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Report

4th TAF TSI IMPLEMENTATION STATUS REPORT OF THE EUROPEAN UNION AGENCY FOR RAILWAYS – 1st HALF 2016

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Abbreviations

Abbreviation	Definition
CEF	Connecting Europe Facility
CER	Community of European Railway and Infrastructure Companies
CI	Common Interface
CRD	Central Reference Database
DI	Degree of Implementation
EC	European Commission
ECM	Entity in Charge of Maintenance
EIM	European Rail Infrastructure Managers
ERA	European Union Agency for Railways (also referred to as Agency)
ETA	Estimated Time of Arrival
GCU	General Contract for Use of Wagons
GIS	Geographical Information System
IM	Infrastructure Manager
INEA	Innovation and Networks Executive Agency
JSG	Joint Sector Group
NCP	National Contact Point
PCS	Path Coordination System by RNE
PM ²	Official Project Management Methodology of the European Commission
RISC	Rail Interoperability and Safety Committee
RNE	Rail Net Europe
RSRD	Rolling Stock Reference Database
RSRD ²	Rolling Stock Reference Database implementation made by UIP members
RU	Railway Undertaking
TAF	Telematics Applications for Freight
TIS	Train Information System developed by RNE
TSI	Technical Specification for Interoperability
UIC	Union Internationale des Chemins de fer
UIP	International Union of Wagon Keepers
UNIFE	Association of the European Rail Industry

Abbreviation	Definition
CEF	Connecting Europe Facility
WIMO	Wagon and Intermodal Unit Operational Database
WK	Wagon Keepers

Reference documents

Ref. N°	Title	Reference	Version
(1)	TAF-TSI Master Plan	TAF Master Plan – v4.0	17.01.2013
(2)	NOTE TO ERA EXECUTIVE DIRECTOR: Assessment of TAF TSI implementation by the European Railway Agency	Ref. Ares(2014)1706338	26.05.2014
(3)	1 st Status Report in 2014 of the European Railway Agency for European Commission regarding the Implementation of TAF TSI.	1 st Status Report ERA-REP-114 - IMPL-2015-01	21.04.2015
(4)	2 nd Status Report in 2014 of the European Railway Agency for European Commission regarding the Implementation of TAF TSI.	2 nd Status Report ERA-REP-114 - IMPL-2015-02	27.11.2015
(5)	3 rd TAF TSI Implementation Status Report of the European Union Agency for Railways – 2 nd Half 2015	3 rd TAF TSI Implementation Status Report ERA-REP-114- IMPL-2016-01.	26.07.2016
(6)	2 nd ERA TAF TSI Implementation Cooperation Group held on 29th and 30th September 2015	Minutes_TAF_Cooperation Group_20150929_30_Draft_v03	16.10.2015
(7)	4 th ERA TAF TSI Implementation Cooperation Group held on 20 th and 21 st October 2016	Draft Minutes of Meeting TAF TSI co-operation group 20161019 20 v01	26.10.2016

Reference legislation

Ref. N°	Document Reference	Title	Last Issue
[1]	Directive 2008/57/EC	Interoperability of the rail system	17.06.2008
[1]	Directive (EU) 2016/797	Directive of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union	11.05.2016
[2]	TAF TSI Regulation No 1305/2014	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 and repealing the Regulation (EC) No 62/2006	11.12.2014
[3]	Corridor Regulation N° 913/2010	Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September	22.09.2010

Ref. N°	Document Reference	Title	Last Issue
		2010 concerning a European rail network for competitive freight	
[4]	CEF Regulation	Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010	11.12.2013

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1. Executive summary

This report contains the data provided to report the status of the implementation by **30.06.2016** of the following TAF TSI [2] functions:

- Reference Files Function:
 - Company Codes
 - Primary Location Codes
- Common Interface Function
- Rolling Stock Reference Database.
- Train Running Information Function
- Wagon and Intermodal Unit Operational Database

This fourth report, compared to the third issued in July 2016, provides a similar view of the implementation of these six functions, agreed by the Agency TAF TSI Cooperation Group in March 2016. This first conclusion can be drawn from the fact that number of companies reporting has stagnated compared to the previous report, because only 157 companies responded out of 366 companies registered in the JSG Reporting Tool (<http://taf-jsg.info/>).

To better evaluate the current degree of implementation for each function, the data provided is compared to the baseline defined in the Master Plan (1)¹ to implement the TAF TSI [2] regulation delivered by the European Rail Sector in 2013. The TAF-TSI Master Plan (1) was submitted to the TAF-TSI Steering Committee, DG MOVE and the Agency on 15th November, 2012. A total of 58 companies, representing over 85% of the total Tonne and Track Kilometres in Europe responded with their individual plans for implementation. The target dates are based on the corresponding TAF-TSI function to be implemented and they were set when 80% or more of the respondents indicated a final implementation.

The data provided is a self-declaration made by every company about the level of implementation of the above mentioned functions. Most of the data has been collected through an entity set-up by the European Rail Sector, the so called Joint Sector Group (JSG), to technically support the implementation of the system. The members of the JSG are:

- CER²
- UIC
- EIM
- UNIFE
- UIRR
- ESC
- UIP
- RNE

¹ See «Reference Documents».

² See «Abbreviations» for acronyms.

- ERFA
- RAILDATA
- UITP
- EPTO

Regarding the function “Rolling Stock Reference Database”, the implementation data has been collected by the JSG in close cooperation with the International Union of Wagon Keepers, UIP. They have submitted to the Agency a file containing the status information of seventy four (74) companies across Europe.

The following key findings per TAF function can be highlighted:

- In general terms, whether we consider a reference group of companies reporting in both 3rd and 4th reports, we cannot observe an increase of companies having finished implementation.
- The majority of IMs has completed the population of the Common Reference Files for locations on their network.
- Company codes are already widely used within the sector, by both IMs and RUs. Nevertheless, some difficulties still remain in the process conducting to get the Company Codes, in particular for newcomers and wagon keepers.
- The majority of RUs is still developing the common interface, while a most of the IMs have already finished the implementation of the common interface.
- The deployment of the Rolling Stock Reference Database has been already launched, however mainly UIP members have delivered data concerning the implementation of this function. Regarding the data delivered, these Wagon Keepers companies have already completed the implementation of this function. Nevertheless, the accomplishment of this function considering the whole European fleet of wagons is clearly delayed.
- The level of realisation of Train Running Information is progressing in accordance with the implementation schedule quoted in the TAF TSI Master plan by 2017, in particular for the Infrastructure Managers, meanwhile the evolution is not so evident for the Railway Undertakings.
- The level of fulfilment of the Wagon and Intermodal Unit Operational Database is still very low based on the realisation milestones reflected on the TAF TSI Master Plan (1), where half of Railway Undertakings respondents committed to deploy this function by 2016 and the whole implementation to be performed by 2018.

Furthermore, the report identifies the TAF TSI functions where the sector shall allocate more resources to meet the target implementation date quoted in the TAF TSI Master Plan (1), in particular the Rolling Stock Reference Database and Wagon and Intermodal Unit Operational Database.

In particular this report shows that the implementation of the Rolling Stock Reference Database (RSRD) by 1st half of 2016 is in average for the overall European rail sector delayed compared to the declared target implementation date in the Master Plan, 2015. The implementation data used in this report permits to conclude that the RUs have already started delivering information about the implementation of the TAF TSI [2] compliant RSRD database.

2. Introduction

This 4th Status Report is delivered in accordance with the legal frame provided by the 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 and repealing the Regulation (EC) No 62/2006 in force, TAF TSI [2].

In particular, Article 5 of the Regulation [2] attributes to the European Union Agency for Railways, named the Agency along the report, the task to assess and oversee the implementation of the Regulation to determine whether the agreed objectives and deadlines have been achieved and to provide an assessment report to the TAF steering committee referred to in Section 7.1.4 of the Annex. Furthermore, the European Commission (EC) issued a letter on 26.05.2014 (2) describing the tasks expected to be carried out by the Agency for the Assessment of TAF TSI [2] implementation. In addition, since June 2016 the Agency becomes a system authority for Telematics. This new role prescribed on article 23 of Regulation (EU) 2016/796 requires the Agency to assist the Commission in the monitoring of deployment of specifications for telematics applications in accordance with relevant TSIs.

Beyond this, this activity meets the 4th Strategic Priority of the Agency work programmes 2015 and 2016, "Simplified Access for Customers". On this basis, the Agency launched in October 2014 the Co-operation Group for the Implementation of Telematics Applications for Freight. The Co-operation Group performs the following tasks:

- To assess the reports from the sector (companies, NCPs and RBs) about the TAF TSI [2] implementation.
- To compare the data received with the content of the TAF TSI Master Plan (1) and assess the progress of implementation to determine whether the objectives pursued and deadlines have been achieved.
- To use Key Performance Indicators (KPIs) previously agreed between the Agency and the Rail Sector to assess the evolution of the deployment of the system and report twice per year to the European Commission and to the TAF Steering Committee.
- To perform a dissemination campaign to NCPs and assist them to follow-up the TAF TSI [2] implementation at national level.

All these activities are performed in close cooperation with the different stakeholders, who will provide implementation reports. The diagram below shows the process allowing the Agency to perform the above listed activities:

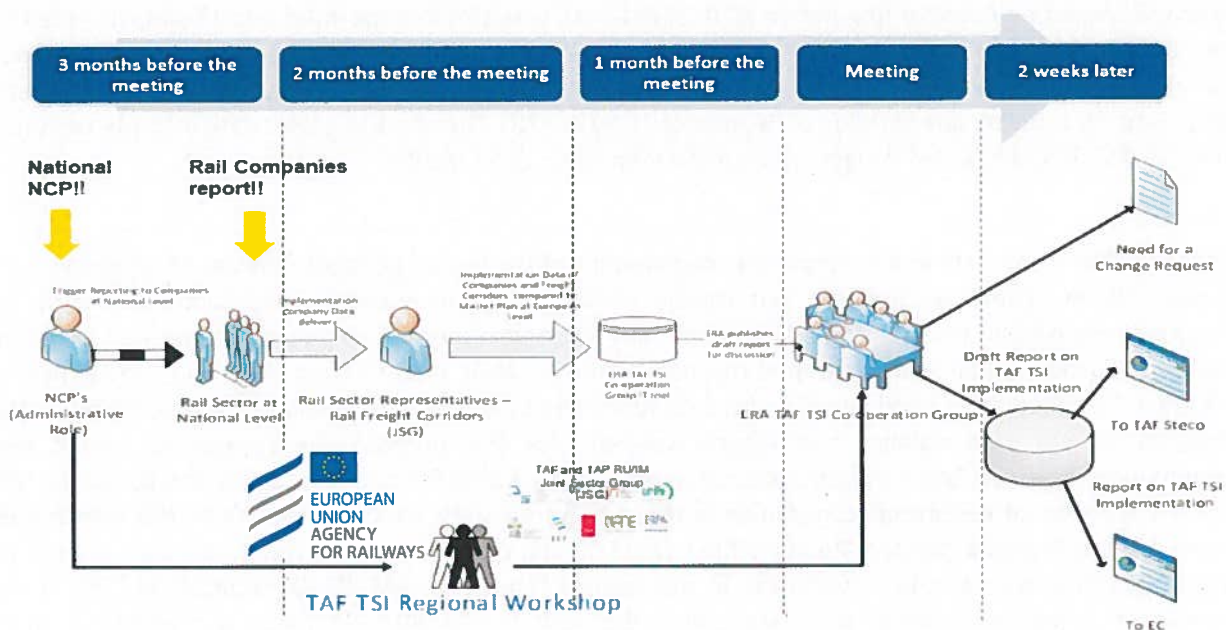


Figure 1: Agency TAF TSI Implementation Cooperation Group process.

The Agency has to inform the EC about the results of this monitoring and has to advise the EC about the possible changes needed. In a multimodal context, the Agency has to guarantee that any of the actions taken do not create additional obstacles for multimodal environment.

In addition, the effort made by the European rail sector to deploy the TAF TSI [2] system is also supported by the Connecting Europe Facility (CEF) [4] programme launched by the European Commission and managed by the INEA Executive Agency.

The CEF³ [4] will better mobilise private financing and allow for innovative financial instruments such as guarantees and project bonds to gain maximum leverage from this EU funding injection at it's a financial tool at disposal of all the companies implementing TAF TSI [2] regulation.

3. Context

The final version of the TAF-TSI Master Plan (1), establishing the implementation timeline for the Regulation, was submitted to the TAF-TSI Steering Committee, DG MOVE and the Agency on 15th November 2012.

A total of 58 companies, representing over 85% of the total Tonnes and Track Kilometres in Europe responded with their individual plans for implementation. Target dates were set when 80% or more of the respondents indicated a final implementation. The target dates are based on the corresponding TAF-TSI function to be implemented.

³<https://ec.europa.eu/inea/en/connecting-europe-facility/2016-cef-synergy-call>

An analysis, based on Corridor Regulation N° 913/2010 [3], was also incorporated into this Master Plan (1). As the Corridor Regulation specifically addresses Short Term Path Requests and Train Running Information, these were the only functions included. It should be noted that the TAF-TSI is a supporting tool – and not a prerequisite – for the implementation of Regulation N° 913/2010. Therefore the later date of implementation of the TAF-TSI should have no impact on the implementation of 913/2010.

In order to collect the data and to boost the involvement of the higher possible number of companies, the European Union Agency for Railways has closely worked with the European Rail Sector to set-up the appropriate mechanism to collect the data concerning the deployment of the above mentioned functions. Indeed, the European Rail Sector grouped through the entity Joint Sector Group (JSG) and the Agency has set-up two IT tools to collect and visualize the data submitted by the European rail companies, Infrastructure Managers, Railway Undertakings and Wagon Keepers. For this purpose the companies submit their information to the JSG IT tool through a Web service available for all the companies registered. For the time being the **number of registered companies is three hundred sixty six (366) thanks to the information delivered by the National Contact Points (NCPs)**. Once the data is collected, the raw data is delivered to the Agency, who incorporates this information in the Agency IT tool for TAF TSI [2] monitoring. This IT tool comprises a database to store the data and a GIS tool to visualize on maps the progress of the implementation. There are three groups of maps:

- Maps to report about common functions. These maps show the degree of implementation of the Reference Files (Company Codes and Primary Location Codes) and the Common Interface functions at European level.
- Maps to report about RU-IM Communication functions. These maps show the degree of implementation at country level of the RU-IM Communication functions and there is an additional publication of the data per rail freight corridor in Europe as defined in the Corridor Regulation N° 913/2010 [3]. The presentation of the progress evolution per corridors underpins the implementation of Corridor Regulation N° 913/2010 [3]. Thereby, the maps used in this report represent the progress of the implementation at country level and at corridor level of the following functions :
 - Short Term Path Request,
 - Train Running Information,
 - Train Preparation,
 - Service Disruption and
 - Unique Train Identifiers.
- Maps to report about Railway Undertaking's functions. These maps show the degree of implementation at country level of the functions to exchange data amongst Railway Undertakings and Wagon Keepers:
 - Consignment Data Function,
 - Wagon and Intermodal Unit Operational Database (WIMO) Function,
 - Wagon Movement Function,
 - Shipment ETA Function and
 - Rolling Stock Reference Database.

The scope of the present report is to inform about the deployment of the functions scheduled to be implemented by 1st half 2016 in the Master Plan (1) delivered by the sector for the implementation of the TAF TSI [2] system. This temporary scope was agreed by the members of the Co-operation Group for the Implementation of Telematics Applications for Freight in the 3rd meeting held on 30th and 31st March 2016, this report provides information about the implementation of the following functions:

- Reference Files Function:
 - Company Codes
 - Primary Location Codes
- Common Interface Function
- Rolling Stock Reference Database.
- Train Running Information Function
- Wagon and Intermodal Unit Operational Database

To have a common approach for all companies' contributors submitting implementation information, **an optional common criterion has been agreed with the representatives of the rail sector to assess the degree of deployment of TAF TSI functions.** This criterion is based on the standard division in project phases of IT projects defined in the methodology for project management in use at the European Commission (PM²). Assuming that project phases are divisions within a project where extra control is needed to effectively manage the completion of a major deliverable, then it may be ideally assimilated with each of the 12 TAF TSI functions identified in the TAF TSI Master Plan (1) to an individual IT reference implementation project.

Within every individual IT reference implementation project, we use percentages of completion as early indicators to track the progress made each period of one year (n-3, n-2, and n-1, n) over a 4-year time span. This allows preventing delays in the implementation of a particular function.

Therefore, taking into account the above mentioned assumptions, every function implementation may be considered as an individual project to be split in the following reference phases:

- **Initiating Phase:** This phase may comprise those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase. This phase includes typically the following activities:
 - Feasibility Study
 - Business Case
 - Gathering of Technical and Functional Requirements

These activities may correspond in an "optional" reference implementation to a Degree of Implementation (DI) between 0% and 25% for a particular function. If the DI is achieved at the beginning of the timeframe for the deployment of such a function, ideally deadline minus three years (deadline-3), the implementation of this function can be deemed on time.

- **Planning Phase:** this phase includes typically those activities required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve:
 - Resource Planning

- Project Work Planning (Working Break Down Structure)
- Migration Planning
- Outsourcing Plan
- Risk Management Planning

These activities may correspond in an “optional” reference implementation to a Degree of Implementation (DI) between 25% and 50% for a particular function. If the DI is achieved ideally within the deadline minus two years (deadline-2) period, the implementation of this function could be deemed to be on time.

- **Executing Phase:** this phase may comprise those processes performed to complete the work defined in the project management plan to satisfy the project specifications. This phase includes activities such as:
 - Procurement
 - Executing
 - Testing (User Acceptance and system Integration)
 - Training and Education

These activities may correspond in an “optional” reference implementation to a Degree of Implementation (DI) between 50% and 100% for a particular function. If the DI is achieved ideally within the deadline minus one year (deadline-1) period, the implementation of this function could be deemed to be on time.

- **Closing & Production:** this phase may comprise those processes performed to finalise all activities across all phases to formally close the project. Therefore, it may include the delivery of the product/service, in the context of the TAF TSI [2] deployment, the delivery of the IT system implementing a particular TAF TSI [2] function moving to production environment. These activities correspond in an “optional” reference implementation to a Degree of Implementation (DI) of 100% for a particular function. If the DI is achieved within the deadline minus ideally one year (deadline-1) period, the implementation of this function could be deemed to be on time. This level of implementation means that the company is capable to use the system in production or is using already the system in production for a particular TAF TSI function.

The above explained phases are summarised in the following diagram explaining the expected commitment of resources made for every phase of the project.

