail delivery) for international and foreign sales in B7 format

Function type	Ticketing
Target Implementation Milestone	2015
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.11.2 • ERA Technical Document B7 • Fulfilment Application Guides (formerly known as Implementation Guides, Release 1.0 of 13 May 2012)

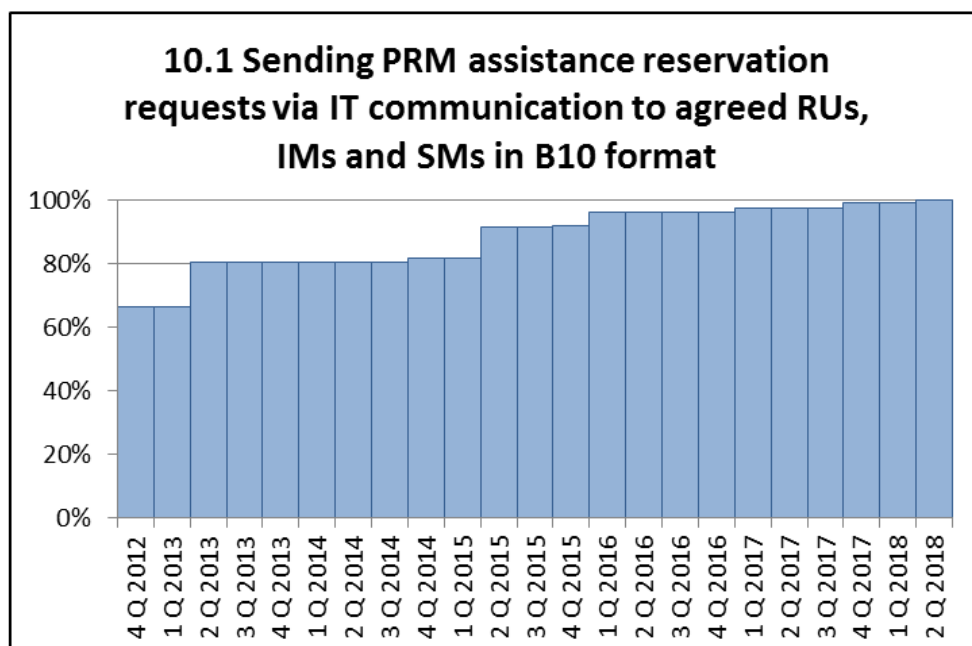


The acceptance of home printed tickets in B7 format is ensured by several RUs already, with a gradual implementation by the others until approx 2016.

4.2.10 PRM Assistance

4.2.10.1 Sending PRM assistance reservation requests via IT communication to agreed RUs, IMs and SMs in B10 format

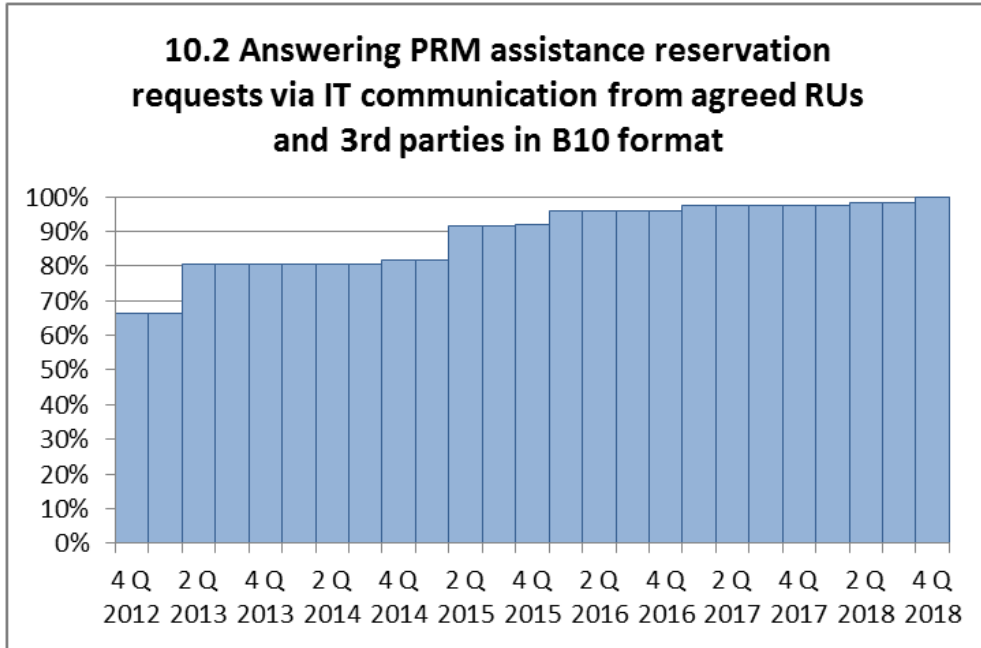
Function type	PRM Assistance
Target Implementation Milestone	2014
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.6.2 • ERA Technical Document B10 • PRM Application Guides (formerly known as Implementation Guides, Release 1.0 of 13 May 2012)



