Rail Freight Corridor 2

Corridor Information Document

Book V – Implementation Plan

Timetable 2014

Disclaimer: This document is a draft and still subject to the approval of the Executive board

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Introduction

Regulation (EU) 913/2010 of 22 September 2010 concerning a European rail network for competitive freight was published in the Official Journal of the European Union[1] on 20 October 2010 and entered into force on 9 November 2010.

The purpose of the Regulation is to create a European rail network composed of international freight corridors with a high level of performance. It addresses topics such as governance, investment planning, capacity allocation, traffic management and quality of service and introduces the concept of corridor one-stop shop.

In the Annex of the Regulation, nine initial corridors were defined, including Corridor 2 (Rotterdam – Antwerp – Luxembourg – Metz – Dijon – Lyon / Basel). This Corridor corresponds to the ERTMS Corridor C extended to Rotterdam and Lille, following the Rotterdam Declaration of 14 June 2010. Six of these nine initial corridors, including Corridor 2, should be operational by 10 November 2013; the remaining three by 10 November 2015.

The Regulation requires a governance structure on two levels: an Executive board (composed of representatives of the authorities of the Member States) and a Management board (composed of representatives of the infrastructure managers and allocation bodies). It also requires the creation of two advisory groups: one consisting of representatives of terminal owners and managers, the other consisting of representatives of railway undertakings.

The corridors shall designate or set-up a Corridor - one-stop shop (C-OSS) for allocating certain types of capacity (pre-arranged paths and reserve capacity). Applicants can request capacity even if they are not railway undertakings.

The establishment of a rail freight corridor is a complex project that involves a lot of parties. To manage this establishment properly and also to comply with Article 9 of the Regulation, the Rail Freight Corridor 2 (RFC 2) Management board has drawn up the present “Implementation plan”. It includes, among other things, a description of the characteristics of the corridor, a summary of the transport market study, an investment plan and the list of objectives set by the corridor in terms of quality of service and capacity.

The RFC 2 Management board consulted applicants on this plan and submitted it for approval to the Executive board on 7 May 2013. Later on, the RFC 2 Management board will periodically update the implementation plan and include it in a public document called the Corridor Information Document that will be published for the first time in November 2013

RFC 2: a major rail freight axis

RFC 2 starts from the two main European ports (Rotterdam and Antwerp) and passes through major industrial areas. It reaches Lyon and Basel as gateways to Southern Europe: Italy via Switzerland, Spain via the South of France.

[1] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:276:0022:0032:EN:PDF

It is already one of the most developed European corridors. Each year, more than 30,000 international trains run on RFC 2 and carry more than 20 million of tons of freight.

History

The RFC 2 governance body, the EEIG RFC 2, was created on March 16, 2007 under the name EEIG Corridor C. The main goal was to deploy the European Rail Traffic Management System (ERTMS) on the whole corridor. ERTMS is a single European control and command system the purpose of which is to replace in the medium run all legacy national signalling system and ground systems. These legacy systems force international trains to be equipped with the same number of on board national systems.

However, the scope of the corridor has never been limited to the sole deployment of ERTMS. Another goal was to facilitate the cooperation between infrastructure managers to improve the quality of rail service and the interoperability of rail networks. From that angle, Corridor C had anticipated RFC 2.

This is specifically the case for capacity management. In 2004, RailNetEurope (RNE) had decided to create “RNE Corridors” in order to foster the cooperation between infrastructure managers as far as path construction and path allocation are concerned. One of them, RNE Corridor 05 had similar routes to Corridor C. As early as on December 4, 2008, the general assembly of RNE approved the transfer of the RNE 5 corridor manager to the Corridor C structure and from that date on, capacity management became one of the recurring tasks of Corridor C. For example, Corridor C had published a catalogue of end to end international paths every year since 2010.

The objective of improved cooperation between infrastructure managers / allocation bodies on matters linked to service quality and interoperability was one of the goals of the European Commission when it passed Regulation 913/2010 creating Rail Freight Corridors. Corridor C had to some extent anticipated it and was then already in line with this evolution. .

With the establishment of RFC 2 on November 10, 2013, the ERTMS Corridor C and the RNE Corridor 05 brands will not be used any longer and their business will be fully transferred to RFC 2.

1. Characteristics of RFC 2 and measures necessary for creating RFC 2

1.1 RFC 2 Characteristics

1.1.1 RFC 2 routes

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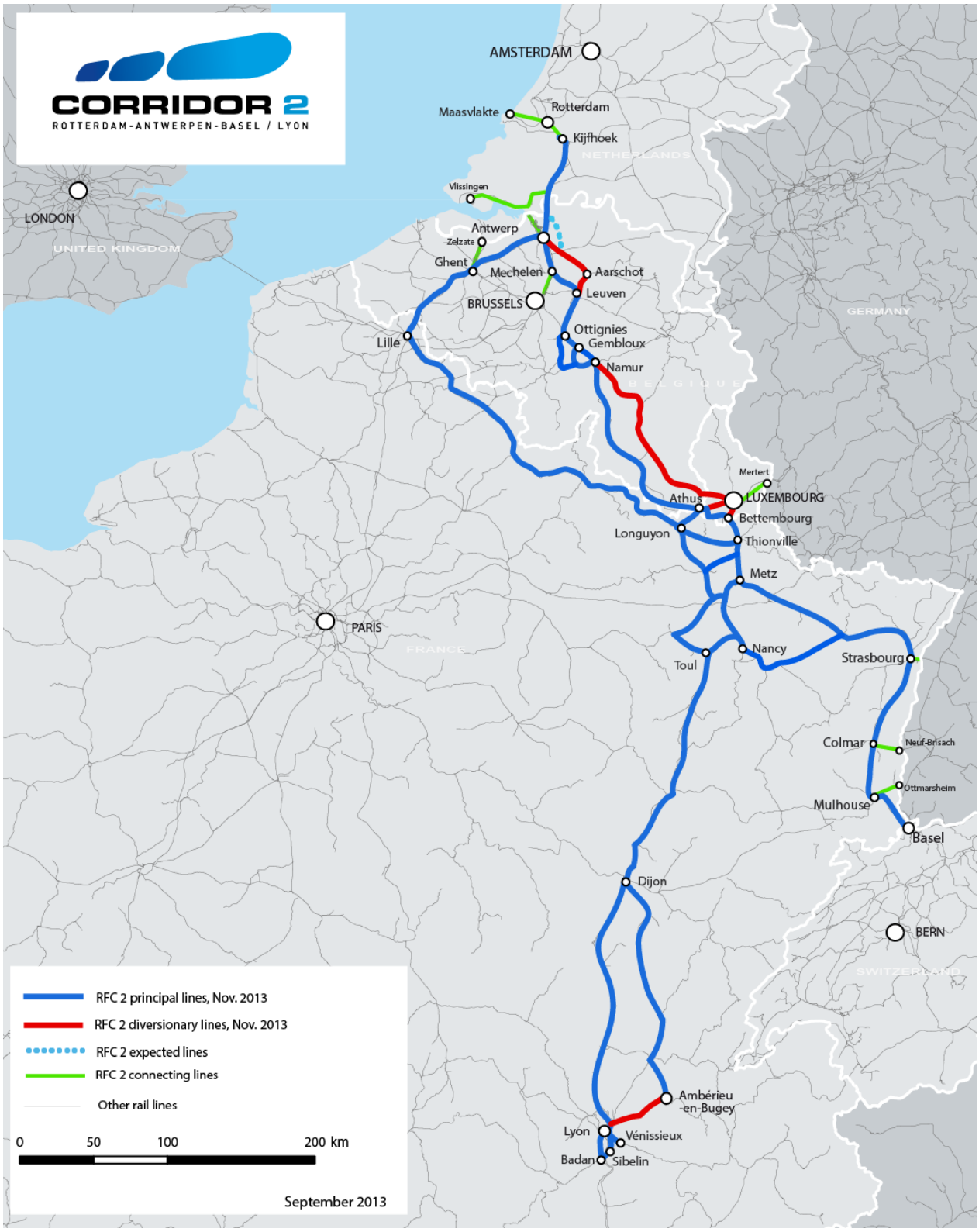
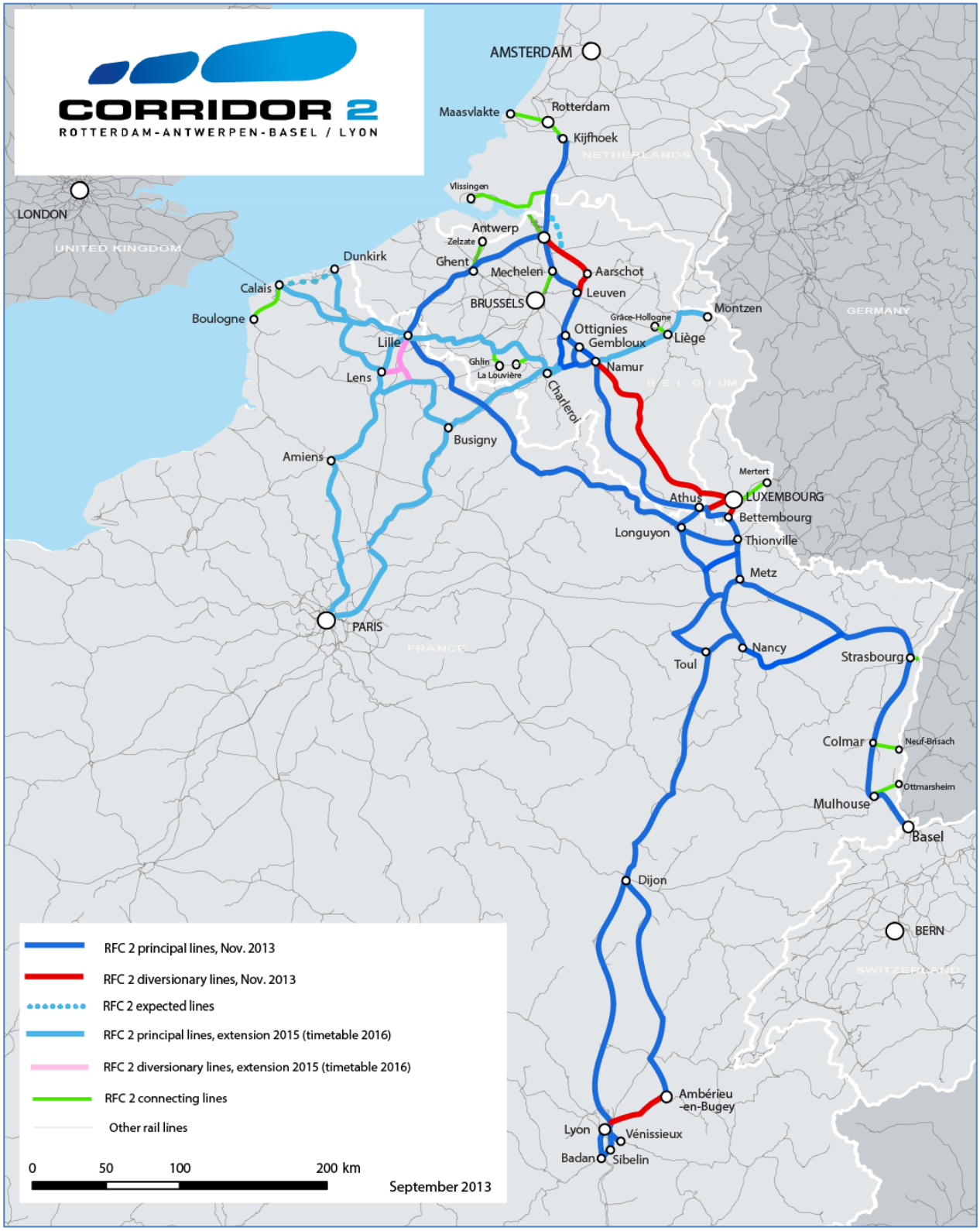
The RFC 2 routes will be established in three phases.