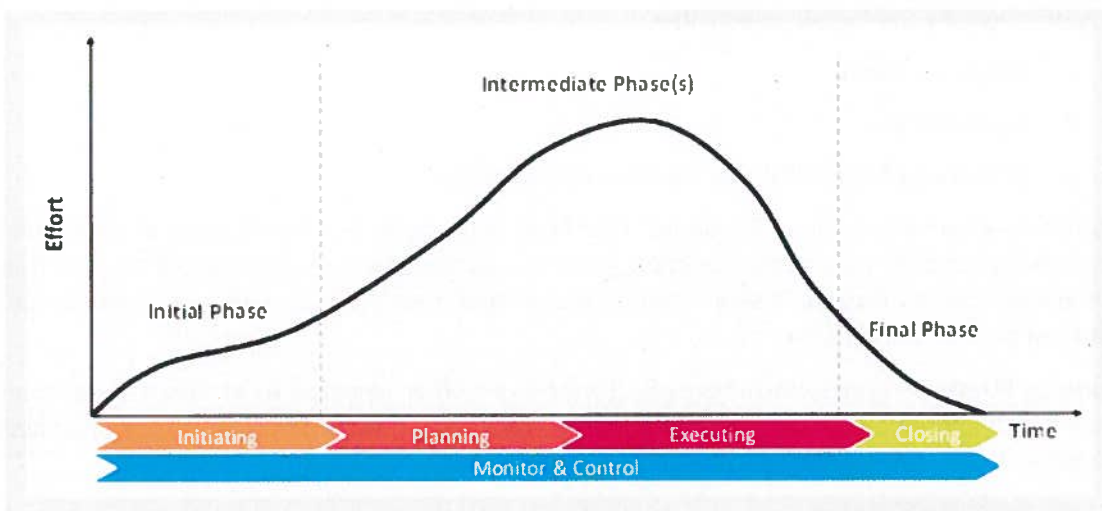


Figure 2: PM² project lifecycle.

Nevertheless, the different activities to be developed in the framework of a project to implement a particular TAF TSI [2] function should be adapted to the particular situation in every company. Therefore, every project may be assimilated, on a voluntary basis, to the addition of the four phases aforementioned (Initiating, Planning, Executing and Closing) establishing an optional comparable reference implementation to assess the progress of the implementation per company.

In conclusion, in the context of the Co-operation Group for TAF TSI Implementation there are two ways to report about the implementation of a particular TAF TSI function compared to the TAF TSI Master Plan (1):

- on one hand, companies may declare the final delivery of a particular TAF TSI function within the deadline set out in the TAF TSI Master Plan (1); in this case the implementation of this function will be deemed to be on time, and thus DI = 100% -> Dark Green colour on the map;
- on the other hand, companies may declare the Degree of Implementation (DI) for every function using the optional methodology aforementioned with different phases for the execution of the project. In this case, the declared Degree of Implementation will be colour-coded and displayed as follows:
 - Project not launched: No data -> Blue colour on the map.
 - Initiating Phase accomplished: 0% =< DI < 25% -> Red colour on the map.
 - Planning Phase accomplished: 25% =< DI < 50% -> Orange colour on the map.
 - Executing Phase accomplished: 50% =< DI < 100% -> Green colour on the map.
 - Closing & Production accomplished: DI = 100% -> Dark Green colour on the map.

4. Analysis

TAF TSI Master Plan (1) shows that most of functions of the TAF TSI can be achieved by the end of 2018, with most functions operational by 2016. The most difficult part of the realisation will be the implementation of the unique Train Identifiers (TID) and the Path Request function, upon which many other functions are dependent. Indeed, the set of functions to be early implemented in order to facilitate the further deployment of the system is:

- Reference Files Function:
 - Company Codes
 - Primary Location Codes
- Common Interface Function
- Rolling Stock Reference Database.

In addition to the above listed functions, the members of the TAF TSI Implementation Co-operation Group agreed in the 3rd Agency TAF TSI Implementation Cooperation Group, meeting held on 30th and 31st March 2016, to continue reporting for the 4th report concerning the implementation of TAF TSI [2] by 1st half 2016 on the following functions:

- Train Running Information Function
- Wagon and Intermodal Unit Operational Database (WIMO) Function

4.1. Evolution of TAF functions at Country level

In line with the timeline defined in the TAF TSI Master Plan (1) and the request of the TAF TSI Implementation Co-operation Group members, the reporting of this fourth report is limited to the TAF TSI [2] functions which could be achieved by 1st half 2016:

- Reference Files Function:
 - Company Codes
 - Primary Location Codes
- Common Interface Function
- Rolling Stock Reference Database.
- Train Running Information Function
- Wagon and Intermodal Unit Operational Database (WIMO) Function

The data were collected by the JSG tool in June 2016 and transferred to the Agency TAF TSI Implementation Co-operation Group IT tool. This data has been uploaded on the Agency's GIS tool and since October 2016, they are publicly available on the Agency website: <http://www.era.europa.eu/tools/TAFTSI/Pages/Home.aspx>.

Concerning the criteria adopted to estimate the level of implementation per country, it has been agreed within the context of the TAF TSI Implementation Co-operation Group to apply a weighting factor per company to those functions where the market share per country of RUs, Wagon keepers and Infrastructure Managers is relevant to have a better view of the degree of implementation. Thereby, the weighting factor per company has been applied for the following functions:

- Rolling Stock Reference Database.
- Train Running Information Function
- Wagon and Intermodal Unit Operational Database (WIMO) Function

More details about the particular weighting factor applied is provided in every section for every function. Indeed, this weighting factor depends on different parameters as track kilometres for Infrastructure Managers, tonne kilometres for Railway Undertakings and number of wagons for Wagon Keepers.

For the remaining functions an average calculation for the values supplied by all the companies reporting that they have started freight transport activities or intent to develop it in the near future is applied. Thereby, the average without any weighting factor is applied to the following functions:

- Reference Files Function:
 - Company Codes
 - Primary Location Codes
- Common Interface Function

The number of companies reporting about the implementation of the above quoted TAF TSI functions in the 4th Implementation report is the following:

	Company Codes function	Primary Location Codes function	Common Interface function	Rolling Stock Reference Database function	Train Running Information Function	Wagon and Intermodal Unit Operational Database function
Number of IMs 4 th Report per function	24	24	24	0	24	0
Number of RUs 4 th Report per function	59	0 ⁴	58	0	58	58
Number of Wks 4 th Report per function	74	0 ⁵	74	74	0 ⁶	0
TOTAL Number of Companies 4th Report per function	157	24	156	74	82	58

Table 1 : Number of companies reporting per function and type of company

The first conclusion that we can draw from the table above is that the number of Wagon Keepers participating in the 4th survey is higher than the number of Wagon Keepers who delivered data for the 3rd report. This provides a better view of the TAF TSI function that it has more impact on their business, the Rolling Stock Reference Database function. Secondly, we draw the conclusion that the number of Railway Undertakings has decreased compared to previous reports. Concerning the number of Infrastructure Managers we can observe a clear stagnation of the number of companies reporting and moreover, we can draw the conclusion that mostly incumbent Infrastructure Managers report, therefore, it is missing the information about the level of fulfilment of small and medium size infrastructure managers.

⁴ Railway Undertakings are not intended to populate the Primary Location Codes Reference File.

⁵ Wagon Keepers are not intended to populate the Primary Location Codes Reference File.

⁶ Wagon Keepers are not intended to implement the Train Running Information Function.

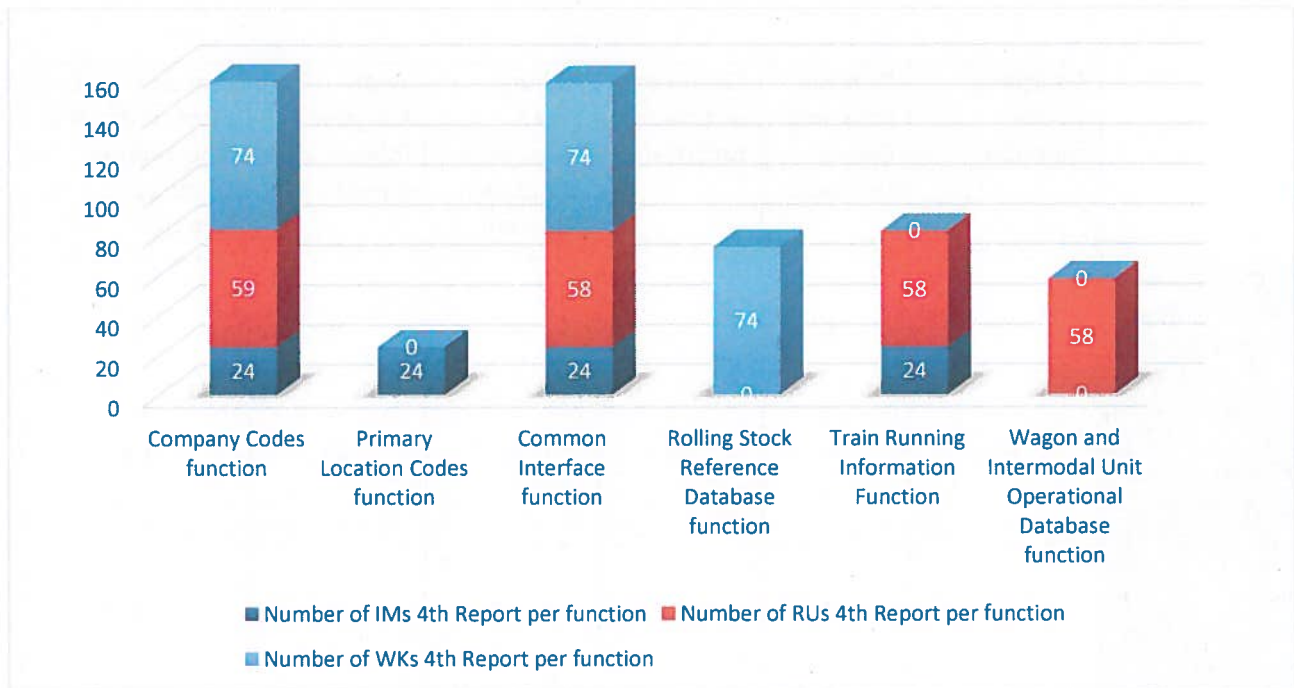


Figure 3: Companies participating in the 4th Reporting Session per function

4.1.1. Implementation status in the 1st half of 2016 for Company Codes function

In every country, the **Average Degree of Implementation (DI)** for the **Company Codes function** is calculated from the data provided by the companies responding the JSG survey in every country without applying any weighting factor. It means that an arithmetic mean of a series of degree of implementation for this function supplied by the companies is calculated. It results the value per country and therefore the colour attributed to every country.

$$\text{Average DI} = \left(\sum_{i=1}^n \text{DI}(i) \right) / n ;$$

Where DI(i) = Degree of Implementation declared by the company (i) starting freight transport activities or intending to develop it in the near future,

and n = number of companies reporting in a country.

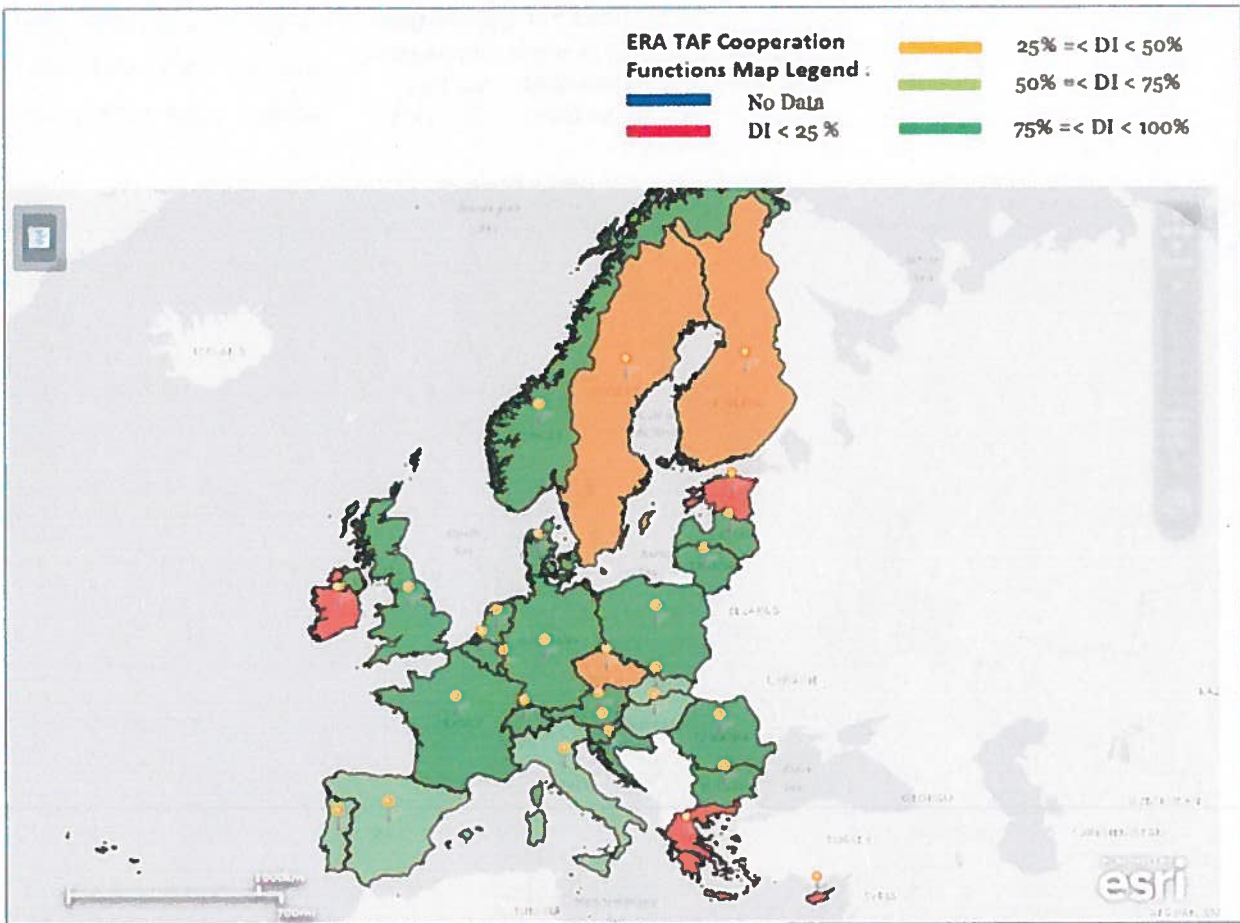


Figure 4: Company Codes function implementation in January 2016.

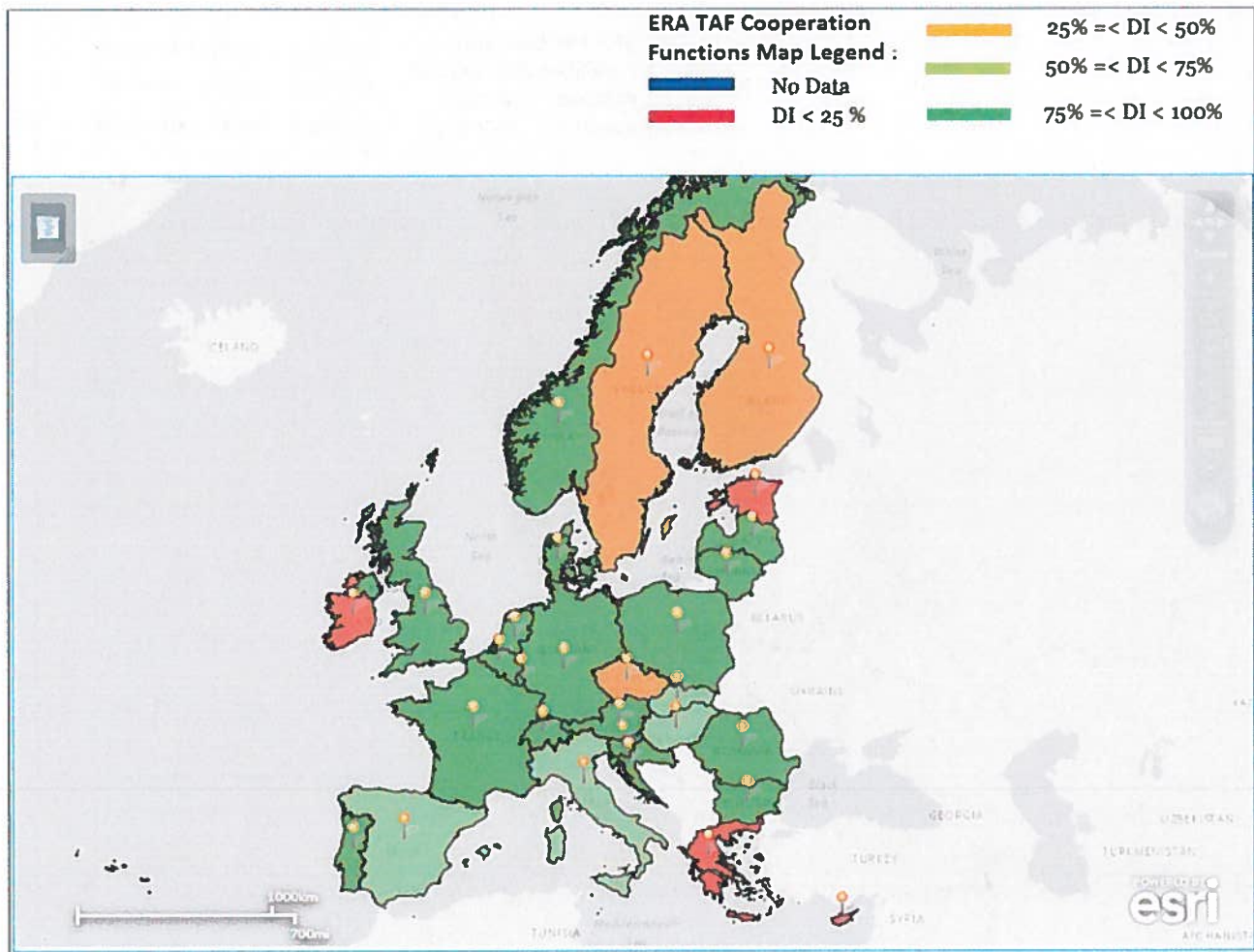


Figure 5: Company Codes function implementation in June 2016.

We can draw from the map the conclusion that in the 1st half of 2016 more than 50% of Infrastructure Managers and Railway Undertakings have already performed the implementation of the **Company Codes function**. Indeed, the data stored in the **Annex 1** indicates an average level of **63% degree of implementation at European level for all companies having reported**.

The question is: are the new values of the implementation for this function lower compared with the data of the previous reports?

Indeed, it can be observed that the complete level of fulfilment for Company Codes function has increased by 2 IMs and by 15 WKS compared to January 2016. However, the number of RUs in this report having a Company Codes has decreased, based on the fact that some companies having reported in previous sessions did not deliver input this time. In general, for this particular function the level of fulfilment is stagnating in the last two reports. It means that with more than double participation in this query, the completion rate has **decreased to 63** (<http://www.era.europa.eu/tools/TAFTSI/Pages/Company-Codes.aspx>) % **compared to 69%** level of fulfilment obtained in the 3rd release of the Status Report (5) and it is still below the value of 88% of the 1st release of the Status Report (3). If we split the aggregated value by actor, **the level of**

Implementation of the Wks, 78%, has improved compared to the 16% in the 3rd report, for the RUs, the level of fulfilment reaches 66%, a small reduction compared to the 70% of previous report, and for the IMs, the degree of implementation of 87% is slightly lower than the 96% reached in the previous report. This means that at European level the deployment of this function is reaching the Executing Phase in an “optional” reference implementation; therefore, most of the countries are either coloured in light green or in green on the map. However, these figures outlined the effort accomplished by UIP members through the adoption of a company code for RSRD2, grouping 59 Wagon Keeper companies, for the exchange of TAF TSI messages with Company Code.