While this function is already in use using another format than B10, the sending of PRM assistance Reservation Requests in B10 format will be limited to some RUs using the B10 format by 2015.

4.2.10.2 Answering PRM assistance reservation requests via IT communication from agreed RUs, IMs and SMs in B10 format

Function type	PRM Assistance
Target Implementation Milestone	2014
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.6.3 ERA Technical Document B10 PRM Application Guides (formerly known as Implementation Guides, Release 1.0 of 13 May 2012)

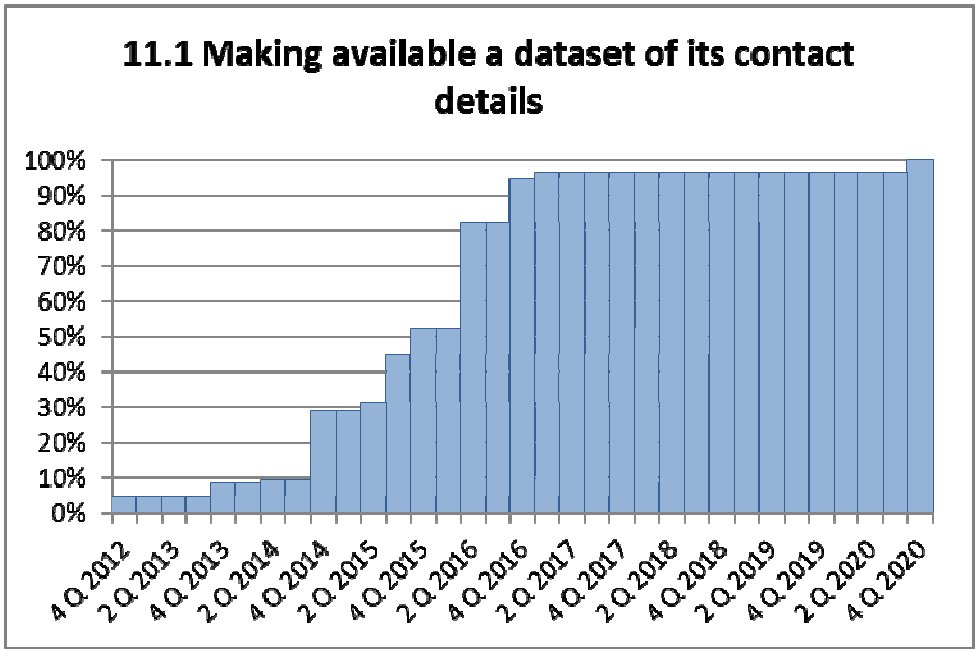


While this function is already in use using another format than B10, the answering of PRM assistance Reservation Requests in B10 format will be limited to some RUs using the B10 format by 2015.