The first phase concerns the routes which will compose the corridor in November 2013. They are shown on map 1. The corresponding lines are listed in detail in Annex 1 (including their category).



Map 1: RFC 2 as established in November 2013

The second phase is the extension of the corridor in January 2015, at the date of the 2016 timetable pre-arranged paths publication. These extensions are shown in light blue on map 2. These routes are Lille - Paris, Dunkirk - Montzen and the Lille by-pass Calais - Aulnoye via Lens and Busigny.



Map 2: RFC 2 as extended in January 2015

A third phase concerns the extension of the corridor towards the United Kingdom, Amsterdam, Zeebrugge and Marseille, following the expected modification of the annex of Regulation 913/2010 and the alignment of freight corridors with the TEN-T Core Network Corridors. It is expected that these extensions shall be included at the latest in November 2016 and that they shall be based on market studies and take into consideration the aspect of existing passenger and freight transport in line with Art 14(3) of this Regulation.

RFC 2 is connected to four other rail freight corridors:

- In Rotterdam, Antwerp, Ghent and Basel with Corridor 1;
- In Metz (November 2013) and Paris (November 2015) with Corridor 4;
- In Lyon and Ambérieu with Corridor 6;
- In Rotterdam and Antwerp with Corridor 8 (at the latest in November 2015).

Several important freight routes are partly on RFC 2 and partly on another corridor. For example, a lot of trains run from Antwerp to Italy through Luxembourg, France and Switzerland.

Table 1 presents the breakdown of RFC 2 lines by country.

Country	Length of lines in November 2013 (in km)
Netherlands	180
Belgium	924
France	1785
Luxembourg	129
Switzerland	28
Whole corridor	3047

Table 1: breakdown of RFC 2 lines by country[2]

1.1.2 RFC 2 terminals

In Regulation 913/2010, terminals are broadly defined. They can be the Infrastructure Managers' marshalling yards and sidings which are necessary for rail system operations like train formation operations. They can also be many other entry points of the various transportation systems in the commercial zone of influence of the corridor:

- combined transport terminals;
- river ports;
- multimodal platforms;
- maritime ports;
- private rail freight terminals.

[2] This table does not take into account the lines within the ports of Rotterdam, Antwerp and Basel

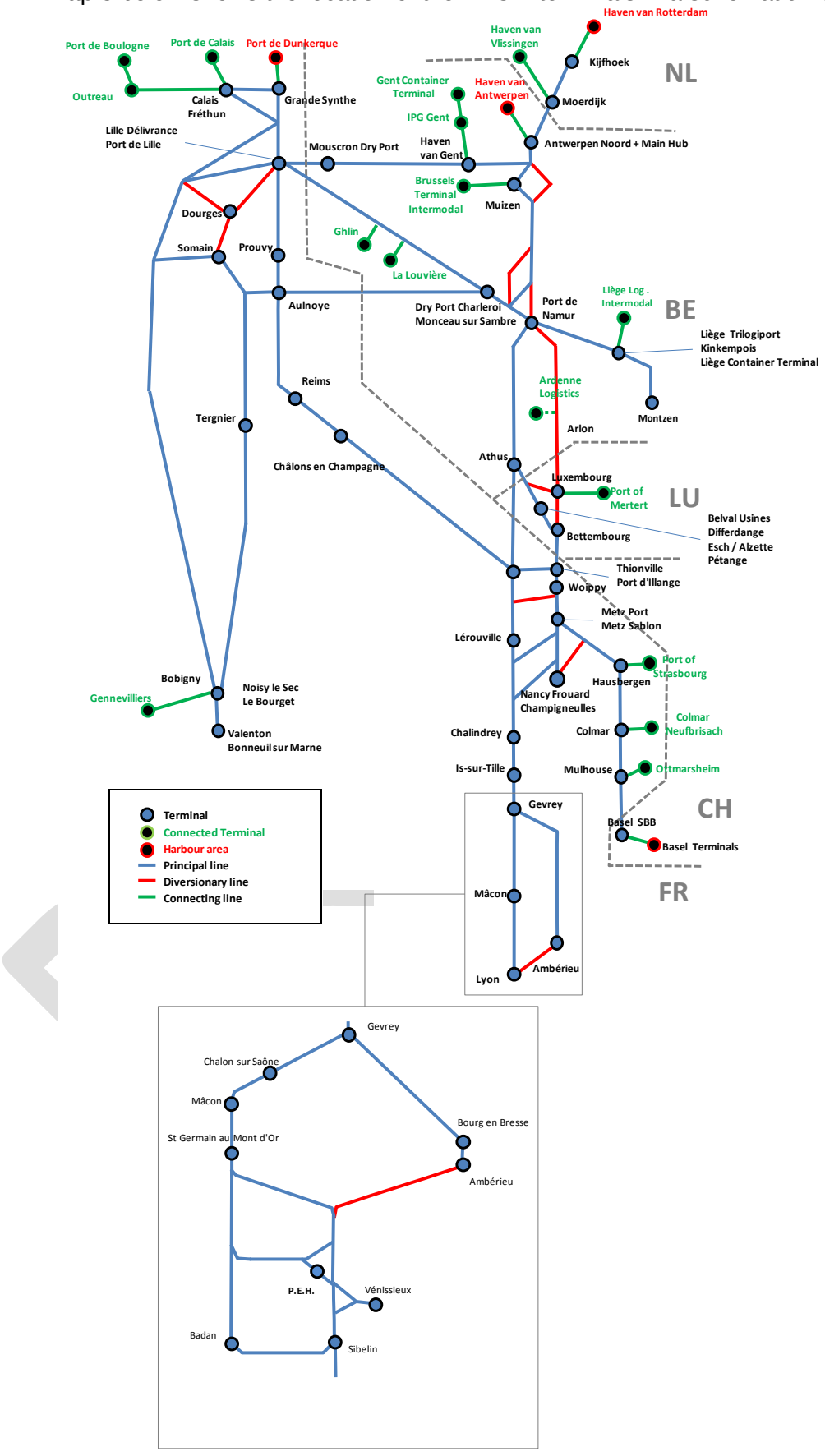
Table 2 below lists the terminals of RFC 2, as extended in 2015.

Terminal	City	Country	Road	Rail	Sea	IWW
Antwerpen Cirkeldyck (MSC home terminal)	Antwerp	Belgium	X	X	X	X
Antwerpen Zomerweg	Antwerp	Belgium	X	X		X
Antwerpen Gateway DP world terminal	Antwerp	Belgium	X	X	X	X
Hupac Terminal Antwerpen	Antwerp	Belgium	X	X		X
Combinant	Antwerp	Belgium	X	X		
Antwerpen ATO	Antwerp	Belgium	X	X		X
Noordzee Terminal PSA	Antwerp	Belgium	X	X	X	X
Europa Terminal PSA	Antwerp	Belgium	X	X	X	X
SHIPIT multimodal platform 1616 (under construction)	Antwerp	Belgium	X	X	X	X
Mexico Natie N.V	Antwerp	Belgium	X	X		X
Deurganck PSA	Antwerp	Belgium	X	X	X	X
Delwaide Dock Terminal (DP World)	Antwerp	Belgium	X	X	X	X
Antwerpen-Noord	Antwerp	Belgium		X		
Antwerpen-Main Hub	Antwerp	Belgium	X	X		
Terminal Container Athus	Athus	Belgium	X	X		
Brussels Terminal intermodal	Brussels	Belgium	X	X		X
Charleroi Logistics centre (Dry Port Charleroi)	Charleroi	Belgium	X	X		
Gent container terminal	Ghent	Belgium	X	X	X	X
Gand port maritime	Ghent	Belgium		X	X	
IPG Intermodaal Platform Gent	Ghent	Belgium	X	X	X	X
Port de Ghlin	Ghlin	Belgium	X	X		X
Kinkempois	Kinkempois	Belgium		X		
La Louvière Garocentre (Port Autonome du Centre et de l'Ouest)	La Louvière	Belgium	X	X		X
L.A.R/ delcaterminal	Lauwe	Belgium	X	X		
Liège Logistique Intermodal	Liège	Belgium	X	X		
Liège Trilogiport (under construction)	Liège	Belgium	X	X		X
Liège Container Terminal (Renory)	Liège	Belgium	X	X		X
Monceau sur Sambre	Monceau sur Sambre	Belgium		X		
Dry Port Mouscron-Lille	Mouscron	Belgium	X	X		
Dry Port Muizen	Muizen	Belgium	X	X		
Port Autonome de Namur	Namur	Belgium	X	X		X
Ardenne Logistics	Neufchâteau	Belgium	X	X		
Ambérieu	Ambérieu	France		X		
Aulnoye-Aymeries	Aulnoye-Aymeries	France		X		
Badan	Badan	France		X		
Blainville	Blainville	France		X		
Bonneuil-sur-Marne	Bonneuil-sur-Marne	France	X	X		X
Bourg-en-Bresse	Bourg-en-Bresse	France		X		
Port de Calais	Calais	France	X	X	X	
Calais Fréthun	Calais	France		X		
Chalindrey	Chalindrey	France	X	X		
Châlons-en-Champagne	Châlons-en-Champagne	France		X		
Aproport CHALON	Chalon-sur-Saône	France	X	X		X
Colmar-Neufbrisach	Colmar	France	X	X		X
Delta 3	Dourges	France	X	X		X
Dunkerque (Grande Synthe)	Dunkerque	France		X		
Port de Dunkerque	Dunkerque	France	X	X	X	X
Port de Nancy/Frouard	Frouard	France	X	X		X
Gennevilliers	Gennevilliers	France	X	X		X