To get more information concerning the companies, this data can be retrieved from the **Annex 1 “Maps and Implementation Data”**. Within this raw data provided by the companies, we have collected some observations. Regarding the former incumbent companies, the company codes were already in use before the delivery of the TAF TSI Implementation Master Plan (1) (January 2013). Indeed, it means an advantage in terms of TAF TSI [2] implementation for those companies having the codes already included in UIC RICS code list and inherited by the TAF TSI CRD company codes repository. Other companies, mostly those that they have joined in the last two waves the reporting exercise, reported that they are not yet using the company codes to exchange TAF TSI [2] messages at national level, while most of the companies just use such codes for international traffic and IT tools implementing TAF TSI [2] functionality as Train Information System (TIS) tool hosted by Rail Net Europe (RNE). The comments collected spot the need to better explain to the companies the usefulness of company codes in TAF TSI context, because some companies quoted that there is a lack of information concerning procedure in place (described in the ERA-TD-103: TAF TSI - Annex D.2 : Appendix C - Reference Files) to get such a code, and moreover, some companies question the need of paying fees for getting a code mandatory by law.

4.1.2. *Implementation status in 1st half of 2016 for Primary Location Codes function*

In every country, the **Average Degree of Implementation (DI)** for the **Primary Location Codes function** is calculated from the data provided by the companies responding the JSG survey in every country without applying a weighting factor:

$$\text{Average DI} = \left(\sum_{i=1}^n DI(i) \right) / n ;$$

Where DI(i) = Degree of Implementation declared by the Infrastructure Manager (i),
and n = number of Infrastructure Managers reporting in a country.

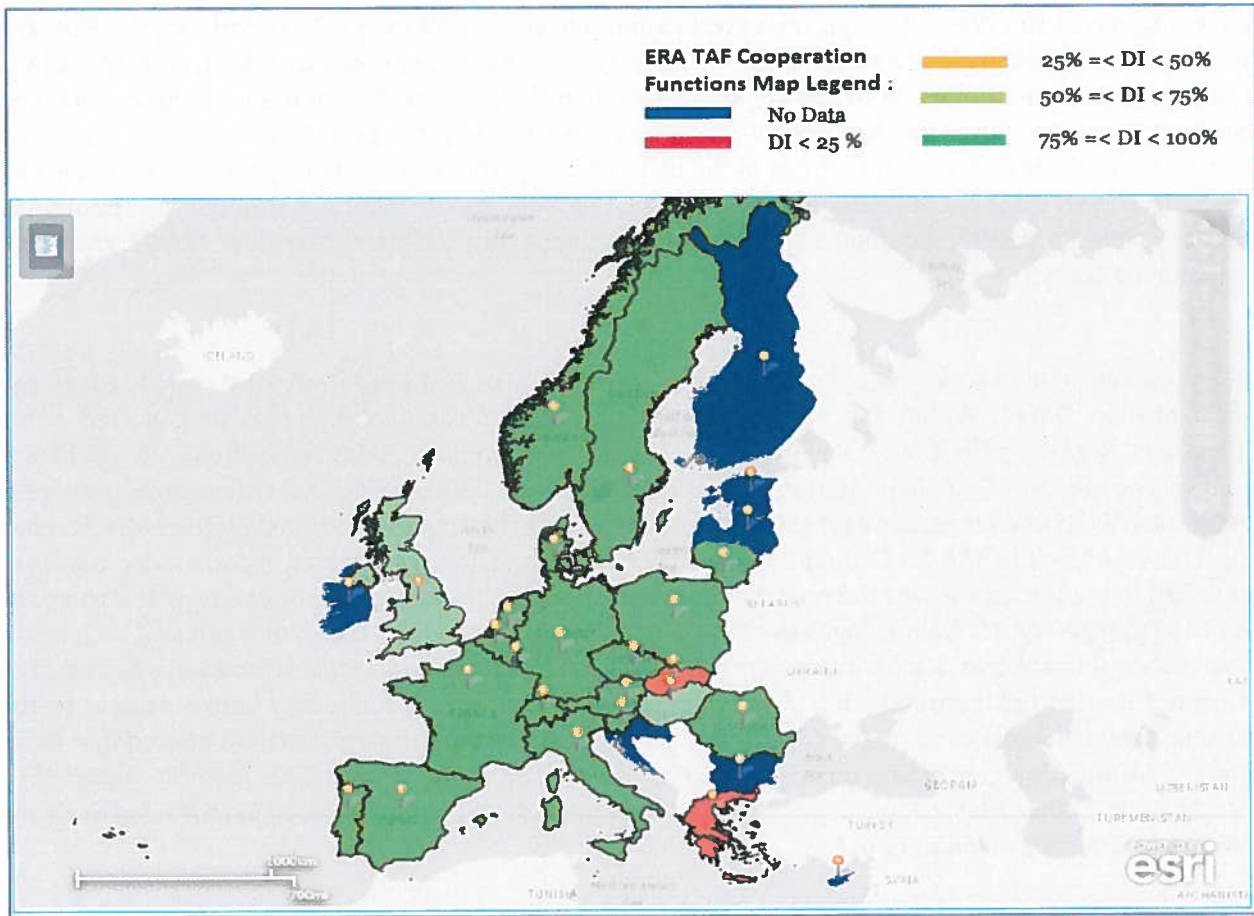


Figure 6: Primary Location Codes function implementation in January 2016.

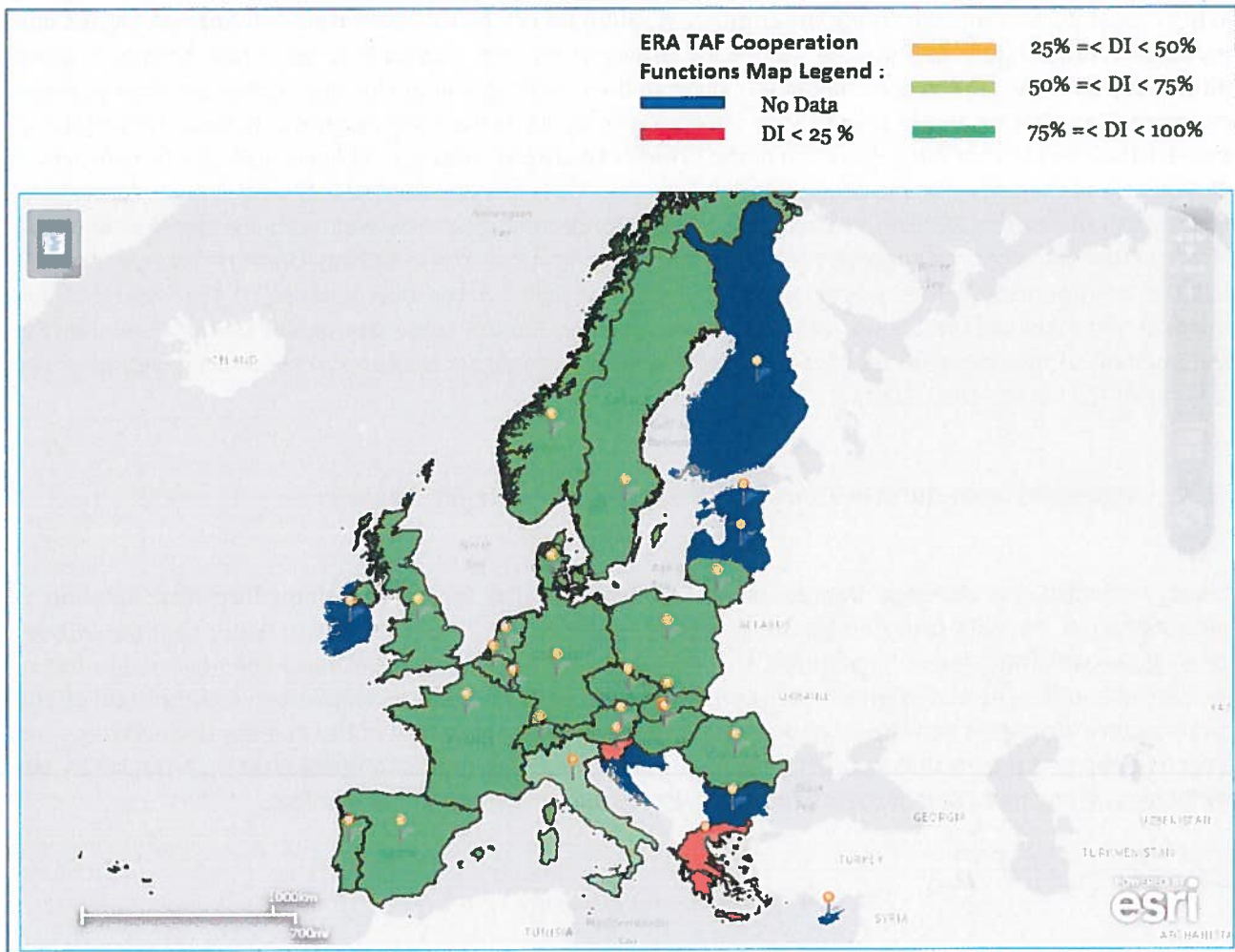


Figure 7: Primary Location Codes function implementation in June 2016.

The map confirms that in the 1st half 2016 most of the Infrastructure Managers have already performed the implementation of the **Primary Location Codes function**, with an average level of **81% degree of implementation at European level for all Infrastructure Managers having reported**. This means that at European level this function is ready to be in production for the exchange of TAF TSI compliant messages as it was already observed in the 3rd Status Report (5). This data has been delivered in almost all the countries by the Infrastructure Managers or Allocation Bodies as entities driving the implementation of the above mentioned function. Moreover, in most of the EU Members States and Switzerland the incumbent Infrastructure Managers have completed the deployment of this function and they have reached the “Closing & Production Phase”. In addition, it cannot be neglected the effort made by the Railway Undertakings the EU member states to cooperate with the Infrastructure Managers to improve the data quality.

In comparison with the **level of fulfilment reported in January 2016** we observe a **limited decline of the implementation, from 86% to 81%** (<http://www.era.europa.eu/tools/TAFTSI/Pages/Primary-Location-Codes.aspx>). This value confirms the stagnation for this function because the complete population of the Primary Location Codes was almost reached by the majority of incumbent Infrastructure Managers by end 2015. In line with the realisation scheduled in 2013 according to the TAF TSI Master Plan.

To get more information concerning the companies, this data can be retrieved from the **Annex 1 “Maps and Implementation Data”**. Within the raw data provided by the companies, we have collected some observations. Firstly, we can conclude that in most of the cases the primary location codes are already in use for international trains and in some cases for domestic trains as well. Although the Railway Undertakings stated in their report that the publication of the **Primary Location Codes** is an obligation for the Infrastructure Managers, and thereby, it has to be reported only by the IMs (decision adopted in the Telematics Cluster TAF on the 20th of January 2015 in Vienna), the Railway Undertakings are as well working together with the Infrastructure Managers to improve the quality data. Furthermore, some Railway Undertakings pointed out that the treatment of border points and the fees to be paid for the maintenance of this reference file provokes some kind of discussion within the EU rail sector. Finally, some companies pointed out that the development of the reference files for some Infrastructure Managers is strongly linked to the set-up of the Rail Freight Corridors across Europe.

4.1.3. *Implementation status in 1st half of 2016 for Common Interface function*

In every country, the **Average Degree of Implementation (DI)** for the **Common Interface function** is calculated from the data provided by the companies responding the JSG survey in every country without applying any weighting factor. In addition, two different reference populations have been defined to better evaluate the different evolution of the implementation, one reference population is composed of the Infrastructure Managers and the second reference population is composed of the Railway Undertakings and Wagon Keepers. It means that an arithmetic mean of a series of degree of implementation provided by the companies belonging to one of these groups is calculated applying the formula below.

$$\text{Average DI} = \left(\sum_{i=1}^n \text{DI}(i) \right) / n ;$$

Where $\text{DI}(i)$ = Degree of Implementation declared by the company (i) starting freight transport activities or intending to develop it in the near future,

and n = number of companies reporting in a country.

The results lead to the attribution of a colour per country reflecting the average level of deployment in this particular country.

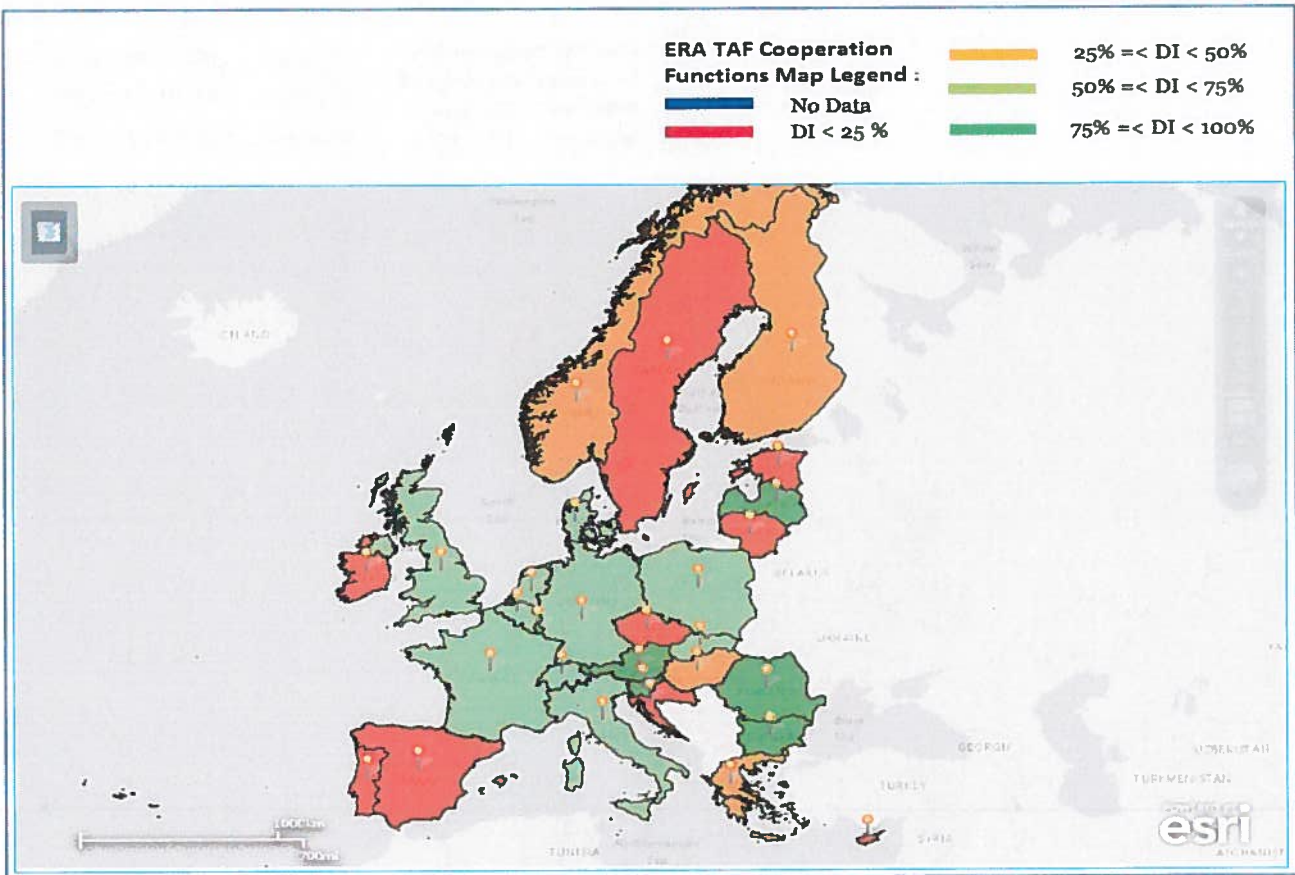


Figure 8: Common Interface function implementation for Railway Undertakings in January 2016.

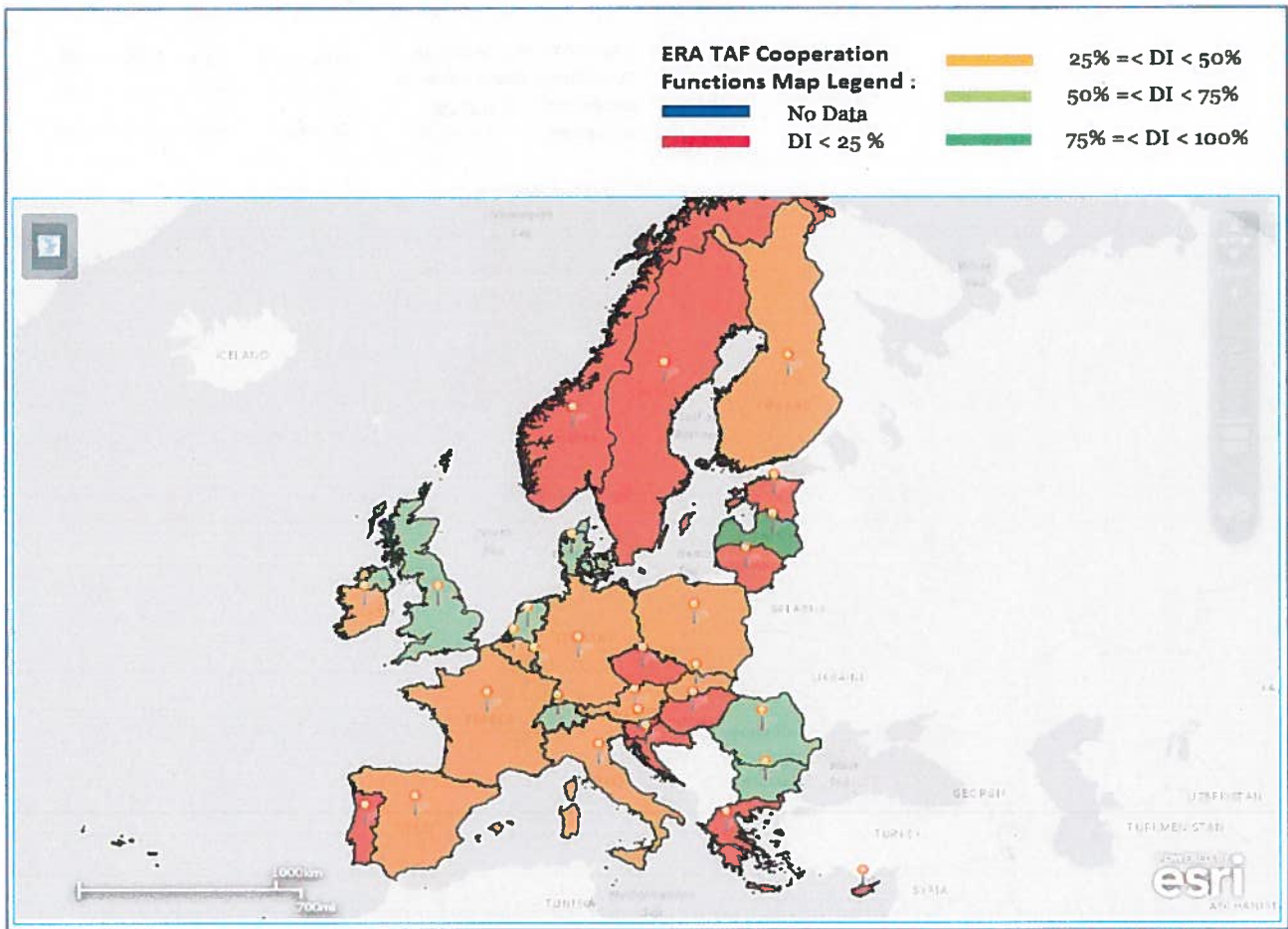


Figure 9: Common Interface function implementation for Railway Undertakings in June 2016.