4.2.11 Retail Architecture

4.2.11.1 Making available a dataset of its contact details

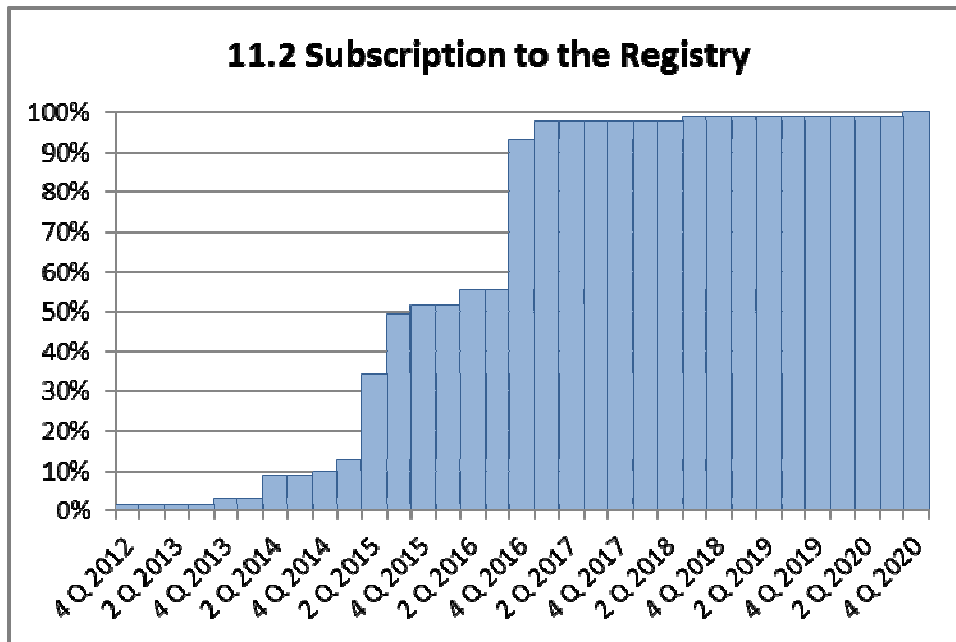
Function type	Architecture / Registry feeding
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.21 • TAP Retail Architecture Description final.docx



All TAP TSI Actors will feed the Registry with their contact details (TAP main contact, Timetables contact, NRT contact (if any), IRT contact (if any), Special offers contact (if any), Reservation contact (if any), RCT2 ticketing contact, Print@home ticketing contact (if any) and PRM contact.

4.2.11.2 Subscription to the registry

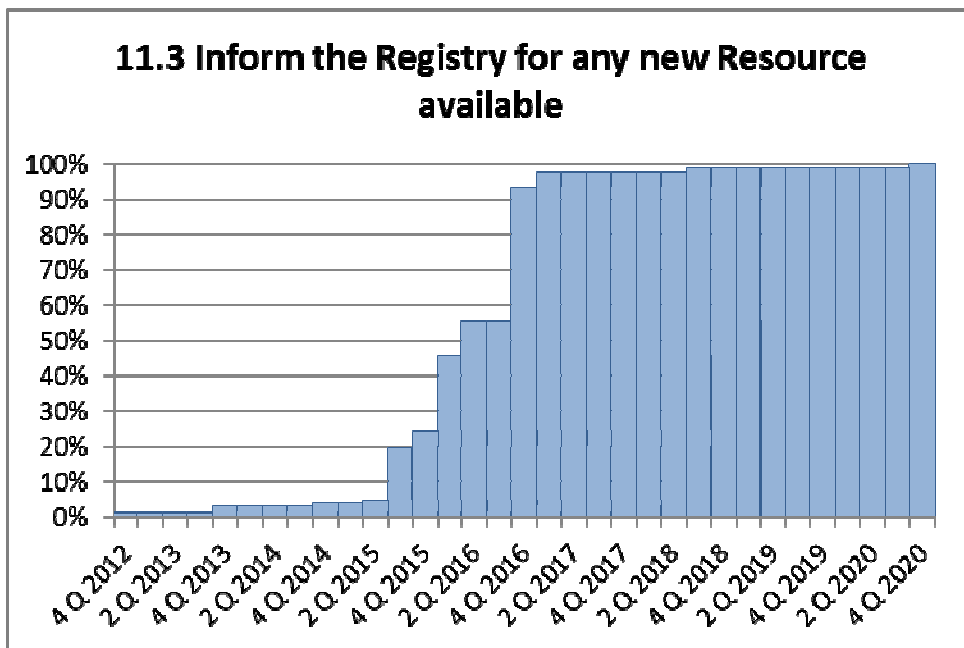
Function type	Architecture / Registry
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.21 • TAP Retail Architecture Description final.docx



All TAP TSI actors will subscribe to the Registry after they have received their membership credentials from the TAP Governance Entity.