Terminal	City	Country	Road	Rail	Sea	IWW
Gevrey	Gevrey	France	X	X		
Hausbergen	Hausbergen	France		X		
Is sur Tille	Is sur Tille	France		X		
Le Bourget	Le Bourget	France		X		
Lérouville	Lérouville	France		X		
Port fluvial de Lille	Lille	France	X	X		X
Lyon Port Edouard Herriot (Lyon terminal 2)	Lyon	France	X	X		X
Mâcon	Mâcon	France	X	X		X
Metz port	Metz	France	X	X		X
Metz-Sablon	Metz-Sablon	France		X		
Mulhouse-Nord	Mulhouse-Nord	France		X		
Mulhouse [Ottmarsheim]	Mulhouse	France	X	X		X
Champigneulles (Nancy)	Nancy	France	X	X		
Noisy-le-Sec	Noisy-le-Sec	France	X	X		
Technoport	Pagny sur Saône	France	X	X		X
Perrigny	Perrigny	France		X		
Prouvy (Valenciennes)	Prouvy	France	X	X		X
Reims	Reims	France		X		
Saint Germain au Mont d'Or	Saint Germain au Mont d'Or	France		X		
Sibelin	Sibelin	France		X		
Somain	Somain	France		X		
Port Autonome de Strasbourg	Strasbourg	France	X	X		X
Tergnier	Tergnier	France		X		
Thionville	Thionville	France		X		
Ports de Thionville-Illange et Metz Nord	Thionville	France	X	X		X
Valenton Naviland	Valenton	France	X	X		
Valenton Novatrans	Valenton	France	X	X		
Valenton T3M	Valenton	France	X	X		
Valenton Décor	Valenton	France	X	X		
Vénissieux Naviland	Vénissieux	France	X	X		
Vénissieux Novatrans	Vénissieux	France	X	X		
Woippy	Woippy	France		X		
Belval-Usines	Belval-Usines	Luxembourg		X		
Bettembourg	Bettembourg	Luxembourg	X	X		
Differdange	Differdange	Luxembourg		X		
Esch/Alzette	Esch/Alzette	Luxembourg		X		
Luxembourg	Luxembourg	Luxembourg		X		
Port de Mertert / Luxport S.A.	Mertert	Luxembourg	X	X		X
Pétange	Pétange	Luxembourg		X		
Pernis Combi Terminal	Rotterdam	Netherlands	X	X		X
CdMR Terminal	Rotterdam	Netherlands	X	X	X	X
Rotterdam Maasvlakte	Rotterdam	Netherlands	X	X		X
ECT Delta Terminal	Rotterdam	Netherlands	X	X		X
Rotterdam RSC	Rotterdam	Netherlands	X	X	X	
Moerdijk	Rotterdam	Netherlands	X	X		
Kijfhoek	Rotterdam	Netherlands		X		
Port of Vlissingen / Sloehaven	Vlissingen	Netherlands	X	X	X	
Basel Birsfelden Hafen	Basel	Switzerland	X	X		
Frenkendorf-Füllinsdorf	Basel	Switzerland	X	X		
Basel Kleinhüningen Hafen	Basel	Switzerland	X	X		X
Basel Auhafen	Basel	Switzerland	X	X		X
Basel CT	Basel	Switzerland		X		
Basel SBB RB	Basel	Switzerland		X		

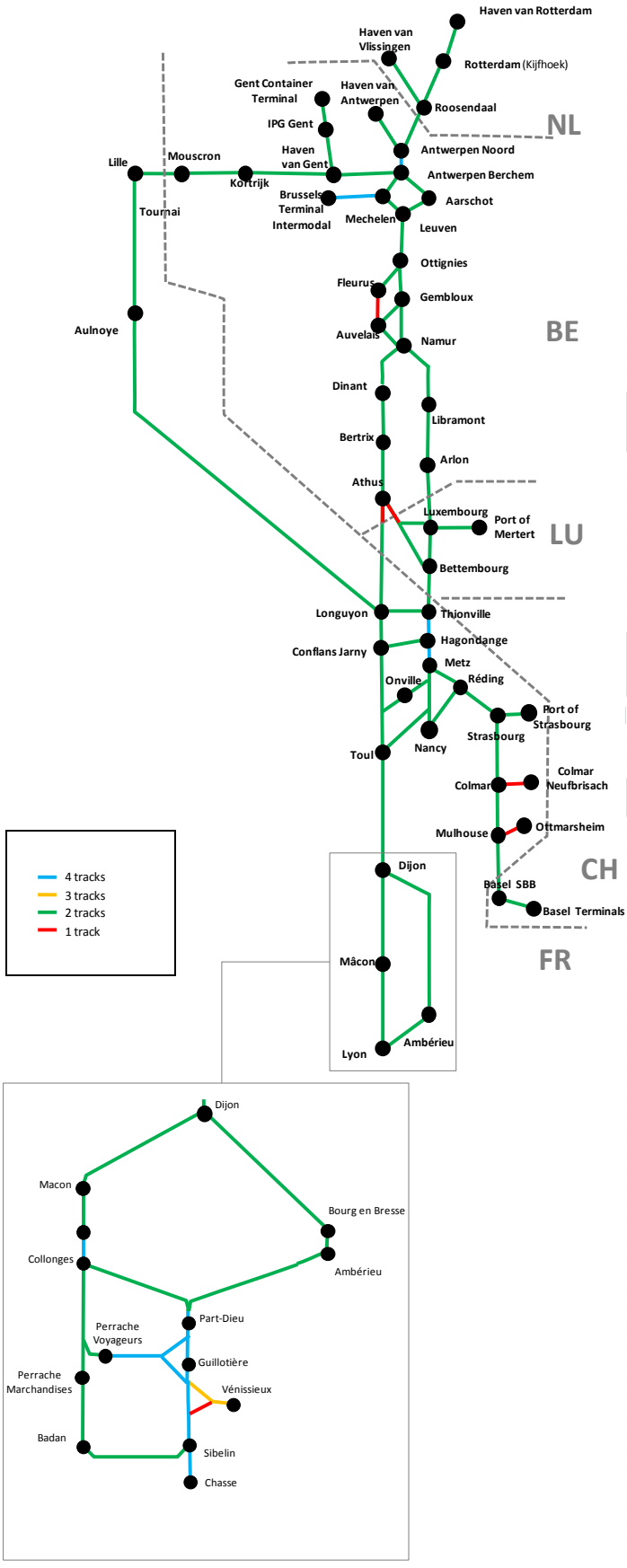
Table 2: RFC 2 terminals

Map 3 below shows the location of the RFC 2 terminals in a schematic way.



Map 3: RFC 2 terminals

1.1.3 Number of tracks



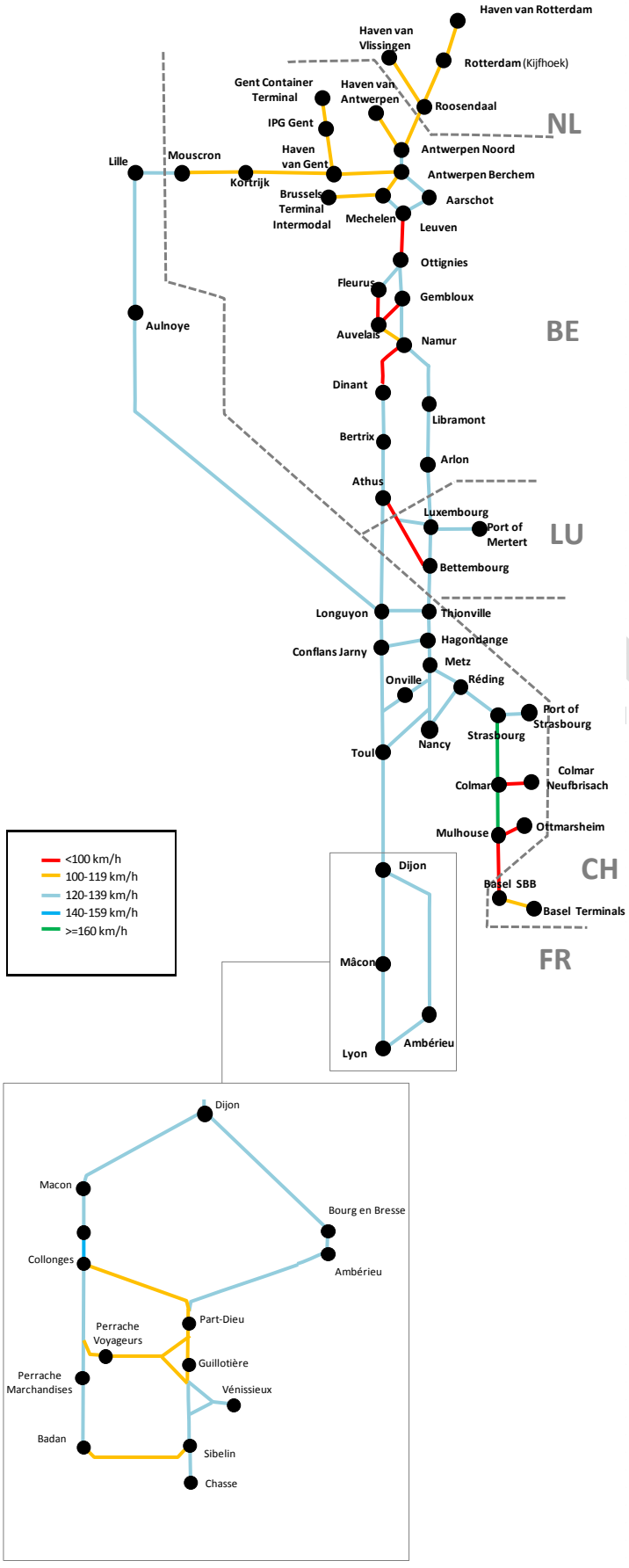
Map 4: number of tracks

All corridor sections have 2 or 4 tracks, except 10 kilometres in Belgium, three short line in France and a small section in Luxembourg.

Map 4 shows in green, yellow and blue the sections with two or more tracks and in red the ones with a single track. All sections in the Netherlands and Switzerland have two tracks or more. Belgium has only one section between Fleurus and Auvelais with one single track. France has one single track short line in the Lyon node and two single track connecting lines in Alsace. Luxembourg has a small section between Aubange and Pétange with one track.