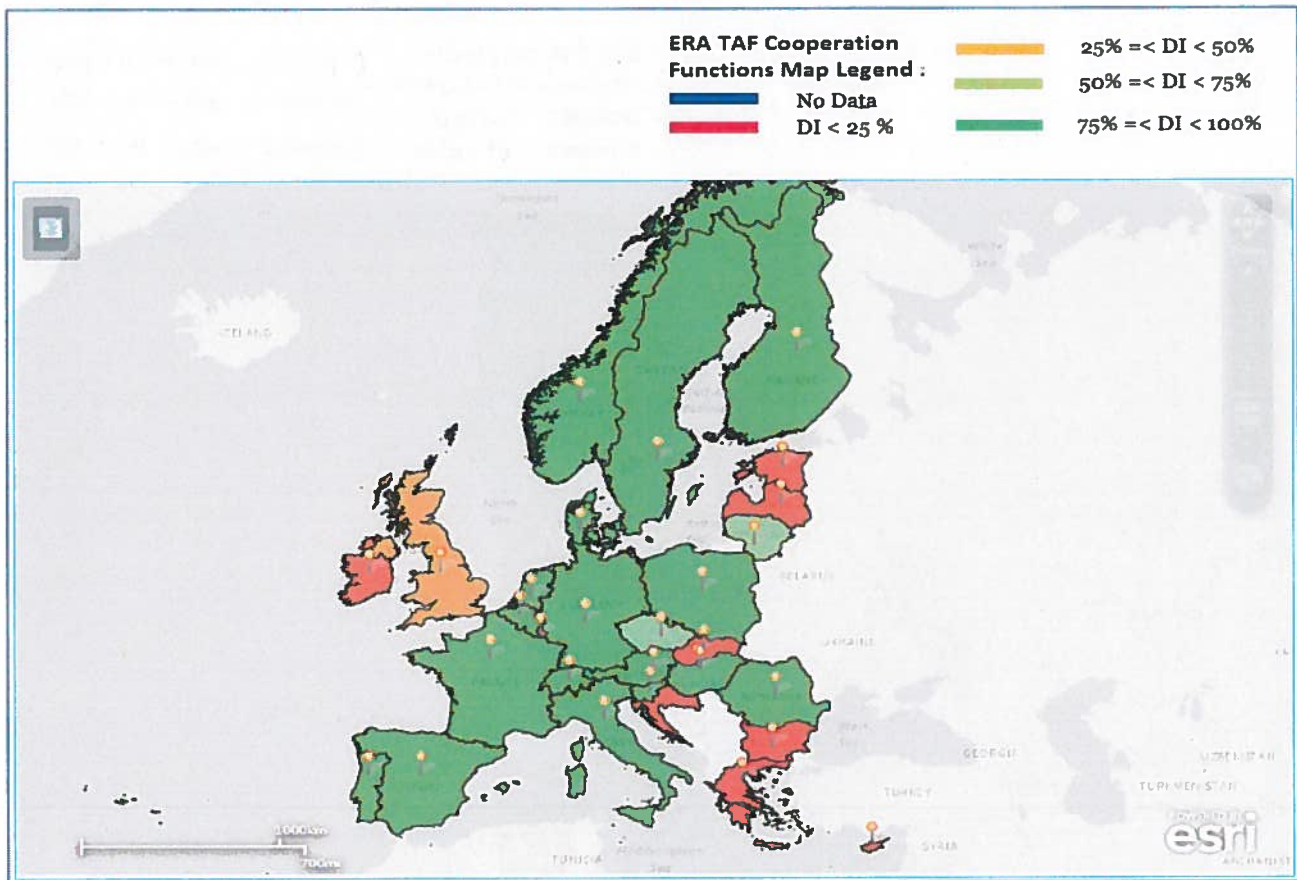


Figure 10: Common Interface function implementation for Infrastructure Managers in January 2016.

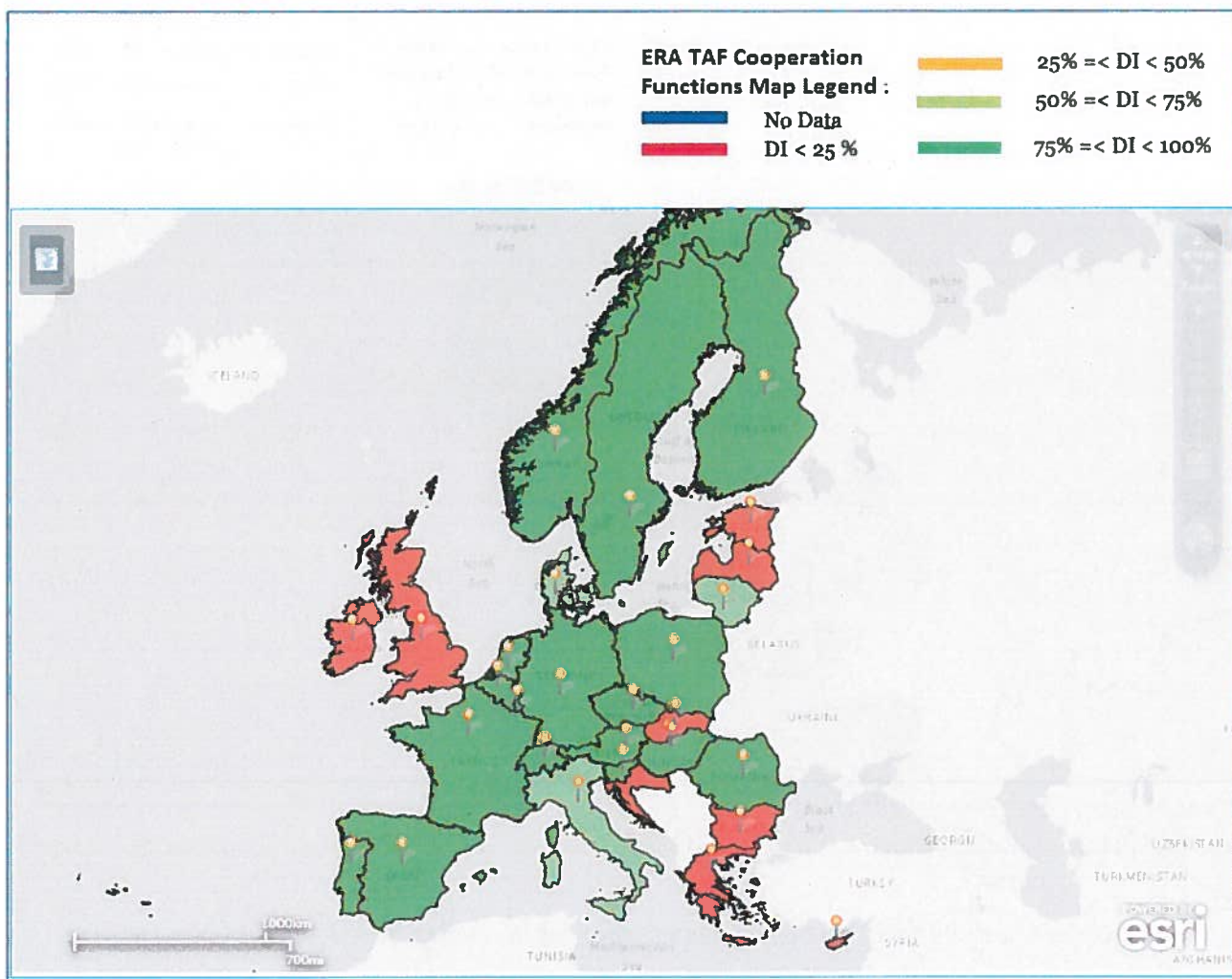


Figure 11: Common Interface function implementation for Infrastructure Managers in June 2016.

The raw data in the **Annex 1 “Maps and Implementation Data”** combined with the map published above shows that the majority of RUs is still deploying this function in the 1st half 2016, while above 80% of IMs have already finished the implementation of the Common Interface. The level of fulfilment reaches the value of **81%** for the Infrastructure Managers which responded to the survey (<http://www.era.europa.eu/tools/TAFTSI/Pages/Common-Interface-Function.aspx>), whereas for the Railway Undertakings the level of accomplishment is **27%** (<http://www.era.europa.eu/tools/TAFTSI/Pages/Common-Interface-Function.aspx>), because only 7 companies out of 58 Railway Undertakings responding the survey have implemented the Common Interface. The average level for the whole rail sector is **54% degree of implementation at European level for all companies having responded to the survey performed by JSG**. This means that at European level the deployment of this function is starting the “Planning Phase”, therefore, behind scheduled compared to the calendar committed by the rail sector in the TAF TSI Master Plan, **95% degree of implementation for the Railway Undertakings and 98% for the Infrastructure Managers**.

Whether this data is compared to the level of fulfilment reported in January 2016, we can observe some kind of stagnation of the level of implementation, **from 46% to 54% in June 2016**. This decline in the degree of

implementation can be partially explained by the fact that the number of responders has doubled and many of the new Railway Undertakings joining the TAF TSI implementation are not aware of the existence of Common Interface Function to exchange TAF TSI Compliant messages. Other companies argue that they cannot implement the Common Interface until their reference Infrastructure Manager (15 Infrastructure Managers out of 25 responders Infrastructure Managers have completely implemented the Common Interface in January 2016) has completed the implementation of the Common Interface. Within the Wagon Keepers the results are pretty similar to the performance shown by the Railway Undertakings, in such a way that only those wagon keepers members of RSRD2 are implementing the Common Interface.

To get more information concerning the companies, this data can be retrieved from the **Annex 1 “Maps and Implementation Data”**. Within this raw data provided by the companies, we have collected some observations from the companies. Some companies outlined that they don't envisage the use of **Common Interface Function** for domestic trains, because they will continue using proprietary interfaces for this traffic. Other Railway Undertakings stated that the implementation of the **Common Interface function** has not been accomplished due to budgetary constraints. Moreover, many companies argue as well the pricing of the Common Interface acts as a barrier to join the TAF TSI community.

4.1.4. Implementation status in 1st half of 2016 for Rolling Stock Reference Database function

In order to reflect the real progress of the implementation of the **Rolling Stock Reference Database function**, an overview at European Level showing the information concerning the deployment per country is considered as the most appropriate. Moreover, the value which reflects the real implementation of this function is the number of wagons stored in the Rolling stock Reference Databases set-up across Europe to fulfil the requirements quoted in the TAF TSI [2] Regulation.

Therefore, it was agreed in the 1st TAF TSI Implementation Cooperation Group meeting on 26 February 2015 to use as reference the number of wagons composing the complete fleet of wagons in Europe split down per country. In line with these assumptions, the data has been sorted in the following table estimating the percentage of wagons stored in a **Rolling Stock Reference Database**:

Country	Valid registrations VVR / Eurostat	Wagons In GCU	Wagons In RSRD (Data provided by RSRD ² – UIP) ⁷	Percentage Implementation ⁸
Austria	19.706	20.052	7.882	40%
Belgium	40.375	10.426	17.361	43%
Bulgaria	-	3.492	244	7%
Croatia		5.837	5	0%
Czech Republic	53.885	40.503	12.932	24%
Denmark	2.305	1	830	36%

⁷ The table has been updated with the data provided by UIP-RSRD².

⁸ Average per country based on the data provided by the companies on the JSG survey on 10th March 2016 (<http://www.era.europa.eu/tools/TAFTSI/Pages/RU-Rolling-Stock-Reference-Database.aspx>)

Country	Valid registrations VVR / Eurostat	Wagons In GCU	Wagons In RSRD (Data provided by RSRD ² – UIP) ⁷	Percentage Implementation ⁸
Estonia	-	0	0	0%
Finland	-	4	-	25%
Norway	-	0	0	0%
France	113.261	77.319	53.232	47%
Germany	102.778	168.866	100.722	60%
Greece	4.094	0	2.047	50%
Hungary	12.918	11.649	646	5%
Ireland	-	0	0	0%
Italy	44.482	26.519	31.137	70%
Latvia	11.210	0	8.676	77,4%
Lithuania	-	0	0	0%
Luxembourg	4.216	2.966	8432	50%
Netherlands	21.957	18.058	7.026	32%
Poland	109.165	70.435	22.924	21%
Portugal	3.379	6	206	6%
Romania	24.076	14.561	963	4%
Slovakia	33.359	24.279	24.352	73%
Slovenia	3.767	3.468	54	2%
Spain	12.760	18.131	4.014	31%
Switzerland	27.398	17.211	13.425	49%
Sweden	12.760	8.820	4.083	32%
United Kingdom	-	616	-	23%

Table 2 : Degree of Implementation per country of the Rolling Stock Reference Database function.

Furthermore, in order to define a reference population, the Agency has decided for those countries where there is no data concerning the number of wagons in NVR register to use as reference the GCU (General Contract for Use of Wagons) register as a reference. The data concerning the number of wagons are stored in GCU (<http://www.gcubureau.org/wagons>). Moreover, due to the need of having a visualization of this data and applying the same process that it has been applied for the above functions, this information has been uploaded in a Geographical Information System (GIS) obtaining the following map of Europe representing the implementation of this function at European level:

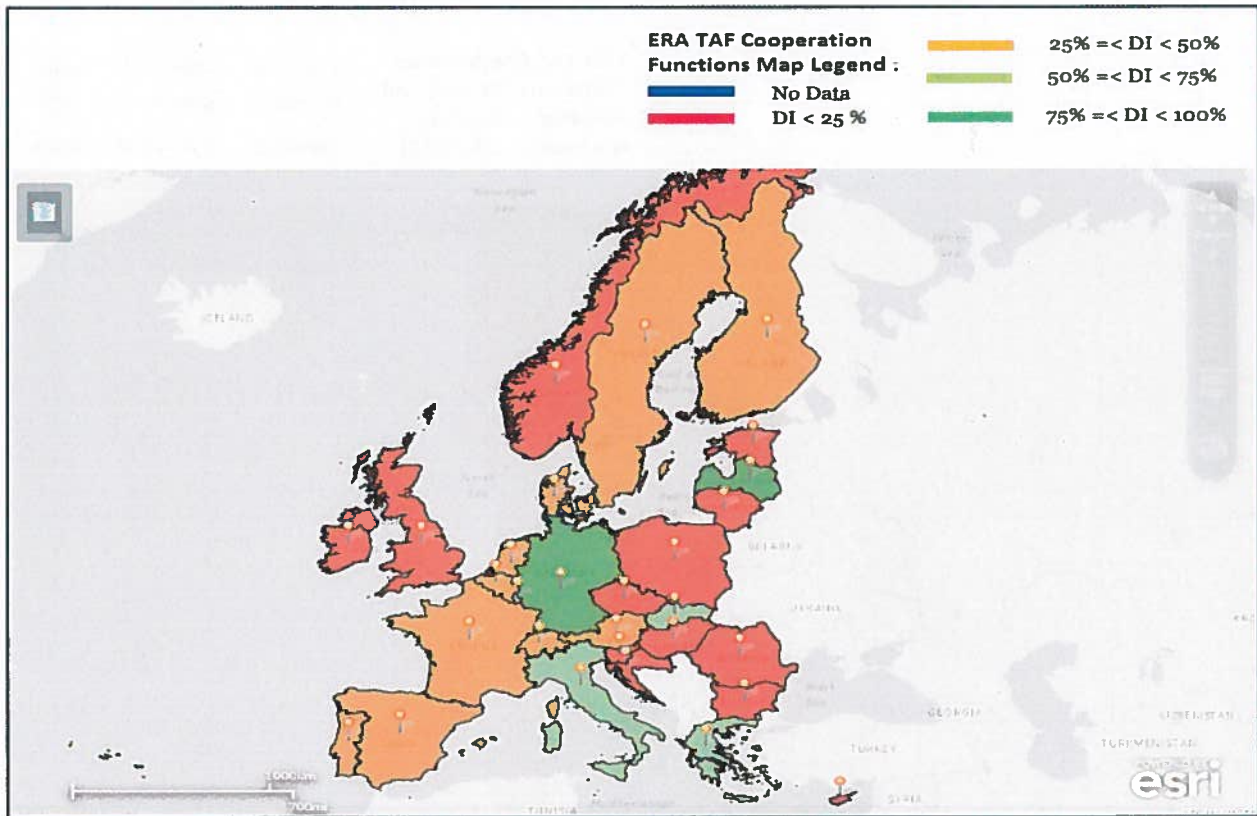


Figure 12: Rolling Stock Reference Database function implementation in January 2016.

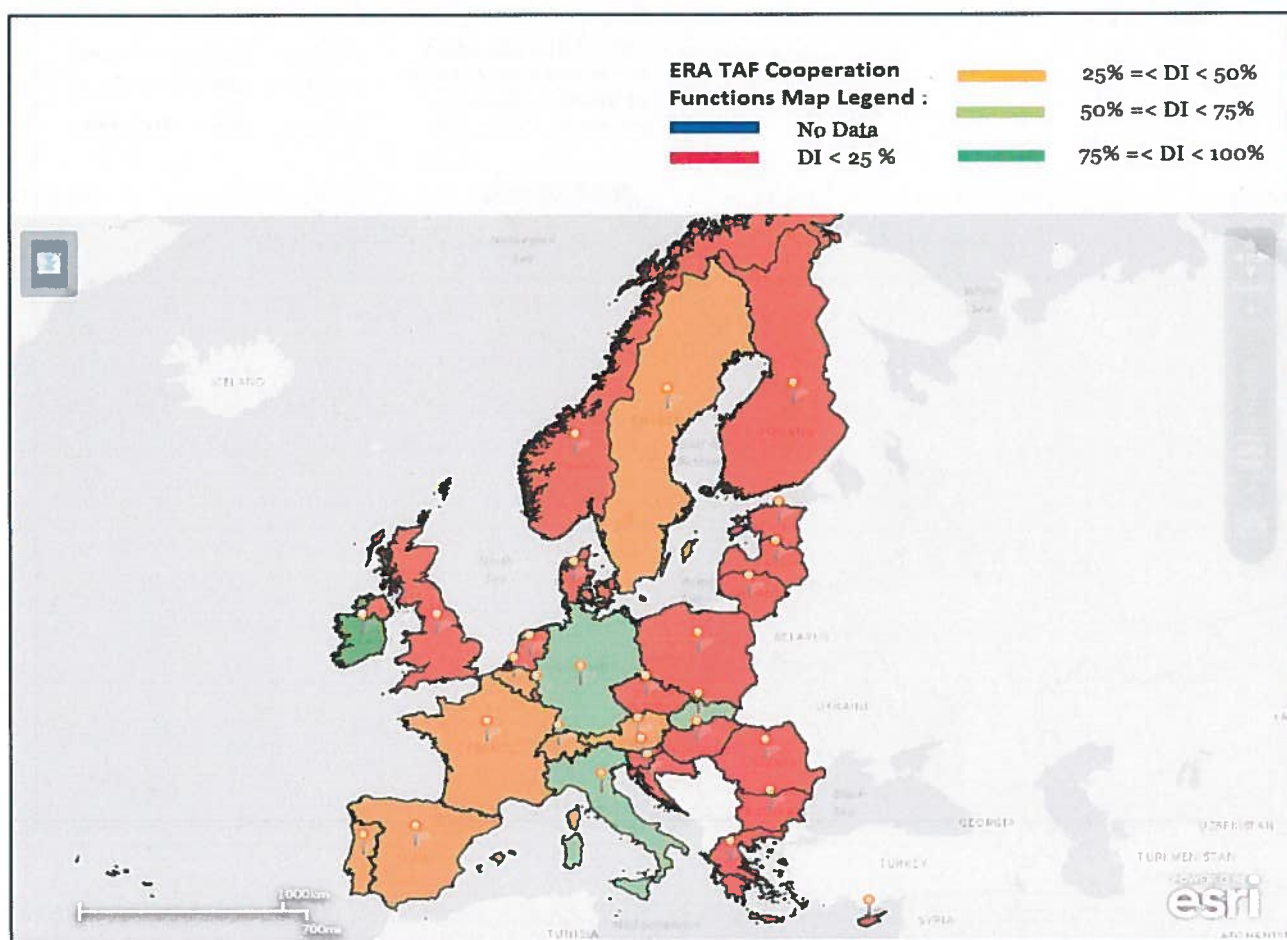


Figure 13: Rolling Stock Reference Database function implementation in June 2016.