4.2.11.3 Inform the registry for any new resource available (timetable or fares/tariffs, public keys for print at home)

Function type	Architecture / Registry
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.21 • TAP Retail Architecture Description final.docx



TAP TSI Resource producers (RUs) inform the Registry what Resources are made available, which version, where and when to find them and how to get them.

Resources: Timetables, NRT Tariffs, IRT Tariffs, Special Offer Tariffs, Reservation info, Print@home public keys.

Version: Varies every time changes happen on Resources.

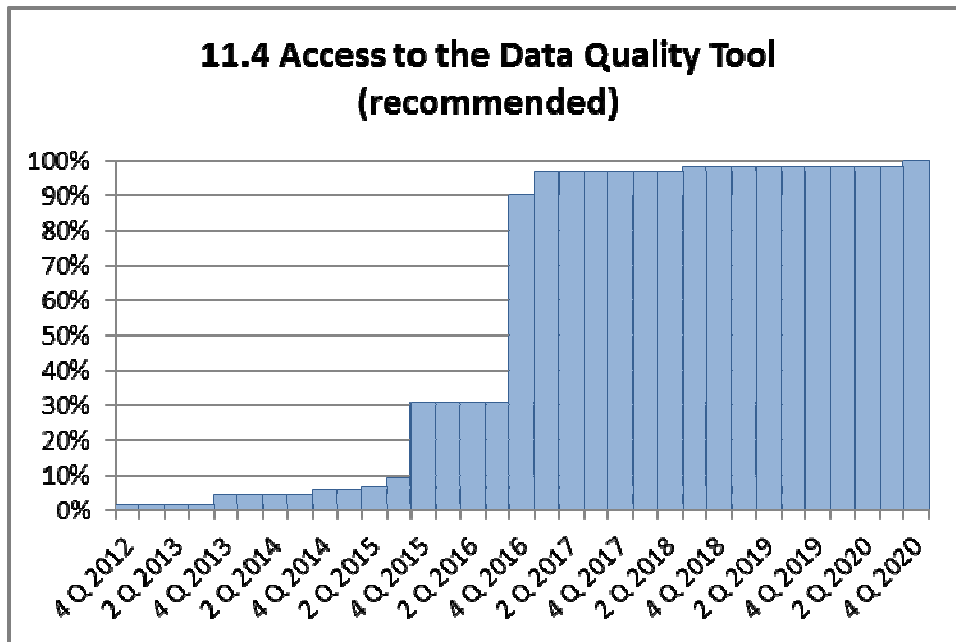
Where: The location where Resources can be found (ftp server address)

How: The different access methods offered to get the Resource.

When: Resources will be usually available immediately once the Registry is updated, but it can happen that their availability is planned to be available from a specific date.

4.2.11.4 Access to the Data Quality Tool (recommended)

Function type	Architecture / Data quality
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.18 TAP Retail Architecture Description final.docx



TAP TSI actors can use a Data Quality Management tool for some resources (Timetables, NRT tariffs, IRT Tariffs) if they do not have their own one, respecting the quality standards described in the relevant application guides.

The figures above only show a percentage relating to the RUs that have answered that they will use the DQM.