RFC 2 meets the proposed TEN-T standard for the core network, except for small sections.

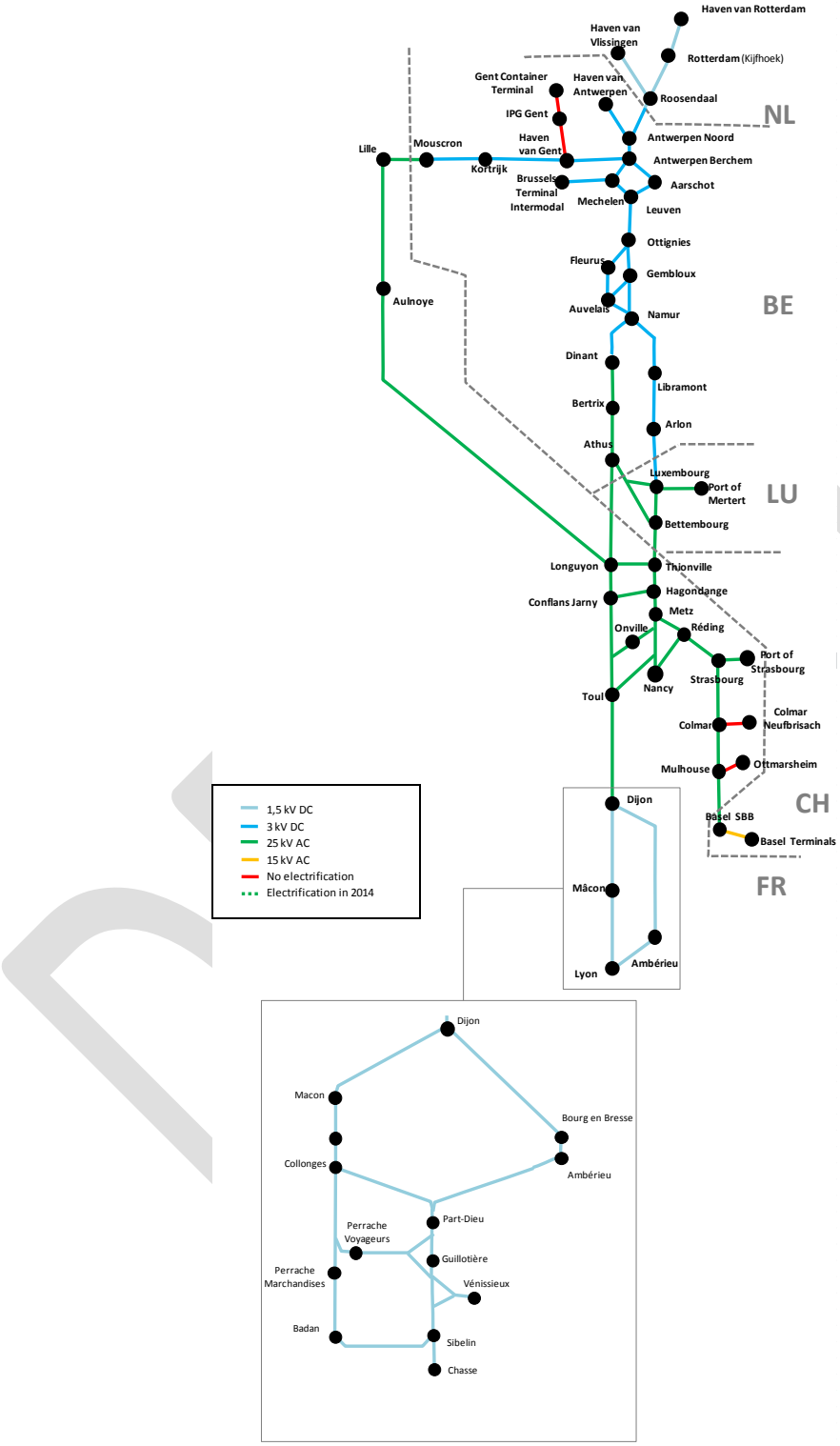
1.1.4 Speed limits



Map 5: speed limits

1.1.5 Electrical systems

All principal and diversionary lines of the corridor are electrified. They comply with the proposed TEN-T core network standard which allows: 25 kV AC, 50 Hz; 3 kV DC; 15 kV AC, 16.7 Hz; 1.5 kV DC.



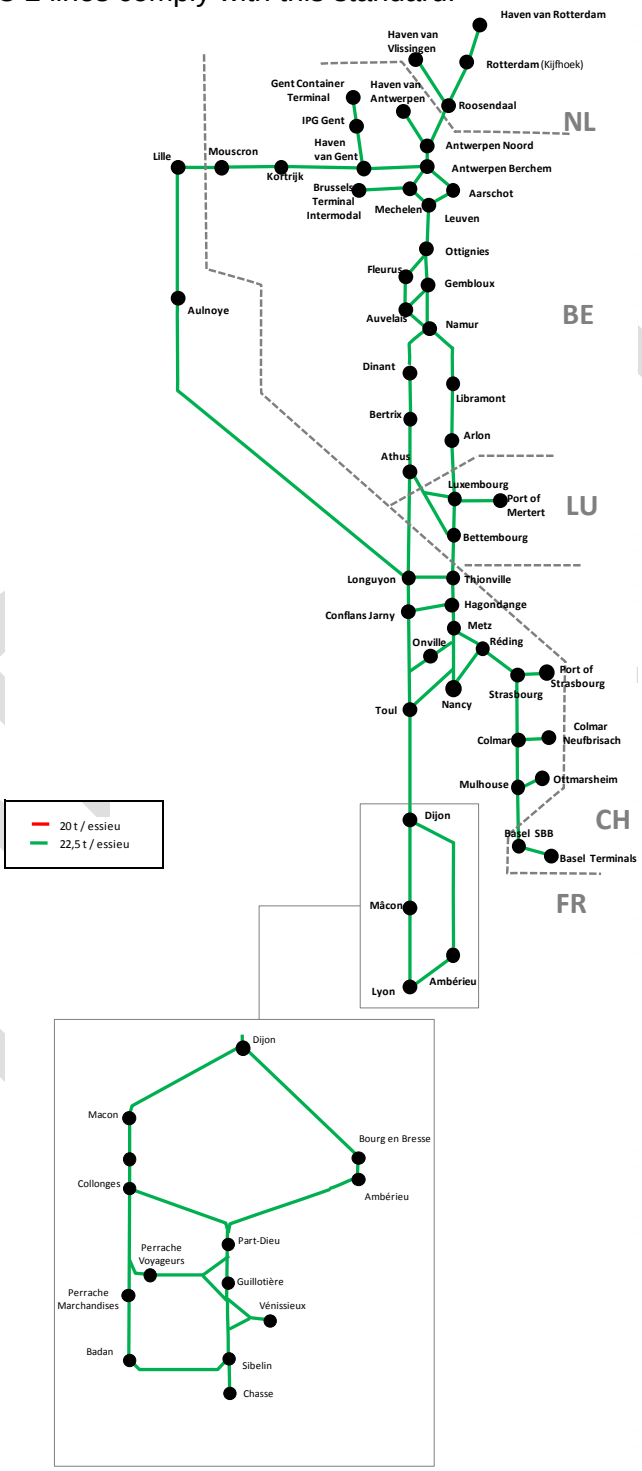
Map 6: electrical systems

1.1.6 Signalling systems

The signalling systems of RFC 2 progressively migrate from legacy national systems to ERTMS. Section 4.2.2 about the interoperable system presents in detail the planning of the ETCS deployment on the corridor lines.

1.1.7 Maximum axle load

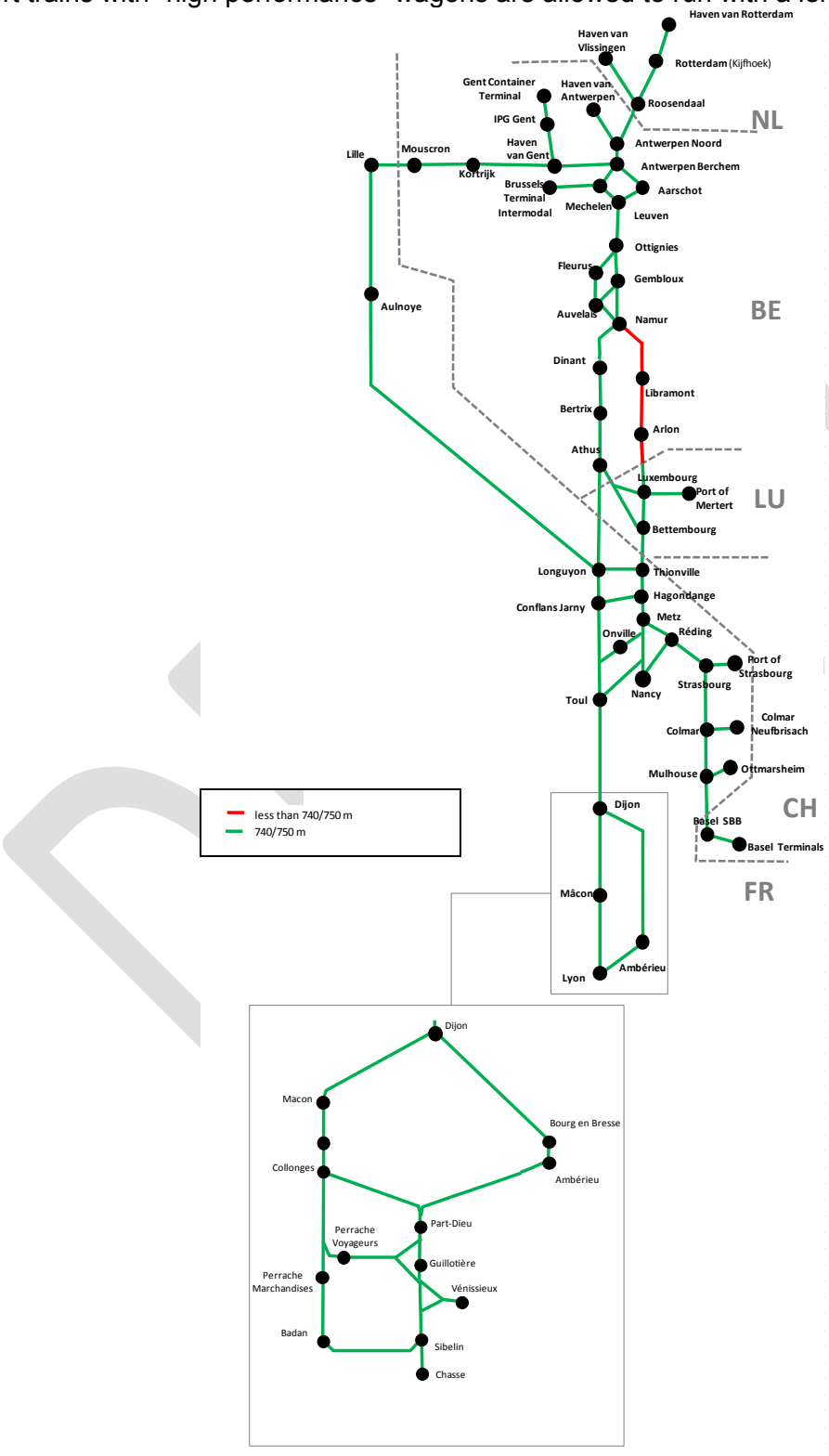
According to the proposed TEN-T standards, the axle load on the core network will not exceed 22.5 tons per axle. All RFC 2 lines comply with this standard.