The map shows that in the 1st half of 2016 some Wagon Keepers and Railway Undertakings have already completed the implementation of the Rolling Stock Reference Database function. Indeed, the arithmetic average degree of implementation at European level is 39% (<http://www.era.europa.eu/tools/TAFTSI/Pages/RU-Rolling-Stock-Reference-Database.aspx>). This means that at European level the deployment of this function has reached, in average, the "Planning Phase" (Resource Planning, Project Work Planning (Working Break Down Structure), Migration Planning, Outsourcing Plan and Risk Management Planning). Thus, most of the countries are displayed in average on red or orange colour on the map, with some exceptions, where the level of implementation is more advanced. In particular, the dark green colour in Latvia and in Germany means that in these two countries most of the companies have already "in production" a database implementing this functionality. A level of fulfilment corresponding to the "Executing Phase" can be observed in Greece, Luxembourg, Italy and Slovakia, where the companies declared starting the phase of procurement and testing of the IT system deploying this functionality. Moreover, in an increasing number of countries like France, Belgium, Switzerland, Austria, Sweden, Spain, The Netherlands and Finland some companies are already facing the "Planning Phase", displayed on orange colour on the map.

To get more information concerning the performance of a particular company, this data can be retrieved from the Annex 1 "Maps and Implementation Data". The data has been supplied by JSG and the European association of private wagon keepers, UIP. In particular the data concerning the deployment of the RSRD²

database to fulfil the requirements of the **Rolling Stock Reference Database function** are provided by UIP. For these companies using this tool, the data stored in RSRD² is complete wagon data sets (mandatory data) therefore, data completeness is 100% ensured for recorded wagons. These figures do not cover keepers having indicated that they will use RSRD² but which are currently in a stage of collecting required wagon data or preparing the interface to RSRD².

The degree of implementation shows a consolidated growth compared to the 30% quoted in the previous report issued in June 2016 (3rd Status Implementation report (3)). Nevertheless, the delay persist in comparison with the **target Implementation Milestone for realisation of the RSRD function** according to the TAF TSI Master Plan (1), 2015. However, this does not mean that no company has implemented this function, since only the average data is displayed on the map. Indeed, 57 European companies out of 74 companies responding the survey declared to have this functionality in place realised with the RSRD² tool. Therefore, taking as reference population only the companies participating in the reporting the level of fulfilment reaches 81%.

4.1.5. Implementation status in 1st half of 2016 for Train Running Information Function

In order to have a better view of the real situation about the implementation of the **Train Running Information Function** in the 1st half 2016, the implementation data will be shown in different maps for Railway Undertakings and Infrastructure Managers:

- One map to show the realisation level of the **Train Running Information Function** at network level by the Infrastructure Managers (IMs) at country level. This information corresponds to the data provided by 25 Infrastructure Managers (almost 90% of the market in terms of track-kms).
- A second map to show the deployment of the **Train Running Information Function** by the Railway Undertakings (RUs) at country level. The values provided by the Railway Undertakings have been weighted to reflect the market share of these companies in their national rail market. This data is based on the response provided, by 56 Railway Undertakings, representing approximately 80% of the market share for RUs in terms of tonne-kms.

To better estimate the degree of implementation, the information provided by the rail companies is compared in both cases with the milestones prescribed in the TAF TSI Master Plan (1). The weighting factor used to weigh the RUs declared data in the JSG survey is based on the figures stated in the report "**Fourth report on monitoring development in the rail market**" issued by the European Commission in June 2014, where **Annex 19** provides the figures concerning "Market shares of railway undertakings (2011-2012)". While for the Infrastructure Managers a Weighting Factor is not yet used in this report. However, in upcoming reports a Weighting Factor will be applied to the degree of implementation declared by the Infrastructure Managers, based on the ratio of track-kms managed by the concerned Infrastructure Manager divided by the total track-kms in the country.

Regarding the Railway Undertakings, an addition of a series of degree of implementation weighted by a Weighting factor is calculated using the following formula:

$$\text{Average DI} = \sum_{i=1}^n DI(i) \times WF(i) ;$$

Where $DI(i)$ = Degree of Implementation declared by the company (i) starting freight transport activities or intending to develop it in the near future,

$WF(i)$ = Weighting Factor for company (i) based on “**Fourth report on monitoring development in the rail market**” issued by the European Commission in June 2014,

and n = number of companies reporting in a country.

Concerning the Infrastructure Managers an arithmetic mean of a series of degree of implementation is calculated using the following formula:

$$\text{Average DI} = (\sum_{i=1}^n DI(i)) / n ;$$

Where $DI(i)$ = Degree of Implementation declared by the Infrastructure Manager (i),

and n = number of Infrastructure Managers reporting in a country.

The results lead to the attribution of a colour per country reflecting the average level of deployment in this particular country. Therefore, two sets of maps with the implementation levels are displayed:

- Evolution of the level of implementation of the function “**Train Running Information**” for the Infrastructure Managers in the 3rd and 4th implementation reports (January 2016 and June 2016).
- Evolution of the level of implementation of the function “**Train Running Information**” for the Railway Undertakings in the 3rd and 4th implementation reports (January 2016 and June 2016).

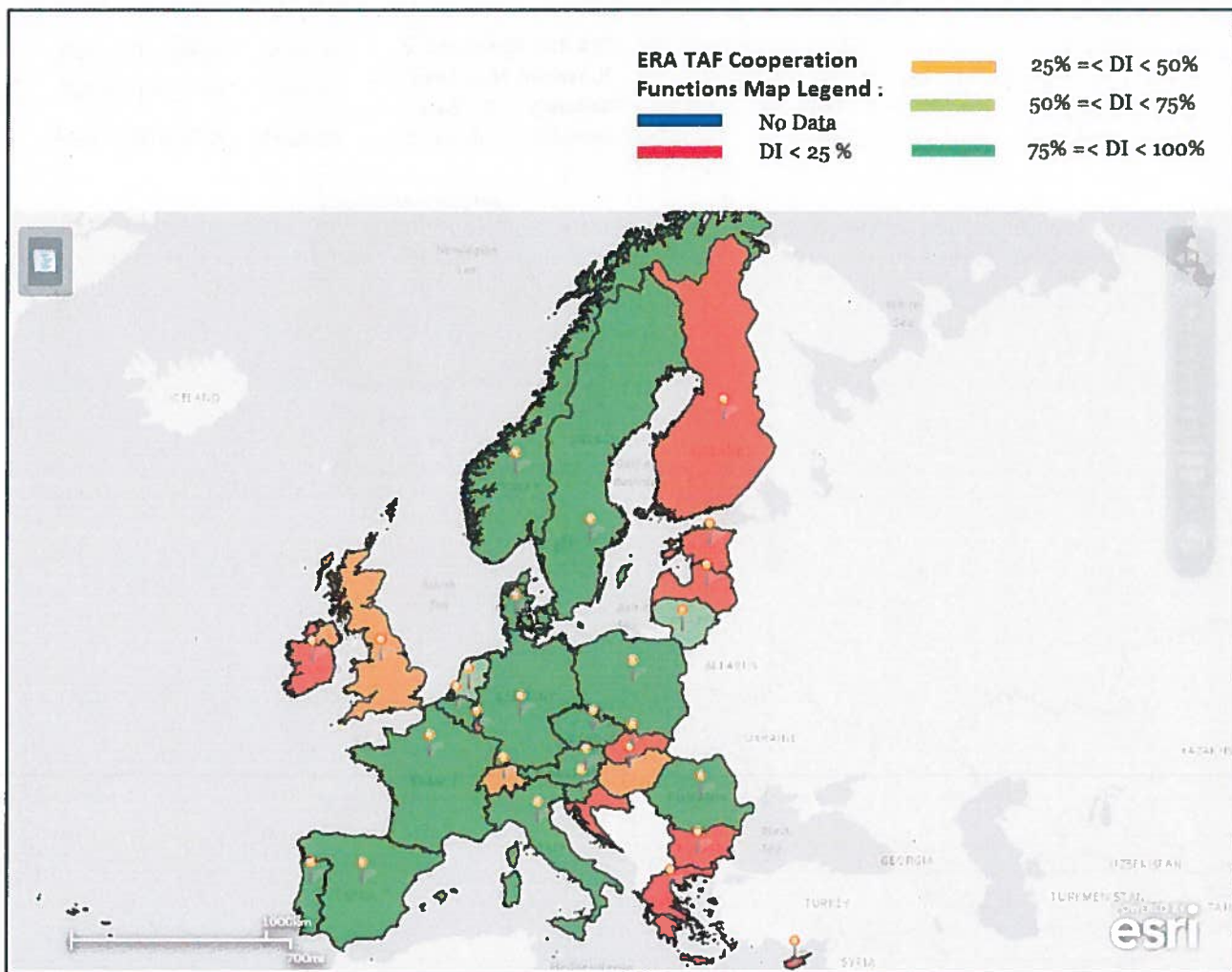


Figure 14: Train Running Information Function implementation for Infrastructure Managers in January 2016.

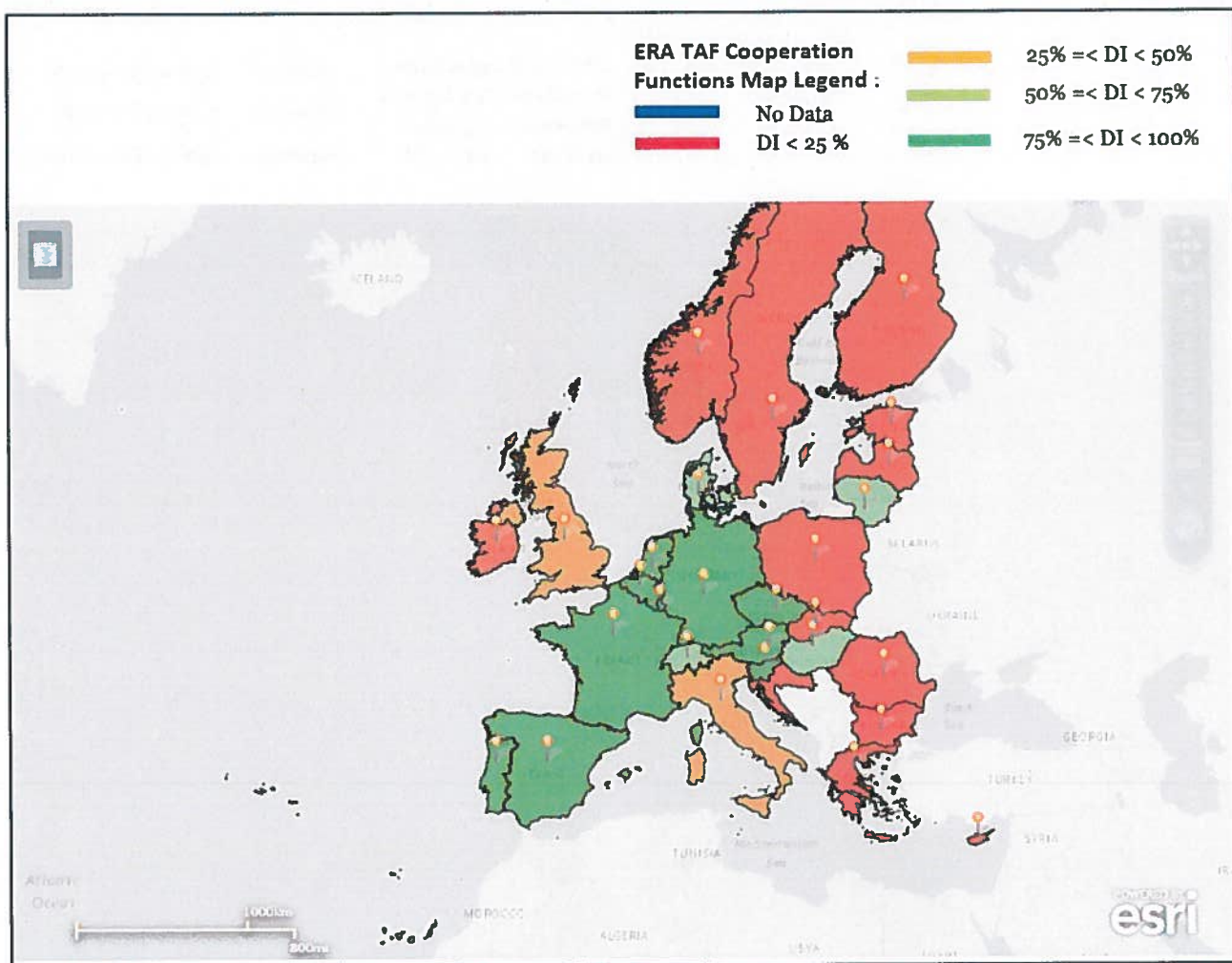


Figure 15: Train Running Information Function implementation for Infrastructure Managers in June 2016.

The data published on the Annex 1 “Maps and Implementation Data” combined with the map published above shows that in in the 1st half 2016 the majority of the **Infrastructure Managers** have already started the deployment of this function having reached a degree of implementation of **81%** (<http://www.era.europa.eu/tools/TAFTSI/Pages/IM-Train-Running-Function.aspx>). Therefore, the IMs are quite advanced in the deployment of this key TAF function because they are already in average in the Executing Phase.

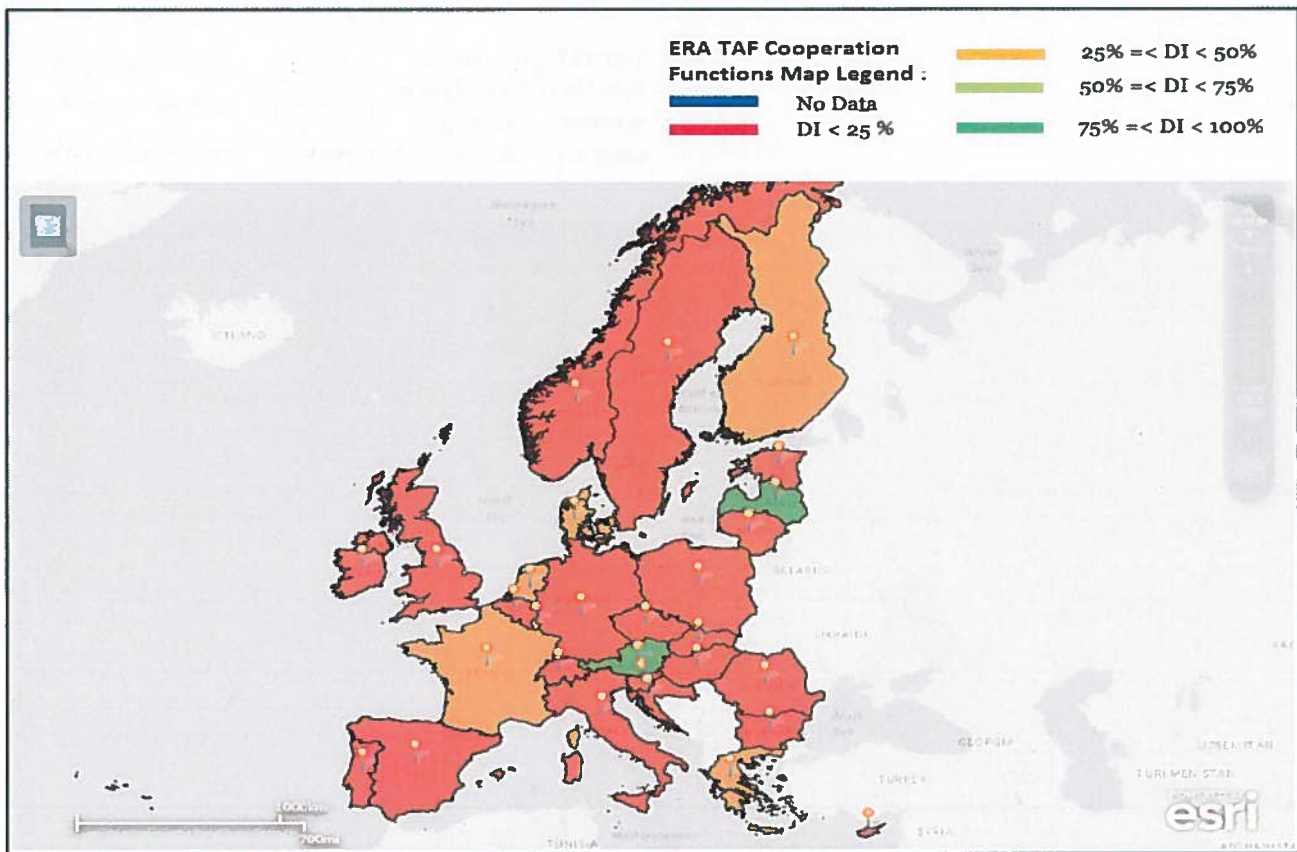


Figure 16: Train Running Information Function implementation for Railway Undertakings in January 2016.