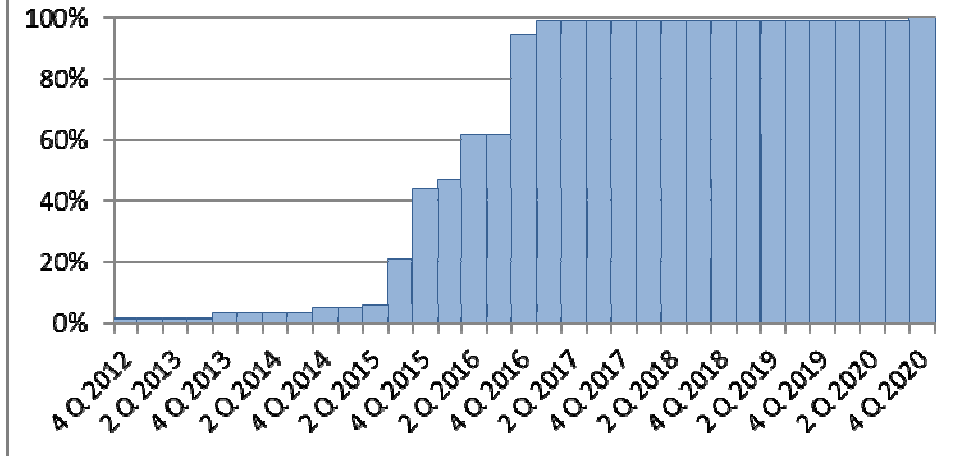
All respondent RUs already use a tool made available by UIC and expect this tool to be compliant to the Regulation through changes managed/controlled by UIC. They therefore rely on UIC planned date of compliance and they make a reserve on the UIC ability to respect this planned date.

13% of respondent RUs declared not having any need to use the DQM.

4.2.11.5 Access the Retail Reference Data (code lists, location codes, company codes, country codes)

Function type	Architecture / RRD
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.19 • TAP Retail Architecture Description final.docx

11.5 Access the Retail Reference Data (Codes list, location codes, Company codes, country codes)

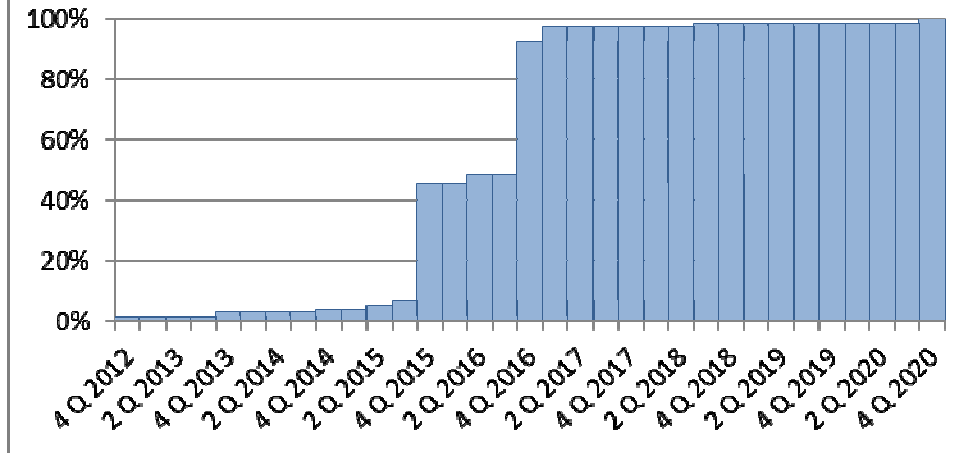


TAP TSI actors need to have access to Reference Data to understand the values used in available resources. They can be common to all resources or specific to some of them.

4.2.11.6 Use of the notification service offered by the Registry (recommended in order to be aware of changes)

Function type	Architecture / Registry / Notification
Target Implementation Milestone	2016
Impact	RU
Reference Documentation	<ul style="list-style-type: none"> • TAP TSI Regulation 454/2011 Annex 1 chapter 4.2.21 • TAP Retail Architecture Description final.docx

11.6 Use of the notification service offered by the Registry (recommended to be aware of changes)



TAP TSI actors have the possibility to be informed of any changes of any Resources of any Producers without the need to have any credentials to access the Resources.

Also all changes in the DQM rules or changes related to reference data can be notified if the actor wishes to.

The Notification service is only here to inform of changes, not to send the changes. It is up to the actors to retrieve them from the locations and with the credentials they received from the Producer concerned.