Map 7: axle load

1.1.8 Train Length

The standard train length is expected to be set at 740/750 meters (including locomotives). In Belgium, 740/750 meter-long trains are not allowed to run on some sections during the day time (161 km). Netherlands, Luxembourg, Switzerland and France fully meet the proposed TEN-T standard.
On the section of line Bettembourg – Le Boulou, trains of the rolling highway as well as combined transport trains with “high performance” wagons are allowed to run with a length of 850 meters.



Map 8: maximum train length allowed

1.1.9 Loading Gauges

There is no expected TEN-T core network standard requirement for loading gauge. However, available loading gauge can be a criterion for railway undertakings to arbitrate between 2 routes. The loading gauge is different whether we consider conventional freight trains or combined transport freight trains. The following figure indicates the technical characteristics of loading gauge.

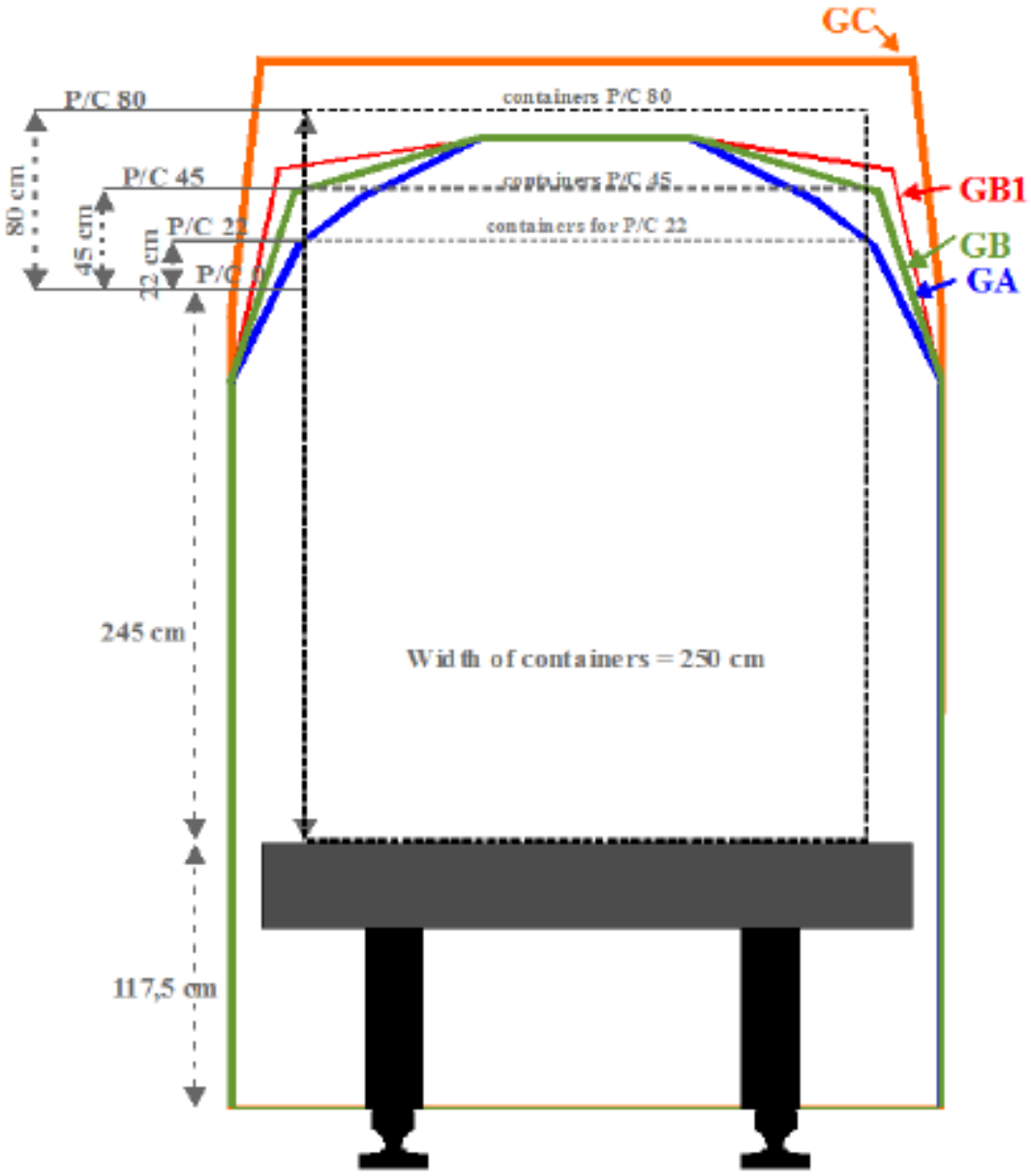
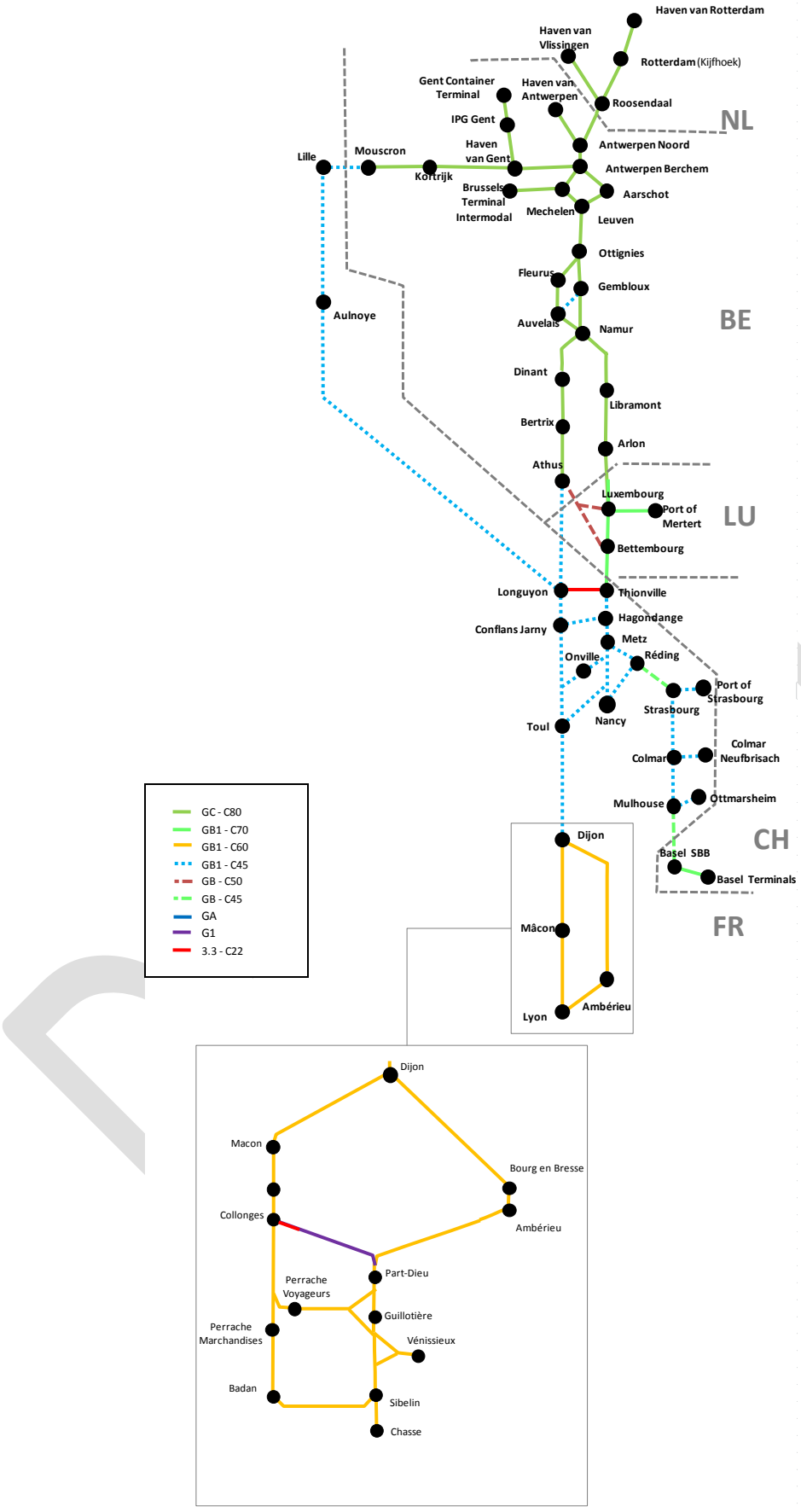
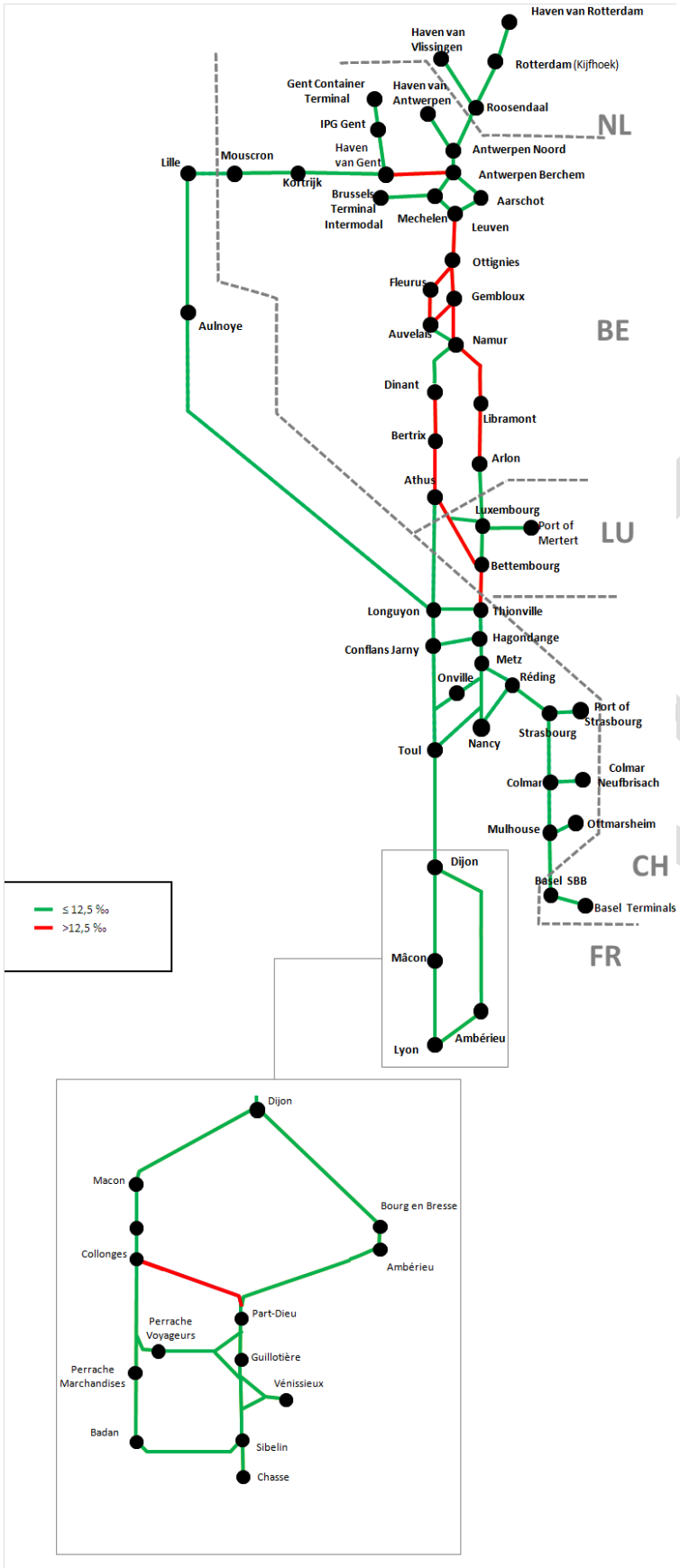