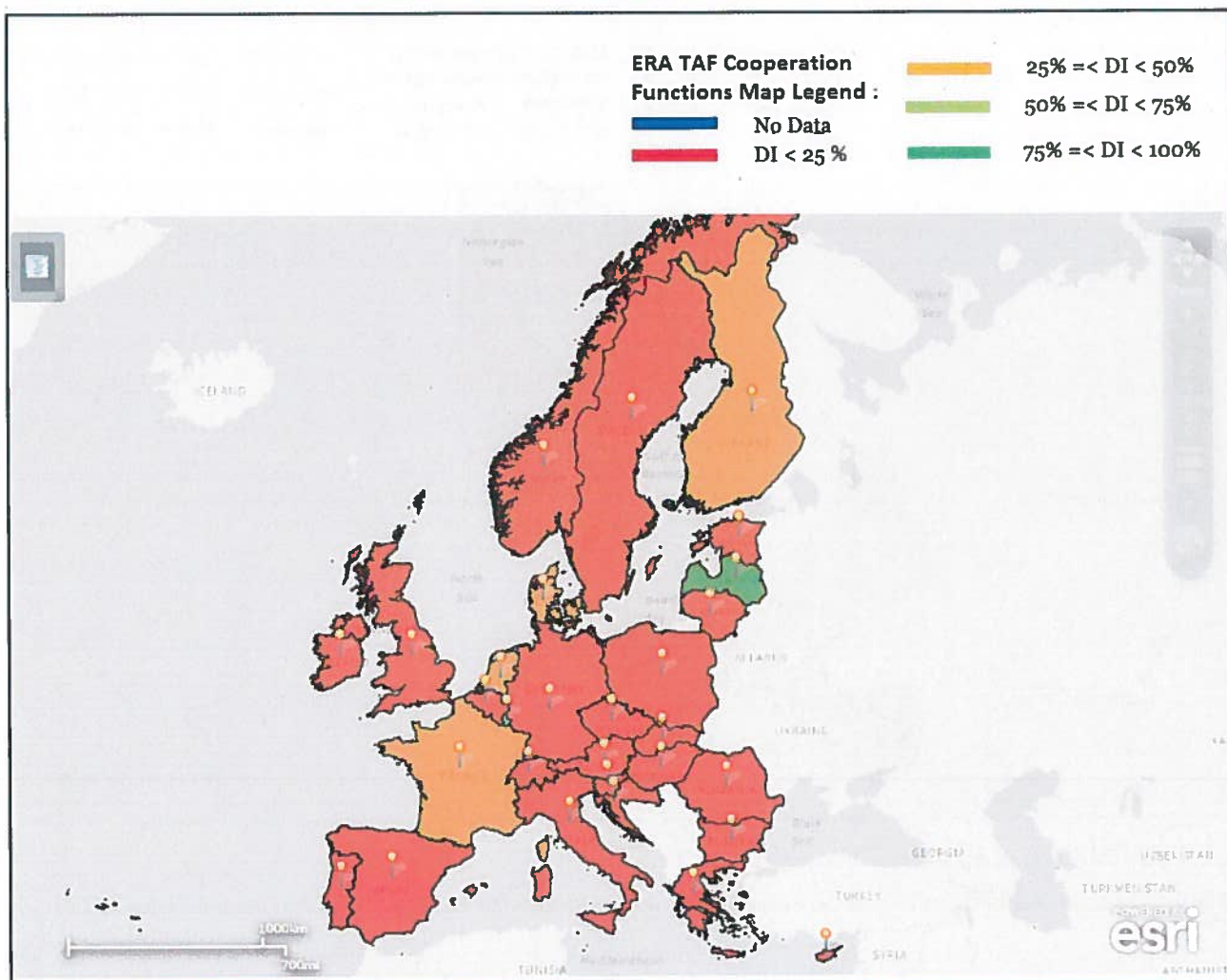


Figure 17: Train Running Information Function implementation for Railway Undertakings in June 2016.

Moreover, concerning the **Railway Undertakings**, the weighted level of implementation is lower compared to the IMs, in particular the degree of implementation of the companies responding the online JSG questionnaire is **11%** (<http://www.era.europa.eu/tools/TAFTSI/Pages/RU-Train-Running-Function.aspx>), having the same level of fulfilment reached in the 1st half 2016, **11%**.

The average level for the whole rail sector is **46%** degree of implementation at European level for all companies having reported. This means that at European level the deployment of this function is reaching in still at the “Planning Phase”.

In every country, the average level of deployment is calculated from the data provided by the companies responding the JSG survey in that country, thus this average defines the colour attributed to a particular country.

To get more information concerning the companies, this data can be retrieved from the **Annex 1 “Maps and Implementation Data”**. Within this raw data provided by the companies, we have collected some observations from the companies. In most of the cases the companies are testing **Train Running function** with pilot projects. Moreover, the companies agreed in the context of the Telematics Cluster TAF on the 1st of July 2015 in Vienna that the stakeholder IM & RU only reported the Train Running Information Message.

Beyond this, many infrastructures managers quoted in the JSG survey that Train running information is being sent through RNE TIS system and only for international traffic. Moreover, some of them stressed that they will be able to exchange these messages subject to the availability of the Common Interface in production or even without using such a tool. This brings positive inputs to the Railway Undertakings in order to move forward in the implementation of this functionality, because for them the delivery of this message using TAF TSI compliant format depends on the implementation schedule of their reference Infrastructure Managers and they envisage its use for international traffic.

4.1.6. Implementation status in 1st half of 2016 for Wagon and Intermodal Unit Operational Database (WIMO) Function

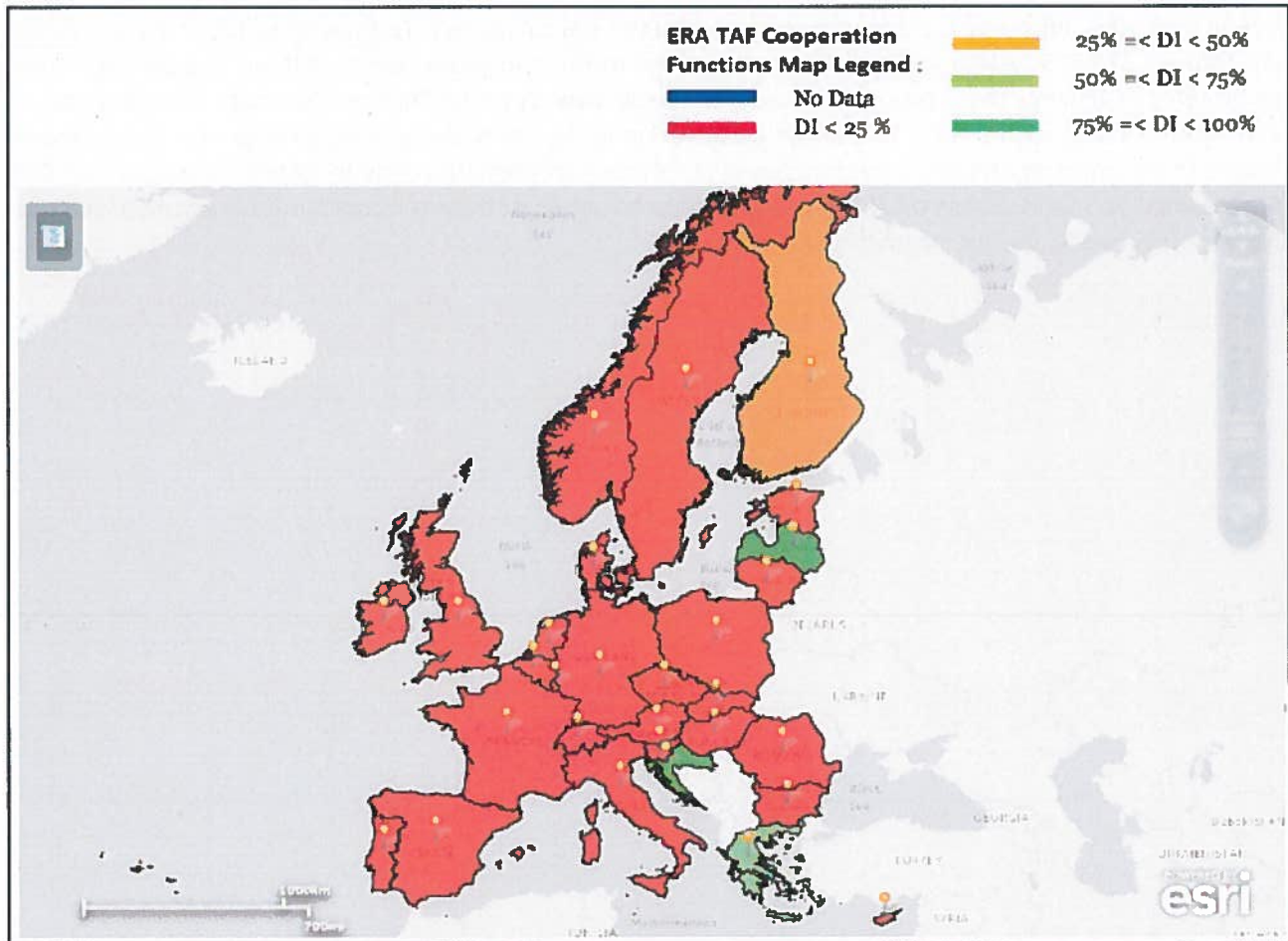


Figure 18: Wagon and Intermodal Unit Operational Database (WIMO) Function implementation for Railway Undertakings in January 2016.

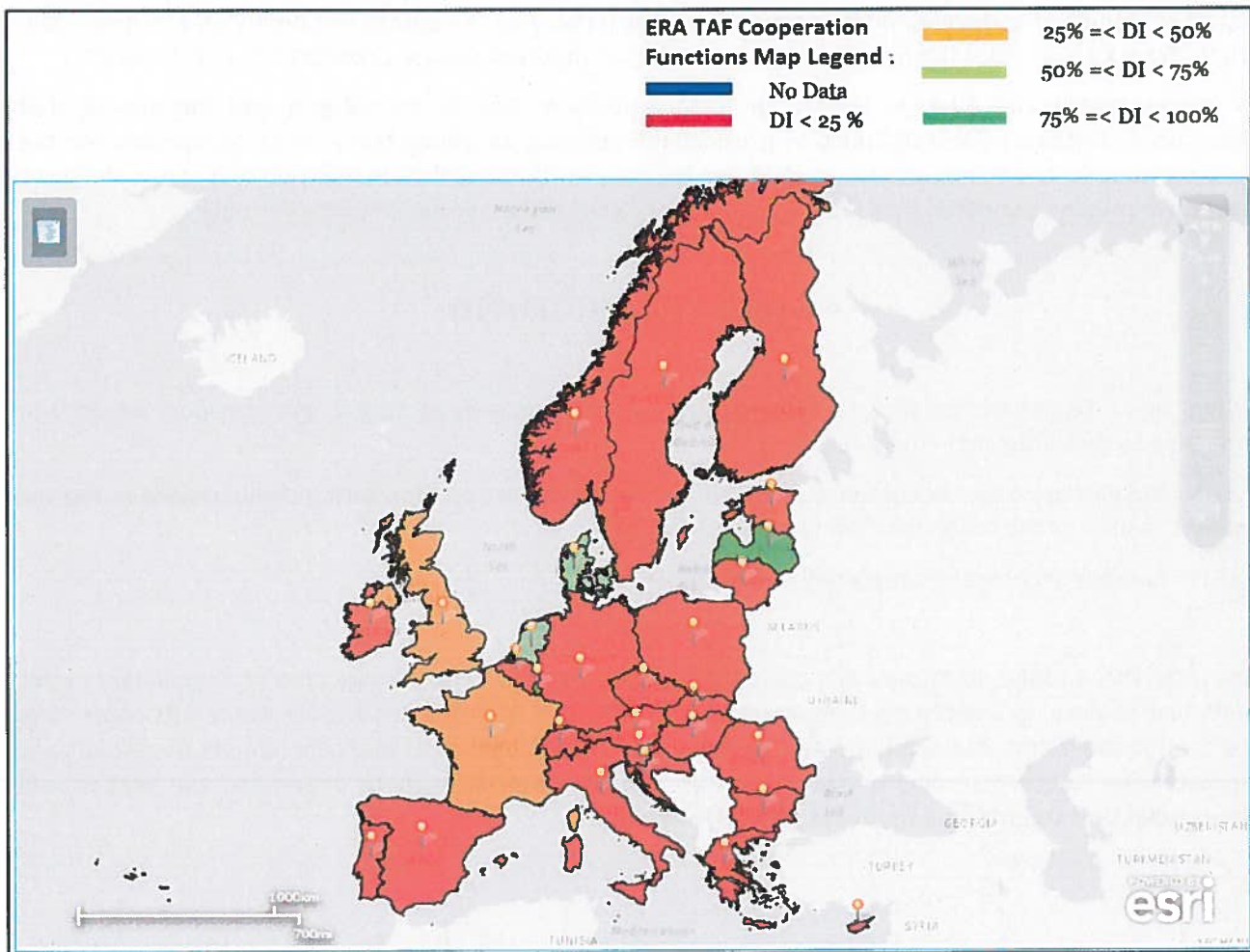


Figure 19: Wagon and Intermodal Unit Operational Database (WIMO) Function implementation for Railway Undertakings in June 2016.

The **Wagon and Intermodal Unit Operational Database (WIMO) Function** is a function to be implemented **only by Railway Undertakings**. Therefore, the map shows that in the 1st half of 2016 the Railway Undertakings have already started the implementation of the **Wagon and Intermodal Unit Operational Database (WIMO) Function**, reaching a **degree of implementation of 15 %** (<http://www.era.europa.eu/tools/TAFTSI/Pages/RU-WIMO-Function.aspx>) for the companies having answered to the survey performed by the JSG. The degree of implementation has slightly increased compared to the **7%** of the survey performed in January 2016. This means that at European level the deployment of function is in the “Initiating Phase” and it could already be considered in delay compared to the target implementation milestone for realisation of the WIMO function according to the TAF TSI Master Plan (1), the year 2016. Thereby, there is a high risk of not meeting the deadline committed by the companies in the TAF TSI Master Plan (1). For this reason the Agency and the JSG are mandated by the TAF TSI Steering Committee to better define the compliance with TAF TSI provisions for this particular function.

The baseline to compare the data declared by the Railway Undertakings to better estimate the degree of fulfilment is the TAF TSI Master Plan (1), where the milestones for the implementation of this functionality are established. The weighting factor used for the RUs is based on the figures stated in the report “**Fourth**

report on monitoring development in the rail market” issued by the European Commission in June 2014, where **Annex 19** provides the figures concerning “Market shares of railway undertakings (2011-2012)”.

In every country, the **Average Degree of Implementation (DI)** for the **Wagon and Intermodal Unit Operational Database (WIMO) Function** is calculated applying weighting factor (WF) per company to the data provided by the companies responding the JSG survey. It means that an addition of a series of degree of implementation pondered by a Weighting factor is calculated using the following formula:

$$\text{Average DI} = \sum_{i=1}^n \text{DI}(i) \times \text{WF}(i) ;$$

Where DI(i) = Degree of Implementation declared by the company (i) starting freight transport activities or intending to develop it in the near future,

WF(i) = Weighting Factor for company (i) based on “**Fourth report on monitoring development in the rail market**” issued by the European Commission in June 2014,

and n = number of companies reporting in a country.

The results lead to the attribution of a colour per country reflecting the average level of deployment in this particular country. In addition to these results, the companies have provided some comments concerning the tools in use for the deployment of this functionality. In particular, most of the incumbent former Railway Undertakings stated that they are using or they will use RAILDATA-ISR to implement the **Wagon and Intermodal Unit Operational Database (WIMO) Function**.

4.1.7. Evolution of RU-IM functions per corridor in 1st half of 2016

In line with the agreements reached in the Kick-Off meeting of the TAF TSI Implementation Co-operation Group, this report includes information concerning the implementation of RU-IM Communication functions per corridor. In particular, this report contains the degree of implementation per corridor for the Train Running Information Function. The data displayed on the map for the corridors is obtained from the data delivered by the Infrastructure Managers for the implementation of Train Running Information Function.

The level of implementation for every corridor is the same as the level of deployment in the country where the corridor is located. That means that the degree of implementation corresponds to the same level shown in the map summarising the level of implementation in chapter 4.1.5. “Implementation status in 1st half of 2016 for Train Running Information Function”.

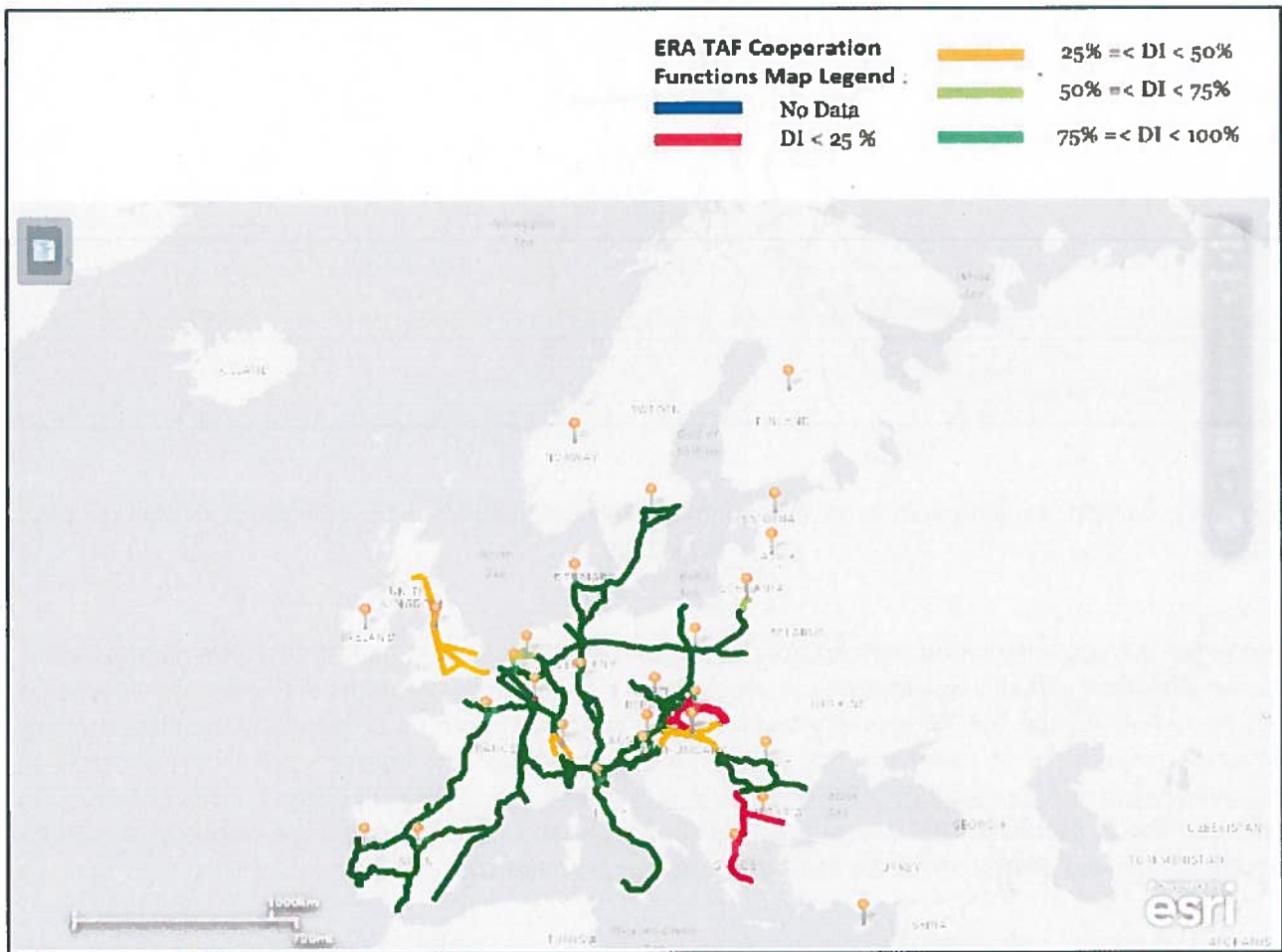


Figure 20: Corridor implementation of Train Running Information Function for Infrastructure Managers in January 2016.