Chart 1: loading gauges description



Map 9: loading gauge

1.1.10 Gradients



Map 10: gradients

To meet most of the railway undertakings' expectations to use only one loco for one train, the gradient shall not exceed 12.5‰. Netherlands and Switzerland fully meet the standard.

France meets the standard on all lines except between Collonges and Part-Dieu.

Luxembourg has part of its sections meeting this expectation: between Autelbas and Bettembourg (30 km). The Athus – Zoufftgen section (35 km) has a slope greater than 19‰.

In Belgium, there are only 40% of the sections which meet railway undertakings expectations.

None of the routes between Rotterdam and Lyon/Basel is compliant from one end to the other.

1.2 Traffic and bottlenecks

1.2.1 Traffic on RFC 2

Table 3 displays the number of tons carried by international trains in 2010 on the RFC 2 routes, as extended in 2015. The total weight transported is almost 22 million of tons.

		DESTINATION											
		NL	BE	LU	FR	CH	DE	IT	UK	ES	SE	PL	
ORIGIN	NL	-	664	-	542	-	313	-	-	-	-	-	1 519
	BE	1 256	-	1 119	4 814	331	661	1 163	156	289	229	56	10 075
	LU	-	622	-	105	26	2	133	-	-	-	-	887
	FR	178	4 929	387	-	336	194	456	-	-	-	-	6 480
	CH	-	177	28	34	-	-	-	-	-	-	-	239
	DE	-	713	0	136	-	-	-	92	-	-	-	940
	IT	-	1 121	25	32	-	-	-	-	-	-	-	1 179
	UK	-	95	-	-	-	45	-	-	-	-	-	140
	ES	-	117	-	-	-	-	-	-	-	-	-	117
	SE	-	244	-	-	-	-	-	-	-	-	-	244
	PL	-	-	-	-	-	-	-	-	-	-	-	-
		1 434	8 680	1 560	5 663	694	1 215	1 752	248	289	229	56	21 820

Table 3: tons carried by international trains on RFC2 (ext. 2015) in 2010 (in thousand tons)[4]

The international goods transported on the corridor are 75% industrial goods (bulk, metal, agricultural, etc.) and 25% miscellaneous goods mainly transported in containers. This last category is the fastest growing market. Rail modal split is currently at 8.1% of the total freight transport in the corridor geographical area.
If the attractiveness of the corridor can be increased there is the indicative potential of 7.0 million tonnes through corridor shift (from RFC 1 to RFC 2). There is also potential from the road modal shift to rail. This is more complex to estimate, still benefits are also much larger, with a maximum of 28.0 million tonnes.

The Origin/Destination matrix shows that almost 34,000 trains crossing at least one border of the corridor are running each year on the corridor sections.

		DESTINATIONS											
		NL	BE	LU	FR	CH	DE	IT	UK	ES	SE	PL	
ORIGINS	NL	-	867	-	562	-	290	-	-	-	-	-	1.718
	BE	1.331	-	1.711	7.522	555	836	1.863	130	241	445	224	14.857
	LU	-	1.505	-	357	43	2	185	-	-	-	-	2.092
	FR	351	7.318	394	-	514	234	653	-	-	-	-	9.463
	CH	-	241	46	387	-	-	-	-	-	-	-	674
	DE	286	1.027	1	207	-	-	-	77	-	-	-	1.599
	IT	-	2.118	119	410	-	-	-	-	-	-	-	2.647
	UK	-	79	-	-	-	38	-	-	-	-	-	117
	ES	-	98	-	-	-	-	-	-	-	-	-	98
	SE	-	447	-	-	-	-	-	-	-	-	-	447
	PL	-	150	-	-	-	-	-	-	-	-	-	150
		1.968	13.850	2.271	9.444	1.112	1.399	2.701	207	241	445	224	33.861

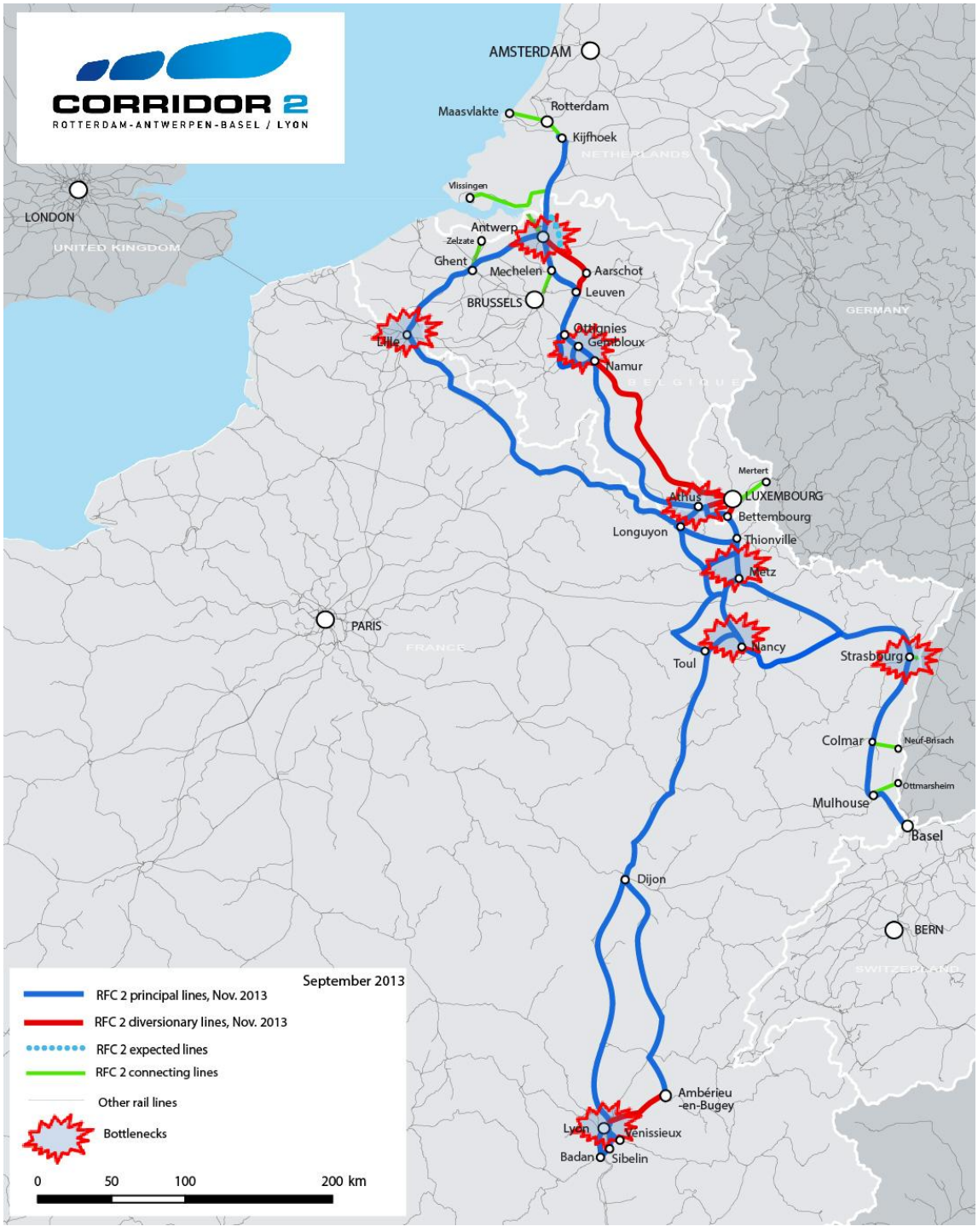
Table 4: number of international trains on RFC 2 (ext. 2015) sections in 2010

[4] Table 3 and 4 are origins/destinations table. They do not give a direct indication of the traffic that runs in a given country. For example, the number of trains crossing the border from France to Switzerland is actually equal to 1112 + 2701 = 3813 as all the trains running from Belgium, Luxembourg or France to Italy cross Switzerland.

1.2.2 Bottleneck description

RFC 2 calls “bottleneck” all rail section where it has identified a capacity problem. Typically, this means that it is difficult to elaborate a train path if this path crosses one of these bottlenecks during peak hours.

In total, RFC 2 has identified eight bottlenecks on its lines.



Map 11: Bottlenecks on the corridor

1.2.2.1 Antwerp node

Antwerp is the most active region of the corridor regarding international trains. It is also a very active passenger traffic area. The bottleneck of Antwerp comes from the fact that all trains run on the same tracks especially during the passenger peak hours. The access roads to the port, however, are saturated and hinder the accessibility thereof.

Liefkenshoek Rail Link

Now that a direct connection between the left bank and the right bank of the river Scheldt is being constructed, a faster and more efficient connection will be possible. The Liefkenshoek Rail Link will provide an alternative for road traffic and the saturated Kennedy tunnel. Its route runs partially underground.

Second rail access to the port of Antwerp

Today, all trains from the port of Antwerp use one railway line to access its hinterland. This line has, however, reached saturation point. That is why Infrabel would like to create a so called second railway access to the port of Antwerp. This new railway line, exclusively for freight transport, will connect the Antwerp-North marshalling yard with the Lier – Aarschot line (L16) and thus make the port of Antwerp more accessible from further inland.

1.2.2.2 Lille node

The Lille rail node faces two traffic characteristics:

- The regional passenger traffic is more and more important to Lille from the other regional cities.
- 60% of the freight traffic through Lille is only in transit

As a consequence, as all the branches converge into the single node of Lille during peak hours, freight trains that are in transit through Lille are always facing congestion on one of the branches they use.

The goal is to create an alternative route to the crossing of Lille in order to extract the maximum freight traffic out of Lille and its suburb and thereby freeing up capacity in the Lille node for the development of regional passenger traffic.

To avoid transit freight trains during peak hours in the Lille area, RFF will put in place the Southern bypass of Lille on the East-West route. During peak hours, freight trains that do not need to stop in Lille will run from Dunkirk to Hirson without crossing the Lille node.

The first phase of works has consisted in connecting Saint Laurent Blangy. The project also includes other improvements and modernisation of the freight yard of Somain.

1.2.2.3 Strasbourg node

Strasbourg faces three capacity issues:

- All the lines from Luxembourg, the Lorraine region and Germany converge in the Strasbourg node from the North
- From Strasbourg to Basel, there is only one line
- Regional passenger traffic, high speed traffic and freight traffic use the same tracks in the Strasbourg node

RFF expects to provide extra capacity in the node of Strasbourg through a two-step investment.

Step 1: Improving sector Strasbourg - Vendenheim

The ambition is to give more fluidity and reliability to the traffic by reducing the number of track crossings and by better distributing the flow of rail traffic (regional trains, high speed trains and freight trains) to facilitate a first step to implement the new timetable in Northern Alsace in 2014, and in line with the implementation of the second phase of the East European High Speed Line. The current facilities at the junction in Vendenheim and the line between Vendenheim and Strasbourg will thus remove the bottleneck in North Alsace.

Step 2: Creating a fourth track between Strasbourg and Vendenheim

The purpose of this operation is to create a fourth track between Strasbourg and Vendenheim with the same performance equivalent as the three existing tracks. This development will achieve the level of rail capacity required for the development of all traffics (regional, high speed and freight traffics).

1.2.2.4 Other bottlenecks

Other investments will provide extra capacity in other corridor bottlenecks.

- The modernisation of the Metz station, a major node of the Nancy-Metz-Luxembourg route

The aim of this project is to improve the management and capacity of the station providing improved tracks, platforms and speed input, output.

- Capacity enhancement in the South Alsace Line

The goal of this study is to identify projects that can reduce congestion and bottlenecks on the section between Strasbourg and Mulhouse.

- Extension of the East European High Speed Line to Strasbourg

High speed trains will no longer run on the conventional line between Metz and Strasbourg and will therefore free capacity for other types of traffic, including freight traffic.

Additional information about RFC 2 bottlenecks is provided in section 4.3.1.

1.3 Governance

The setting up of the governance of RCF2 is one of the main measures necessary for creating RFC 2. The other measures, more technical, are described in chapter 5.

1.3.1 Management board

The RFC 2 Management board is the European Economic Interest Grouping Rail Freight Corridor 2, in short EEIG RFC 2.

1.3.1.1 Members and Partners

As stipulated in article 8 of Regulation 913/2010, the Management board is composed of all Infrastructure managers (IM) and allocation bodies (AB) involved in RFC 2, namely:

- ProRail (IM) for the Netherlands
- Infrabel (IM) for Belgium
- CFL (IM) and ACF (AB) for Luxembourg
- RFF (IM) for France
- SBB (IM) and Trasse Schweiz (AB) for Switzerland

1.3.1.2 Legal structure

EEIG RFC 2 is based in Luxembourg and ruled by:

- EU Regulation 2137/85 dated July 25 1985;
- the Law of Luxembourg concerning EEIGs dated March 25 1991, and
- its own by-laws.

It was created on March 16, 2007 under the name of EEIG Corridor C. On March 21st, 2013, the name, scope and governance of the EEIG were modified. The EEIG name has become European Economic Interest Grouping Rail Freight Corridor 2, (in short EEIG RFC 2) and the scope has been extended to include all tasks entrusted to the Management board as described by Regulation 913/2010.

The seven entities that participate in the activities of the Management board are either members of the EEIG or partners of the EEIG:

- ProRail, Infrabel, CFL and RFF are members of the EEIG;
- SBB, Trasse Schweiz and ACF are partners of the EEIG.

On March 21st, 2013, the four members signed the new EEIG by-laws and the three partners signed partnership agreements with the EEIG.

Photo 1: signature of EEIG RFC 2 by-laws and partnership agreements on March 21st, 2013 in Luxembourg From left to right: Marc Roman (Belgian Ministry), Marc Oestreicher (ACF), Ann Billiau (President of the EEIG RFC 2 Assembly), Luc Lallemand (Infrabel), Alex Kremer (CFL), Marion Gout - van Sinderen (ProRail), Alain Quinet (RFF), Philippe Gauderon (SBB) and Thomas Isenmann (Trasse Schweiz);

The EEIG governance relies on an Assembly and a Managing Director.

The Assembly is chaired by a President. If the President is not available to chair the Assembly, this chairmanship is entrusted to a Vice-President. The Assembly has all powers to make decisions or to perform the actions which are necessary for the fulfilment of the EEIG scope.

The Managing Director is appointed by the Assembly. He is in charge of all the operational and technical tasks that must be performed by the EEIG. He can represent and commit the EEIG with the limit defined by the Assembly.

More details about EEIG RFC 2 can be found in the organisation chart below (see section 1.3.1.5).

1.3.1.3 Permanent team

EEIG RFC 2 has a Permanent team, based in Brussels, which has been set up gradually since 2009.
It consists of three persons under the authority of the Managing Director:

- a Quality and Capacity Manager;
- an Operations and Investment Manager;
- a Communication and Finance Manager.

The Managing Director ensures the performance of the tasks entrusted to the EEIG.

The Quality and Capacity Manager is responsible for all matters related to train performance along the corridor as well as capacity allocation issues. As from 10 November 2013, he will be the

Corridor one-stop shop leader, in charge of the allocation of pre-arranged paths and reserve capacity on RFC 2.

The Operations and Investment Manager concentrates his actions on operational problems and proposes measures to eliminate bottlenecks along the corridor or improve operational aspects of traffic. He also contributes to the coordination of works.

The Communication and Finance Manager is responsible, among other things, for all tasks related to the management of European subsidies, the financial aspects of the management of the EEIG and the promotion of RFC 2 to stakeholders. She is also in charge of the relationship with the advisory groups.

This streamlined structure allows the EEIG to react with promptness, flexibility and efficiency.

1.3.1.4 Working groups

Besides actively participating in the RailNetEurope working groups, RFC 2 has implemented its own working groups. These groups are composed of members from the Permanent team and experts from the infrastructure managers and allocation bodies that form RFC 2. Ten working groups are active. Some have been set up for an ad hoc mission; others are expected to have a permanent mission.

The legal working group and the steering committee of the transport market study are ad hoc working groups. The ERTMS Committee is a permanent working group.
All the other working groups have been set up for the establishment of the RFC 2 in November 2013. After this establishment, the nature of their work will evolve but they will remain active on a permanent basis.

ERTMS/ETCS Committee

Considering the importance of coordinating both the technical developments and the timetables for implementing ETCS on the various sections of the Corridor to provide the fastest possible interoperability, the EEIG decided from the outset to set up an ERTMS/ETCS Committee whose mission is to ensure that national implementations of the system, at a technical and operational level, provide this interoperability without creating any unacceptable constraints for any of those involved (infrastructure managers or railway undertakings).

The main functions of the ERTMS/ETCS Committee are as follows:

- to define the ETCS technical aspects requiring harmonisation or coordination between those involved in the corridor;
- for each of these aspects, to set up a working group made up of experts in the field in question, establish the remit of this group, monitor its work, arbitrate and follow up as necessary;
- to incorporate the issues handled into the strategy of the infrastructure managers and railway undertakings;
- to be a place for exchanges and coordination between the national ETCS projects of the Corridor members and partners.

The members of the ERTMS/ETCS Committee and its technical working groups are representatives and experts commissioned by the infrastructure managers and railway undertakings active on the Corridor. Their work is carried out with the regular participation of representatives of the EEIG ERTMS Users Group, with the aim of ensuring coherence with other corridors as far as possible.

Legal working group

The legal working group was created in 2011 and is consulted on all legal aspects concerning the corridor. It has already worked on the drafting of the EEIG by-laws, the partnership agreements, the contracts for consultancy services and the funding agreement. It now focuses on the drafting of a cooperation agreement which will describe the liabilities of the EEIG, its members and its partners in management of the operational aspects of the corridor activities, including the corridor one stop shop function.

Corridor one-stop shop working group

This working group was created in August 2012 to prepare the framework and procedures needed to comply with Regulation 913/2010, most notably the setting up of the Corridor one-stop shop and the allocation of pre-arranged paths and reserve capacity by this Corridor one-stop shop. The working group consists of allocation experts of all infrastructure managers or allocation bodies of the Corridor. It also supervises the work done by the sub-working group Pre-arranged paths.

Pre-arranged paths sub-working group

The sub-working group Pre-arranged paths works on the concrete set-up of the yearly Corridor timetable catalogue. This group consists of timetable experts from the involved infrastructure managers and allocation bodies, who work on the harmonisation of train paths at the borders, thus reducing waiting times to a bare minimum.

Transport Market Study steering committee

This committee created in May 2012 steers the Transport Market Study which is carried out by a consortium composed of companies from the Netherlands, Belgium and France. It is composed of the Permanent team and infrastructure managers' experts.

Corridor Information Document working group

This working group created in July 2012 consists of national Network Statement experts of all involved infrastructure managers and allocation bodies. The main purpose of this working group is to manage the needed references between the Corridor Information Document (CID) and the national Network Statements and vice versa. This working group also serves as a soundboard for the structure and content of the CID, prepared by the Permanent team.