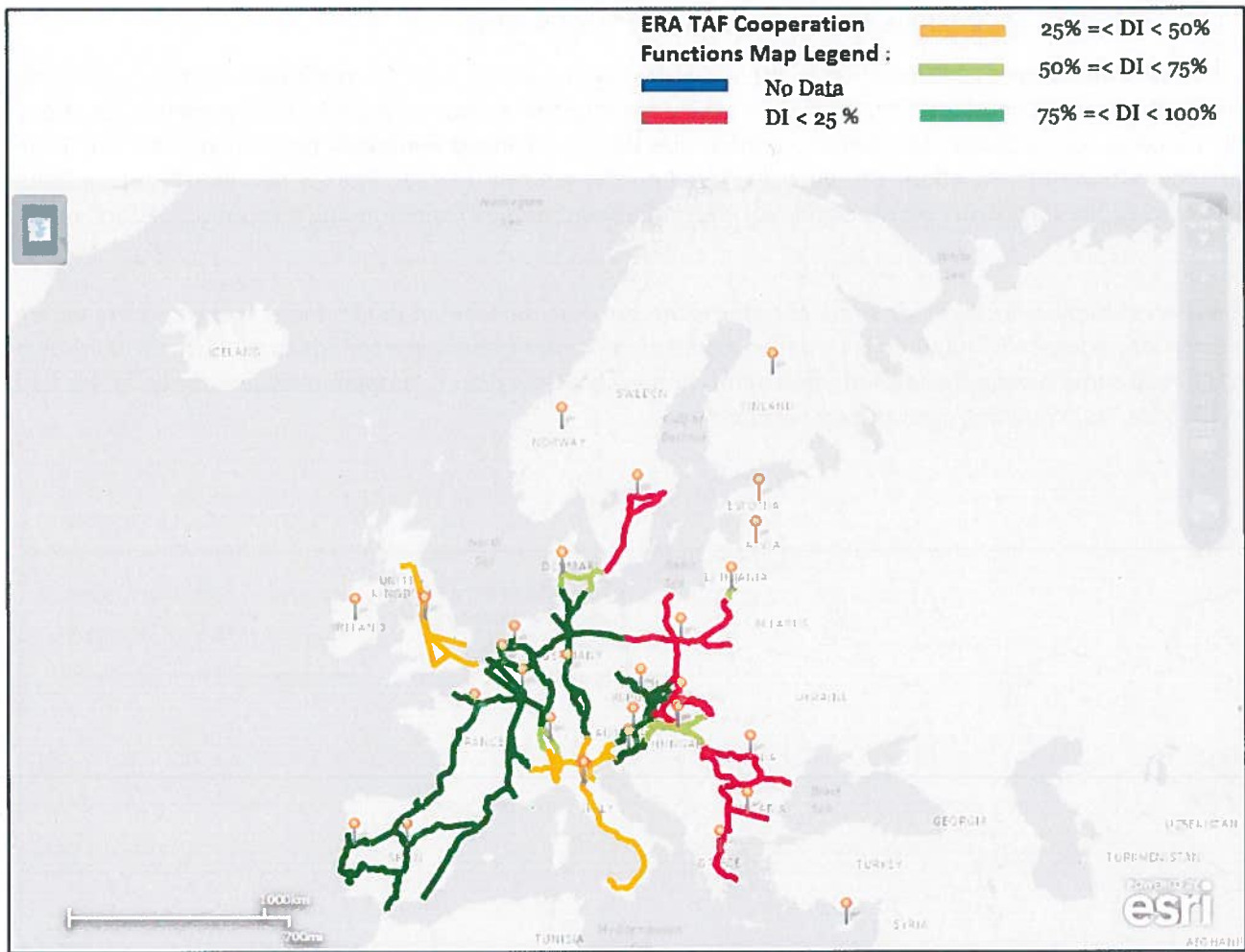


Figure 21: Corridor implementation of Train Running Information Function for Infrastructure Managers in June 2016.

Comparing the implementation per corridors in the 2nd half 2015 and 1st half of 2016, we can observe a positive evolution, in such a way that we can conclude that in most of the corridors defined by the Regulation (EU) No 1316/2013 the TAF TSI Message Train Running Information can be delivered by the Infrastructure Managers responsible of every corridor section under request of the concerned Railway Undertaking (<http://www.era.europa.eu/tools/TAFTSI/Pages/IM-Cor-Train-Running-Function.aspx>). Nevertheless, in some sections of corridors RFC2 (North Sea Mediterranean) and RFC7 (Orient) more resources should be allocated in the mid-term to meet the implementation target milestone in 2017.

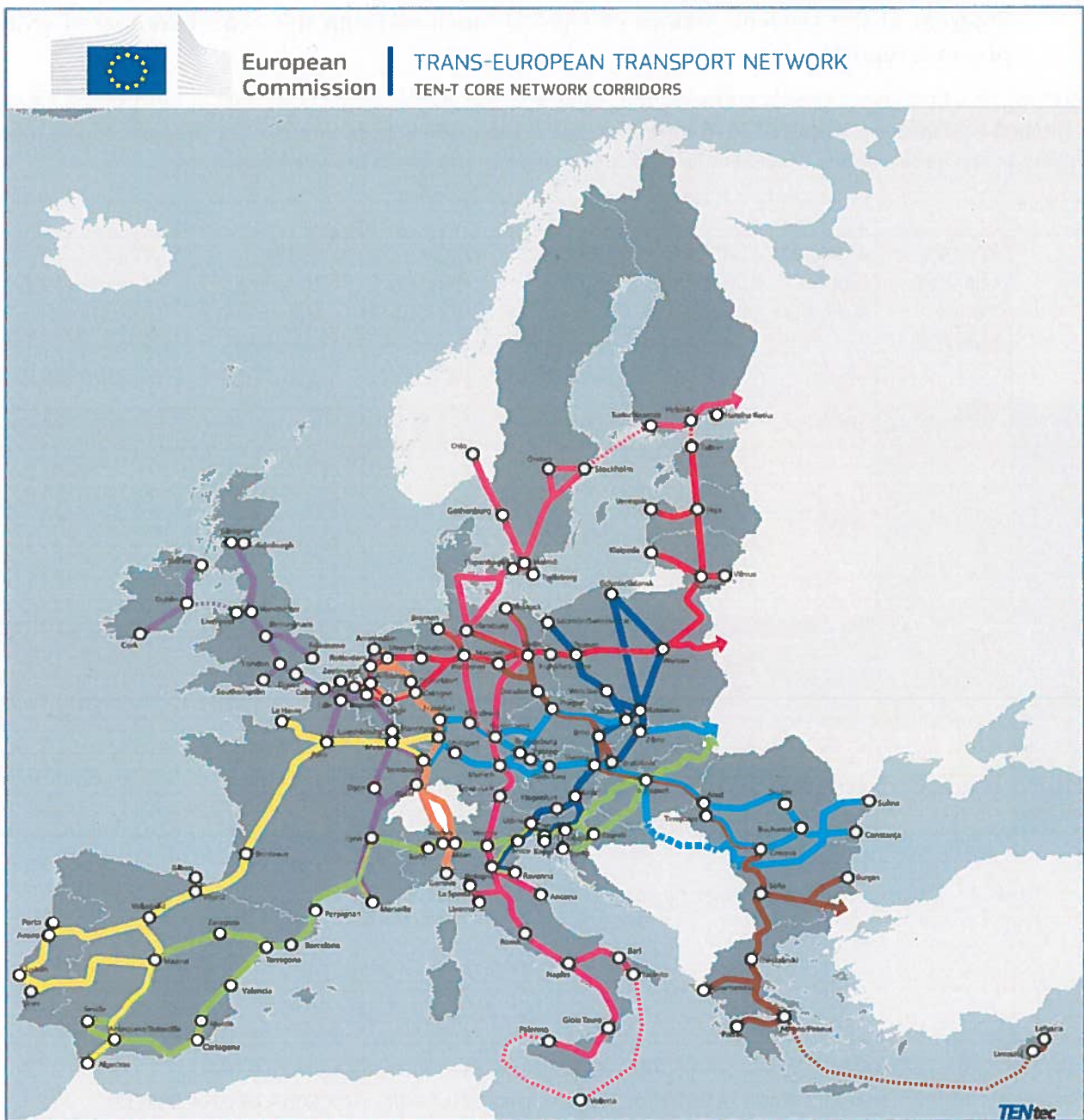


Figure 22: Rail Freight Network Corridors defined by Regulation (EU) No 1316/2013.

5. Progress of the Implementation of TAF TSI functions from this report compared with previous reports

Therefore, at a first glance the target milestones quoted in the Master Plan (1) are met in most of the cases for the first functions by 1st half of 2016. However, the comparison with previous Status Reports shows that contrary to the expectations the level of accomplishment has stagnated for some functions:

	Primary Location Codes Function	Company Codes Function	Common Interface Function	Rolling Stock Reference Database Function	Train Running Information Function (IM)	Train Running Information Function (RU)	Wagon and Intermodal Unit Operational Database Function (RU)
1st Status Report	86%	88%	63%	7%	0	0	0
2nd Status Report	93%	61%	56%	17,28%	59,07%	24,2%	11,28% ⁹
3 rd Status Report	86% [100%] ¹⁰	69% [100%] ¹¹	46% [97%] ¹²	29,6% [76%] ¹³	63% [62%] ¹⁴	11% [33%] ¹⁵	7% [39%] ¹⁶
4 th Status Report	81% [100%] ¹⁷	63% [100%] ¹⁸	54% [100%] ¹⁹	39,5% [100%] ²⁰	81% [62%] ²¹	11% [33%] ²²	15% [39%] ²³

Table 3 : Summary of the degree of implementation along the three reports of implementation.

⁹ Light red color indicates a negative trend, while light green one indicates a positive one.

¹⁰ Target Implementation Milestone in 2015 for Primary Location Codes Function - Master Plan (1)

¹¹ Target Implementation Milestone in 2015 for Company Codes Function - Master Plan (1)

¹² Target Implementation Milestone in 2015 for Common Interface Function - Master Plan (1)

¹³ Target Implementation Milestone in 2015 for Rolling Stock Reference Database Function - Master Plan (1)

¹⁴ Target Implementation Milestone in 2015 for Train Running Information Function (IMs) - Master Plan (1)

¹⁵ Target Implementation Milestone in 2015 for Train Running Information Function (RUs) - Master Plan (1)

¹⁶ Target Implementation Milestone in 2015 for Wagon and Intermodal Unit Operational Database Function - Master Plan (1)

¹⁷ Target Implementation Milestone in 2015 for Primary Location Codes Function - Master Plan (1)

¹⁸ Target Implementation Milestone in 2015 for Company Codes Function - Master Plan (1)

¹⁹ Target Implementation Milestone in 2015 for Common Interface Function - Master Plan (1)

²⁰ Target Implementation Milestone in 2015 for Rolling Stock Reference Database Function - Master Plan (1)

²¹ Target Implementation Milestone in 2015 for Train Running Information Function (IMs) - Master Plan (1)

²² Target Implementation Milestone in 2015 for Train Running Information Function (RUs) - Master Plan (1)

²³ Target Implementation Milestone in 2015 for Wagon and Intermodal Unit Operational Database Function - Master Plan (1)

Thus, different trends can be observed:

- For some functions we can observe a clear situation of stagnation over two reporting sessions, yellow colour, this is the case for Primary Location Codes, Company Codes and Train Running Information Function when it is implemented by the Railway Undertakings.. This evolution may be partially justified because the reporting population has not increased and therefore the statistics may not reflect well the real situation.
- Bearing in mind that the implementation of the Rolling Stock Reference Database Function was scheduled by end 2015, the gathered data confirmed in the 1st half 2016 an insufficient progress for the implementation of this function. However, the level of fulfilment has significantly improved due to the effort made by the companies in the 1st half 2016 to cope with the delay. Thereby, the colour assigned is green, to reflect such a positive evolution in comparison with previous reports. Nevertheless, there is still an issue regarding the deployment of this functionality and this is currently treated in the context of the Agency TAF TSI Implementation Cooperation Group and the TAF TSI Steering Committee.
- Concerning the deployment of the Common Interface, it can be outlined that there is a clear stagnation of the implementation. This remark is endorsed with the comments provided by the companies, in particular by some Railway Undertakings, questioning the usefulness of the Common Interface and moreover manifesting that they are mostly not aware of the TAF TSI requirements concerning this tool.
- Regarding the Company Codes Function, the evolution over the last three reports shows a clear stagnation. Indeed, this result is substantiated by the fact companies stated that they do not know the procedure to get a company code or simply they consider that the procedure in place is not fair enough with newcomers due to the existence of fees to be paid to the allocation body. That is the argument to attribute to this function a yellow colour. However, the evolution of this function is under surveillance in the Agency TAF TSI Implementation Cooperation Group.
- In contrast, the warning already raised in previous implementation reports for the function Wagon and Intermodal Unit Operational Database Function to be realised by the Railway Undertakings is confirmed with the results of the 4th Reporting campaign and therefore some measures to mitigate the risk of not realisation are being discussed in the frame of the Agency TAF TSI Implementation Cooperation Group.
- Finally, the comparison between the different implementations reports ensures that the implementation of the Primary Location Codes has been achieved meeting the milestones of the Master Plan. Beyond this, the positive trend observed for Train Running Information guarantees as well that the implementation deadline will be met.

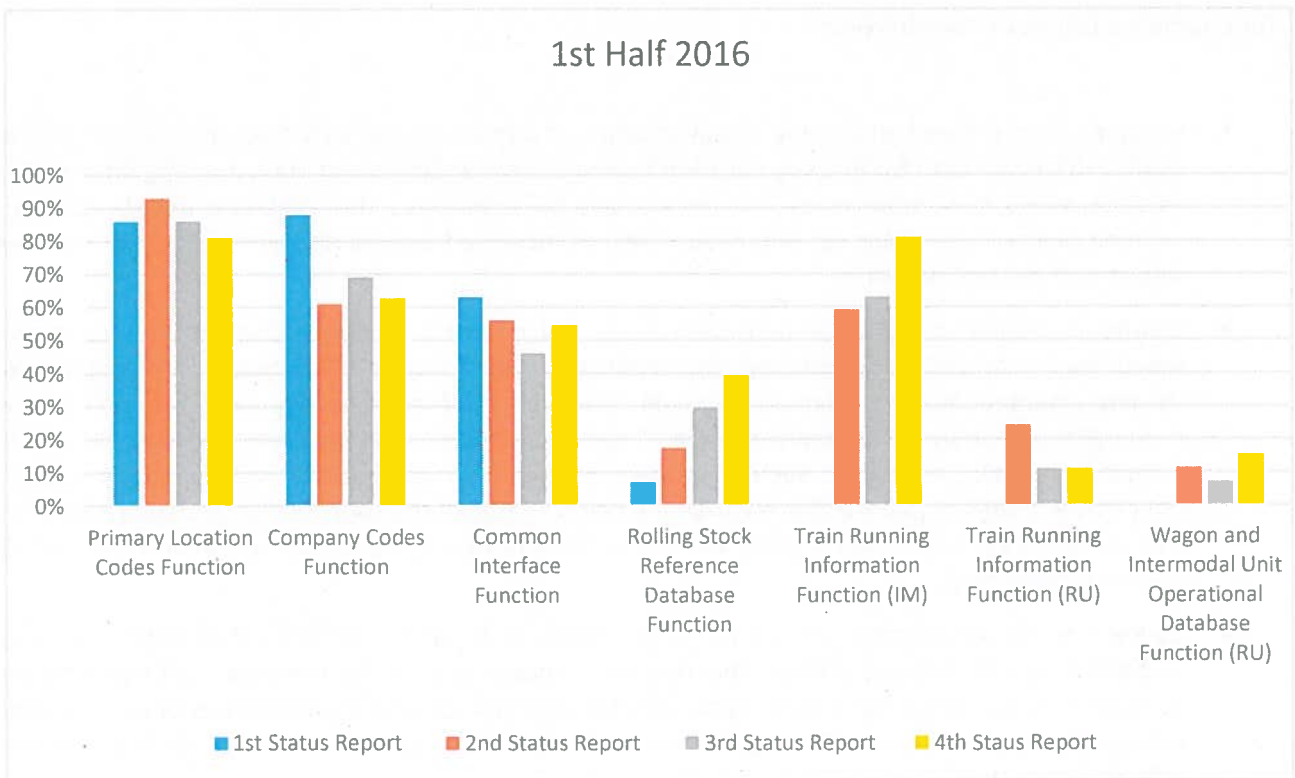


Figure 23: Evolution of the Implementation along the Reporting.

6. Conclusions

The fourth report to evaluate the degree of implementation of Commission Regulation (EU) No 1305/2014, TAF TSI [2], shows a stagnation compared to the reference baseline, the Master Plan (1) to implement TAF TSI [2] delivered by the sector in January 2013.

The TAF TSI Master Plan (1) issued by the rail sector in January 2013 foresees the following level of realisation by **mid-2016** for the reported functions:

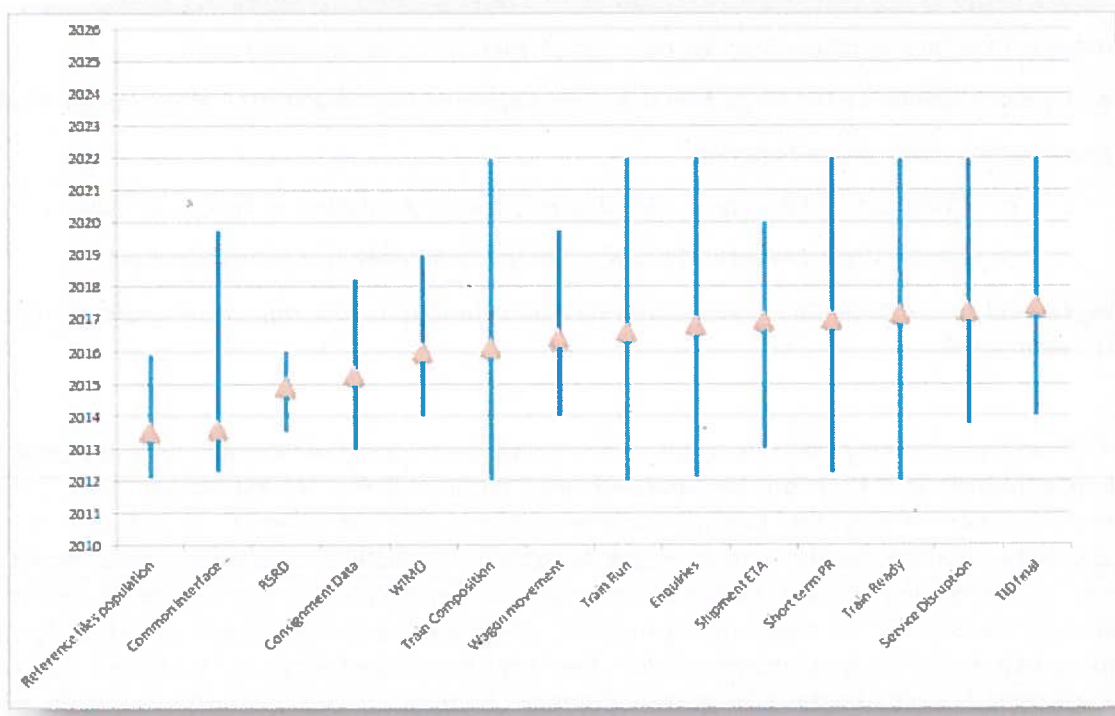


Figure 24: Minimum and Maximum Implementation Dates in the TAF TSI Master Plan delivered in January 2013.

- Reference files population (Primary Location Codes Function and Company Codes Function):
 - 98% degree of implementation at European level for Infrastructure Managers and
 - 95% degree of implementation at European level for Railway Undertakings.
- Common Interface Function:
 - 98% degree of implementation at European level for Infrastructure Managers and
 - 95% degree of implementation at European level for Railway Undertakings.
- Rolling Stock Reference Database Function: 80% or more of the respondents (Wagon keepers and Railway Undertakings) indicated a final implementation in 2015.
- Train Running Information Function:
 - 62% degree of implementation by mid-2016 at European level for Infrastructure Managers and

- 33% degree of implementation by mid-2016 at European level for Railway Undertakings.
- Wagon and Intermodal Unit Operational Database Function: 39% by mid-2016 for the Railway Undertakings.

The data reported in **June 2016** shows different degrees of implementation per function:

- **Company Codes function: 63% degree of implementation at European level.**
- **Primary Location Codes function: 81% degree of implementation at European level.**
- **Common Interface function: 54% degree of implementation at European level.**
- **Rolling Stock Reference Database function: 39% degree of implementation at European level.**
- **Train Running Information Function:**
 - **For Infrastructure Managers: 81% degree of implementation at European level.**
 - **For Railway Undertakings: 11% degree of implementation at European level.**
- **Wagon and Intermodal Unit Operational Database function: 15% degree of implementation at European level.**

The report allows us concluding that the evolution of the **implementation of “Primary location Codes” and “Train Running Information” functions is in line with level required in the TAF TSI Master Plan (1)**. Indeed, for this second function we may state that the implementation is ahead of schedule. In particular, it is quite relevant the data supplied by the Infrastructure Managers, because it clearly illustrates about their commitment to populate the primary location central repository and to test the exchange of data for tracking the movement of the trains, “Train Running Information”. The Infrastructure Managers are in fact the drivers for the deployment of the “Primary Location Codes” and “Train Running Information” functions. This positive evolution will bring benefits in the further development of other TAF TSI [2] functions as the “Service Disruption Information” and “Shipment ETI/ETA” functions. Thus, we can state that the basic elements to deploy the system are technically in place.

Regarding the **“Company Codes” function**, we can observe a **stagnation in the level of fulfilment** at the same time more companies are joining the implementation process for TAF TSI. Thereby, we may conclude that a negligible number of companies has applied to get the company codes, however some measures should be evaluated to further support the adoption of Company Codes. In particular, it cannot be neglected the fact that the Wagon Keepers and small Railway Undertakings don't perceive the benefits of getting Company Codes through the current procedure in place and most of them don't envisage to have it.

The level of **implementation of the “Common Interface” function is stagnating** and this decline can be partially justified due to the stagnation of the survey population. In fact, some companies declared that they will be able to generate TAF TSI [2] compliant messages from their legacy systems without further conversion. For this reason, even if the level of deployment for this function is lower than that one for the “Reference Files” functions (Primary Location and Company codes), this is not perceived as problem for the overall deployment of the TAF TSI system. This outcome can be as well justified either on the lack of knowledge about the technical requirements to deploy the TAF TSI [2] messages set, or because most of the companies are starting now to install a local instance of this tool. Nevertheless, the implementation of this function should be closer oversee by the Agency TAF TSI Implementation Cooperation Group to propose measures when needed.

The results for the “Rolling Stock Reference Database” function shows that the sector is slowly progressing towards the implementation of this functionality, in particular the Wagon Keepers, who are doing a great effort materialised in the tool RSRD². Indeed, although similar functionality may be in place for most of the Railway Undertakings operating in Europe, they have not delivered data for this particular function to the JSG to show the level of deployment. Moreover, whether we may confront these results with the number of wagons stored in the GCU wagon database (with more than 600,000 wagons currently declared across 20 countries in Europe), we can conclude that for the time being almost 40% of the European wagon fleet is fulfilling the legal requirements requested for “Rolling Stock Reference Database” function through the implementation of RSRD² database. The delay in the accomplishment of this functionality has been treated in the context of the Agency TAF TSI Implementation Cooperation Group and some initiatives, a wagon browser, are being explored within the sector to ensure this implementation. In addition to the **set of criteria for the wagons excluded of the provisions for the “Rolling Stock Reference Database”**, defined in the 2nd Agency TAF TSI Implementation Cooperation Group meeting held on 29th and 30th September 2015 (6), the wagons excluded from the “Rolling Stock Reference Database” are:

- those wagons owned by IMs,
- wagons owned by small companies subcontracted to perform works on the tracks,
- wagons owned by RUs use this rolling stock only for their own purpose and not providing them to third parties,
- and wagons owned by wagon keepers using this rolling stock only for their own purpose and not providing them to third parties.

Regarding the **level of accomplishment declared for Wagon and Intermodal Unit Operational Database function over the last two reports**, we can draw the conclusion that a **delay can be expected** compared to the commitment in the TAF TSI Master Plan (1). The Agency TAF TSI Implementation Cooperation Group treated this risk and agreed submitting a request to the TAF TSI Steering Committee for discussion and adoption of mitigation measures. In regards to the request, the European Commission mandated the Agency and JSG to launch a discussion in order to assess together with the European rail sector different ways of compliance for this function WIMO and to revert the outcomes of this reflection to both Agency TAF TSI Implementation Cooperation Group and TAF TSI Steering Committee.

Furthermore, the results obtained allow concluding that more support from the EU institutions can be provided to help the companies to implement these functions through different actions as better dissemination and increase of funding.

7. Regional Workshops

To provide an appropriate response to the first action requested to EU institutions, the Agency TAF TSI Implementation Cooperation Group adopted in the 2nd meeting held on 29th and 30th September 2015 (6) the decision to launch a campaign of Regional Workshops across European Member States.

7.1. Outcomes of the Regional Workshops

The first one was organised in Madrid –Spain in close cooperation with the Portuguese and Spanish NCPs in Madrid in June 2015, where 47 companies attended the event. Afterwards, three additional Regional Workshops have been organised:

- 2nd TAF TSI Regional workshop organised in Paris – France on 22nd and 23rd February 2016, in close cooperation with the NCPs of France, Belgium and Luxembourg. Round 41 companies attended the event and quite positive feedback was provided by the companies in regards the usefulness of the deployment of TAF TSI. More details about the outcomes of this workshop can be retrieved form the 3rd Implementation report published on: <http://www.era.europa.eu/Document-Register/Pages/Implementation.aspx>
- 3rd TAF TSI Regional workshop organised in Bonn – Germany on 2nd and 3rd March 2016, in close cooperation with the NCPs of Germany, Austria, The Netherlands, Switzerland, and Belgium. Approximately 140 companies attended the event providing quite positive feedback in regards the usefulness of the deployment of TAF TSI. More details about the outcomes of this workshop can be retrieved form the 3rd Implementation report published on: <http://www.era.europa.eu/Document-Register/Pages/Implementation.aspx>.
- 4th TAF TSI Regional workshop organised in Rome – Italy on 7th and 8th June 2016, in close cooperation with the NCPs of Italy, Slovenia and Croatia. Around 75 companies attended the event. The companies suggested some changes in the functionality, for instance, current restricted scope to short term path requests should be extended to all phases of path allocation (e.g. incl. yearly timetable construction). More details about the outcomes of this workshop can be retrieved form the 3rd Implementation report published on: <http://www.era.europa.eu/Document-Register/Pages/Implementation.aspx>.
- 5th TAF TSI Regional workshop organised in Bratislava – Slovakia on 4th and 5th October 2016, in close cooperation with the NCPs of Slovakia, Czech Republic and Hungary. This was a good opportunity to verify that the companies operating in these three companies are among the most advanced ones in terms of TAF TSI deployment. Indeed, the showed a quite mature knowledge of the regulation and its functionality and they were pointing mostly to the issues to be treated in order to have a smooth deployment. During the Workshop the companies highlighted some of the expected benefits because of the implementation:
 - Improvement of the efficiency of railway operations or shortening the wagon circulation time.
 - Clear process border between RU and IM.
 - Clear process border between planning and operation phase
 - Clearly described life cycle in IT systems
 - Standardised communication with all customers.
 - Efficient interchange of information in rail industry all over the Europe
 - Operational Process standardization.

But the companies outlined as well some issues regarding the implementation:

- It is needed to have a consistent harmonization of TAF TSI Implementation with other related EU Regulations, for instance rail freight corridors.
- It has to be guaranteed at EU level a stable and fully integrated software architecture with predictable development, expenses and benefits.
- Implementation process strongly must be managed and harmonized by the European Union Agency for Railways in such a way that the investments can be secured.
- There is a need to have a more robust regional coordination allowing a smooth and streamlined migration for all companies intended to implement TAF TSI.
- Exchange of TAF messages is possible without Common Interface and whole process can be implemented, then at EU level it should be explored to make the Common Interface free of charge.
- Company Code should evolve to alphanumeric.
- A reflection should be triggered regarding the exchange of data between Railway Undertakings and in particular for WIMO function.
- It should be better coordinated the implementation of the Infrastructure Managers as reference for the Railway Undertakings to make decisions.
- It should be ensured that all actors use Company Codes and to make access to CRD free of charge. This will led to a reflection in terms of cost of Common Elements to be made by the Agency and the sector.
- Some Infrastructure Mangers requested to put back into the TSI data structure the infrastructure restriction notice database. This proposal should be agreed by all actors at EU level.

7.2. General Recommendations

Although we can conclude that the Regional Workshops are considered as a quite fruitful dissemination action, there is still room for improvement. In fact the feedback provided by the National Contact Points is worthy to trigger a discussion between the Agency and the sector represented by the Joint Sector Group to improve the content and structure of this communication tool.

The usefulness of this tool is underpinned by the comments provided by the National Contact Points:

- The Information transmitted in the workshops is very useful because it is explained what TAF TSI obligations are and how to implement them.
- It allows the creation of a national network for TAF TSI.
- It facilitates the integration/engagement of small-medium size companies in EU forums. In particular, it has been revealed as very useful for small railway undertakings and wagon keepers.
- It clarifies towards the actors the different roles, responsibilities and obligations.
- It makes aware small and medium sized companies of tools developed at European level to implement TAF TS and moreover the companies can get pricing and access conditions to become users of these tools.

- It is considered as efficient forum for exchanging information with bodies leading the TAF TSI deployment at EU level and a great opportunity to solve doubts. This helps companies participating in the workshop to have the opportunity to come into contact with each other and promote joint integration activities.
- This dissemination activity increases the overall sector activity regarding TAF TSI: report information to the JSG and the TAF TSI implementation.
- This workshops are considered as a good opportunity to discuss and treat some issues found during the implementation and to make aware the Agency of these findings.

However, the National Contact Points collected as well some constructive inputs to be taken on-board by the Agency for future Regional Workshops:

- In order to further improve the quality of the presentations and deliver content which reaches the audience:
 - The exposition of the benefits implementing TAF TSI were not well transmitted towards the audience, They struggle to understand the reason why to listen and why to implement / use the points explained in the presentation
 - Focus on the implementers rarely present
 - Content of presentations need to be streamlined, and therefore unnecessary content removed.

In order to provide an appropriate response to these recommendations and to have a more fruitful experience sharing, the Agency agreed with the National Contact Points to apply a new set of rules in the workshop held in Bratislava. These new rules are:

- The Agency to ensure that the other presenters also improve their speeches and presentations following Agency recommendations.
- The Agency to reduce their time of exposition and to focus the Agency's presentation on the expected benefits for the companies applying TAF TSI.
- The second day's workshop, the companies to explain their roadmap for the deployment of TAF TSI system and the issues they are facing along the implementation. The time allotted per company is 15 minutes for exposition + 5 minutes for Questions / discussion. Moreover, the structure and content of the presentations must be the following:
 - 1st slide: presentation about the company.
 - 2nd /3rd slides: what and how are TAF functions implemented / the use of TAF specific tools and time/project planning for implementation.
 - 4th slide: expected impacts from TAF or their expectations (for non-implementers) and the experienced impacts from TAF implementation (for users).
 - 5th slide: reported issues during implementation (for implementers/ users only).
 - 6th slide - optional: recommendations in general or to other users/Agency/ business opportunities / outlook.
- Finally the presentations to be checked by the Agency to validate / request amendment.

7.3. Impact of the regional Workshops in the Reporting Exercise

Comparing the dates when the Regional workshops were held with the number of companies participating in every reporting session, we may draw the conclusion that the number of companies have increased and a priori one of the factor contributing to this increase is the activity of dissemination performed by the Agency through what is known as Regional workshops for TAF TSI.

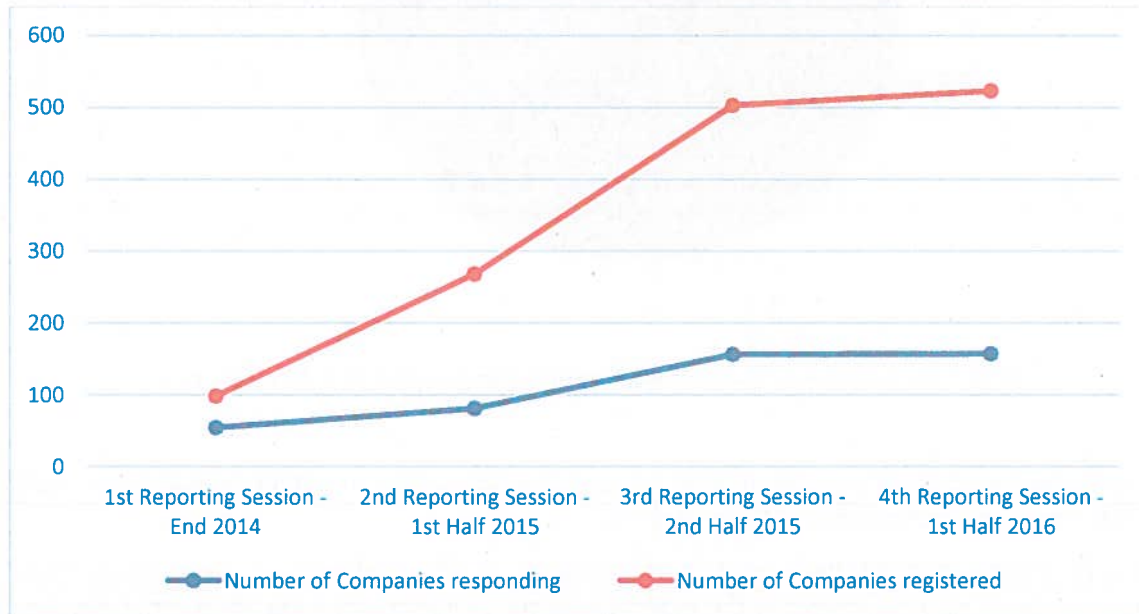


Figure 25: Impact of the Regional workshops on the evolution of companies participating in the reporting exercise

However, although the graphic above shows that the number of companies engaged in the reporting has doubled after having the 1st Regional workshop, there is a clear stagnation of number of companies responding along this year 2016. This stagnation can be partially justified because it is still early to observe the impact of the workshops campaign held during this year 2016. This information helps as well to attribute the positive predisposition of the companies, not only to the regional workshops but to further factors as the funding available.

Nevertheless, it must be taken into account that the objective of making aware the small and medium size companies of their duties concerning TAF TSI has been reached as we can observe on the figure below:

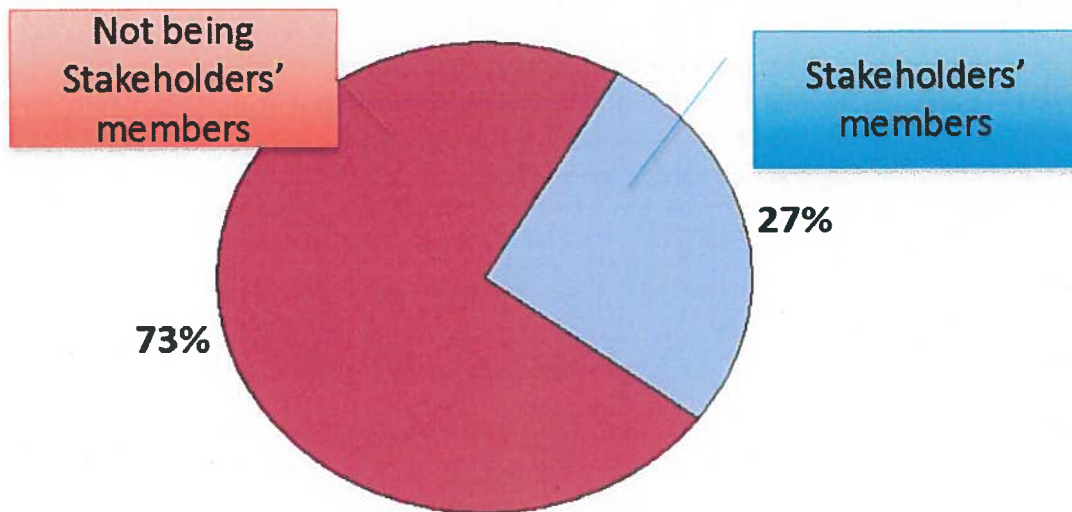


Figure 26: Membership of companies attending the Regional Workshops

Indeed, not being members of the Stakeholders representing the rail sector at European level (yet subject to the TAF TSI) is a clear disadvantage to deploy TAF TSI.

Therefore, we expect that the high number of attendees to the workshops in Paris, Bonn, Rome and Bratislava will have a positive impact in the reports in terms of number of companies reporting about the level of implementation of TAF TSI. Nevertheless, the only input which helps the Agency to make this assumption for the time being is the effect of the Regional Workshop held in Madrid for Portugal and Spain.

8. Proposals to support the Reporting Process

This report contains the following proposals endorsed by the Agency TAF TSI Implementation Cooperation Group in the 4th meeting held on 19th and 20th October 2016:

- The Spanish National Contact Point requested the Agency to deliver a clarification about which companies can be considered as Wagon Keepers falling under the provisions of TAF TSI. The Agency committed to provide a proposal for the next Agency TAF TSI Implementation Cooperation Group meeting.
- ERA announced that the assignment of the "Company Codes" could be done in the future by ERA, in common with the decision for NVR, to be adopted by end 2016. The code structure has to be changed most likely to an alphanumeric 4-position code.
- The Agency will send JSG Company List to NCPs in advance granting them 15 days for reaction before starting the reporting campaign. The aim is to keep up to date the contact details of the reporting responsible in every company.
- The reporting about TAF TSI RU/IM communication will not be included in the next reporting session.

- The Agency will keep the previous implementation value for not responding companies in upcoming reports. This will apply only to a very limited number of companies and trying always to confirm this value with the Company contact point. These companies will be flagged on the reporting tool.
- The Agency and JSG will come next meeting with a common proposal to assess compliance of systems as implementing WIMO functionality.
- The sector represented by JSG will explain in upcoming meetings the developments launched by the RUs for the implementation of RSRD.
- The Agency will deliver a detailed proposal to the Agency TAF TSI Implementation Cooperation Group in order to set up a shared Common Interface umbrella hosted by the Agency to be used by small newcomers in the TAF community and those companies not participating in the drafting of the regulation.
- The Agency together with JSG informed that communication specification for the CI will be incorporated in the technical document Appendix E of the regulation and this will allow every actor to develop / purchase their own common interface granting the exchange of data.

9. Functions to be reported in the next report

It has been agreed in the 4th TAF TSI Implementation Cooperation Group meeting held on 19th and 20th October 2016 (7) that for the next meeting, to be organised in March 2017, the companies shall deliver data concerning the implementation of the following TAF TSI [2] functions:

- Company Codes Function
- Primary Location Codes Function
- Common Interface Function
- Rolling Stock Reference Database Function
- Train Running Information Function
- Wagon and Intermodal Unit Operational Database Function
- Train Composition Message (optional function to be reported by Railway Undertakings)

The request to report on the evolution of the implementation for the aforementioned functions is based on the target implementation dates quoted in the TAF TSI Master Plan (1).

Annex 1: Maps and Implementation Data

Common Functions, RU's functions and RU-IM Communication Functions Maps + Raw data on Agency website: <http://www.era.europa.eu/tools/TAFTSI/Pages/Home.aspx>