Coordination of works working group

This group, composed of the Permanent team and members of the infrastructure managers, was launched in 2012. The aim of the group is to coordinate the works along the corridor. The group has already published on the works planned in 2013 and 2014 on the RailNetEurope website.

Train Performance Management working group

This working group was created in 2009, and has since then been working on the monitoring of the punctuality on the Corridor. Performance experts of the five Corridor infrastructure managers meet every two months. For half of these meetings, railway undertaking representatives are invited to share their opinions. The first aim of this working group was to help to improve the international train data, to be able to create high quality reports. Since 2011, Train Performance Management working group members have been using these reports as a basis for bilateral meetings between IMs and customers, to work closely together on improving the punctuality on the Corridor. This working group not only delivers qualitative punctuality reports, but it also provides the basis for the global analysis of all Corridor traffic.

Traffic management working group

The first task of this group, launched in 2012, is to analyse how the requirements of Regulation 913/2010 can be fulfilled as regards traffic management, in particular priority rules in case of disturbances. With that purpose, bilateral conventions could be improved and standardised in order to enhance quality of service.

1.3.1.5 Organisation Chart

Chart 2: RFC 2 organisation chart

1.3.1.6 Communication

Whether through its website[5] or its publications (brochures, Fact sheet), RFC 2 concentrates on presenting its activities, ambitions and its cooperation with its stakeholders: railway undertakings, terminals, shippers, transport ministries, the European Commission and RailNetEurope.
It means that stakeholders can be kept informed on the current projects and the results obtained on RFC 2.

The communication policy of RFC 2 relies on:

- a full reshape of the ex-Corridor C website; our new website will be adapted to the context of a Rail Freight Corridor and will focus on the open cooperation we intend to promote with the railway undertaking and terminal advisory groups;
- the presentation of our activities in professional conferences like the annual RNE conference or business fairs;
- press conference like the one that was organised in Luxembourg on March 21st 2013 for the formal creation of the RFC 2 Management board;
- the publication of brochure, annual reports and other communication supports designed to present the activities of RFC 2 to its stakeholders and the media.

1.3.1.7 Finance

The financial resources available to the EEIG RFC 2 come from contributions from its members and partners and European subsidies received.

1.3.2 Executive board

The Executive board is composed of representatives of the authorities of the Member States involved in RFC 2. They make their decisions at the Executive board level. This is the governance body to which EEIG RFC 2 reports.

In order to be able to provide the Ministries with the best information, the EEIG members report regularly and present the progress of work in the following areas: general achievements of the EEIG, achievements of the working groups, corridor key performance indicators (KPIs) and progress on the implementation of the Regulation.

[5] The RFC 2 website address is www.rfc2.eu.

1.3.2.1 Members and other participants

The representative members and stand-in members of the Executive board are:

Country	Member	Name
BE	SPF Mobilité et Transports	Marc Roman (Chairman)
BE	SPF Mobilité et Transports	Joannes Peeters
BE	SPF Mobilité et Transports	Julie Buy
FR	Ministère du Développement durable	Guillaume Brodard
FR	Ministère du Développement durable	Brigitte Jacquemont
LU	Ministère du Développement Durable et des Infrastructures (MDDI)	Jeannot Poeker
LU	Ministère du Développement Durable et des Infrastructures (MDDI)	André Bissen
NL	Ministry of Infrastructure and Environment	Franc van der Steen
NL	Ministry of Infrastructure and Environment	Hinne Groot
NL	Ministry of Infrastructure and Environment	Dirk Dekkers
CH	Office Fédéral des Transports	Pierre-André Meyrat
CH	Office Fédéral des Transports	Rolf Zimmermann
CH	Office Fédéral des Transports	Arnold Berndt

Table 5: RFC 2 Executive board members and stand-in members

On top of the members, the European Commission, the TEN-T Executive Agency, the EEIG members and partners, the EEIG permanent team, the UK Department for Transport, Network Rail, Eurotunnel and one representative of the five involved regulatory bodies are also invited to the Executive board meetings.

National Safety Authorities are invited to Executive board meetings on an ad hoc basis.

1.3.2.2 Mission Statement

In June 2011, the Corridor C Executive board migrated to the RFC 2 Executive board, by approving a “mission statement” establishing the Rail Freight Corridor no. 2 Executive board. Its mission is to accomplish all the tasks entrusted to it under Regulation 913/2010.

1.3.2.3 Framework for capacity allocation

On December 20, 2012 the seven transport ministers involved in RFC 1 and RFC 2 signed a Framework for capacity allocation. This Framework was then published in the Official Journal of the European Union on March 6, 2013[6].

This Framework for capacity allocation on the corridor concerns the allocation linked to the pre-arranged train paths and to the reserve capacity given to the C-OSS for freight trains, crossing at least one border on a corridor as foreseen by Article 14.4 of Regulation 913/2010, namely where the allocation of capacity by the C-OSS is mandatory, according to Article 13 of the same Regulation.

[6] www.eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:065:0004:0012:EN:PDF

1.3.3 Advisory groups

On June 27, 2012, the Management board of RFC 2 formally created the RFC 2 Railway undertaking Advisory Group (in short RAG) and the Terminal Advisory Group (in short TAG) and the kick off meeting of these two advisory groups took place on the same day in Brussels. The creation of these two groups complies with article 8.7 and 8.8 of Regulation 913/2010.

1.3.3.1 Railway undertaking Advisory Group

Railway Undertakings potentially interested by RFC 2

RFC 2 intends to invite all railway undertakings interested in the use of the corridor to be involved in the activities of the RFC 2 RAG. For that purpose, RFC 2 publishes on its website announcements about upcoming RAG meetings. All railway undertakings interested in the use of the corridor are welcome to attend these meetings. On top of publishing this internet advertisement and to maximise the number of attendees at RAG meetings, an email invitation is sent to all railway undertakings which, to the knowledge of RFC 2, could be interested in the use of the corridor (see list in table 6 below). If other railway undertakings express their interest in RFC 2, RFC 2 will add them to this list. This will entitle them to receive all future correspondence linked to the RAG and to attend RAG meetings.

Belgian Railfeeding	ERS	RailTRAXX	VFLI
Captrain	Euro Cargo Rail	Rotterdam Rail Feeding	BLS Cargo
CFL Cargo	Europorte	Rurtalbahn Benelux	SBB Cargo International
CFR	Fret SNCF	TPCF	Sibelit[7]
Colas Rail	HUSA transportation	Trainsport AG	ETF
Crossrail Benelux	NMBS Logistics	TRENITALIA Cargo	RDT13
DB Schenker Rail Nederland	OSR France	TSO	TX Logistik
PKP Cargo			

Table 6: railway undertakings potentially interested by RFC 2

Two railway sector organisations are also invited: CER (Community of European Railway and Infrastructure Companies) and ERFA (European Rail Freight Association).

The RAG is chaired by a representative of a railway undertaking. A vice-chairman replaces him in case of impeachment. They are both chosen by the RAG. In May 2013, the RAG chose M. Régis Vircondelet (Fret SNCF) as chairman and Eric Lambert (CFL Cargo) as vice-chairman.

[7] Sibelit is a grouping of several railway undertakings

Photo 2: RAG meeting in Paris (18 January 2013)

Purpose and scope

RFC 2 set up its RAG to enable a fruitful dialogue with railway undertakings on all topics related to RFC 2. The RFC 2 Management board and the RAG can share information, ideas and opinions. This advisory group may issue an opinion on any proposal by the Management board which has consequences for these undertakings. It may also issue own-initiative opinions. The Management board shall take any of these opinions into account.
For example, discussions in RAG meetings recently addressed the following topics:

- outcome of the transport market study;
- timetabling 2014 paths;
- ERTMS deployment;
- investment plans;
- loading gauge enhancement.

1.3.3.2 Terminal Advisory Group

RFC 2 intends to invite all RFC 2 terminals to participate in the activities of the Terminal Advisory Group. For that purpose, RFC 2 publishes on its website announcements about upcoming TAG meetings. All RFC 2 terminals are welcome to attend these meetings. On top of publishing this internet advertisement, RFC 2 sends an email invitation to all RFC 2 terminals.

Members

The list of RFC 2 terminals can be found in section 1.1.2.

Photo 3: TAG meeting on 7 March 2013 in Paris

Purpose and scope

As for the RAG, RFC 2 set up its TAG to enable a fruitful dialogue with terminals on all topics related to RFC 2. The RFC 2 Management board and the TAG can share information, ideas and opinions. This advisory group may issue an opinion on any proposal by the Management board which has direct consequences for investment and the management of terminals. It may also issue own-initiative opinions.
For example, discussions in TAG meetings recently addressed the following topics

- outcome of the transport market study;
- coordination between the operation of the railway infrastructure and the terminals;
- collection of terminal characteristics;
- investment plan.

2. Essential elements of the Transport Market Study

In application of Article 9 of Regulation 913/2010, the RFC 2 Management board has mandated a consortium of consultant firms to carry out a Transport Market Study. The following summarises the essential elements of this study.

2.1 Analysis of the current situation

RFC 2 has a very high added value as a maritime-railway intermodal route. It connects major ports such as Antwerp and Rotterdam to large industrial centres (Basel, Ghent, Liège, Lorraine, Nord-Pas-de-Calais and Lyon) with large commercial areas. Moreover, Rail Freight Corridors 1, 4, 6 and 8 are connected to RFC 2 in Rotterdam, Antwerp, Ghent, Metz, Basel and Lyon providing customers with interoperable connections to the North, East and South of Europe. This is combined with potential links to important economic areas such as Nord Pas de Calais (FR) Ile de France (FR) the Liège Region (BE) and the UK market.

2.1.1 The geographic and socio-economic context

To get an overview of the context, the following elements on a NUTS 2 level have been studied:

- GDP per capita growth rates
- Purchasing power parity standards
- Employment
- Population density
- Industries

Two variables are analysed at a country level

- Purchasing power parity
- Oil prices

In total 46 NUTS2 regions in 7 countries are expected to be influenced by the RFC 2. Influenced regions are not only those passed through by the RFC 2 but include also some regions in the surroundings of the Corridor.
The primary regions of the corridor are the regions where the corridor runs through – connecting major ports such as Antwerp and Rotterdam to large industrial centres such as Basel, Ghent, Liège, Lorraine, Nord-Pas-de-Calais and Lyon.

The secondary regions are regions which are not actually part of the corridor, but of which large traffic flows pass through the corridor – for example traffic from Antwerp to the North of Italy- were taken into account in the analysis.

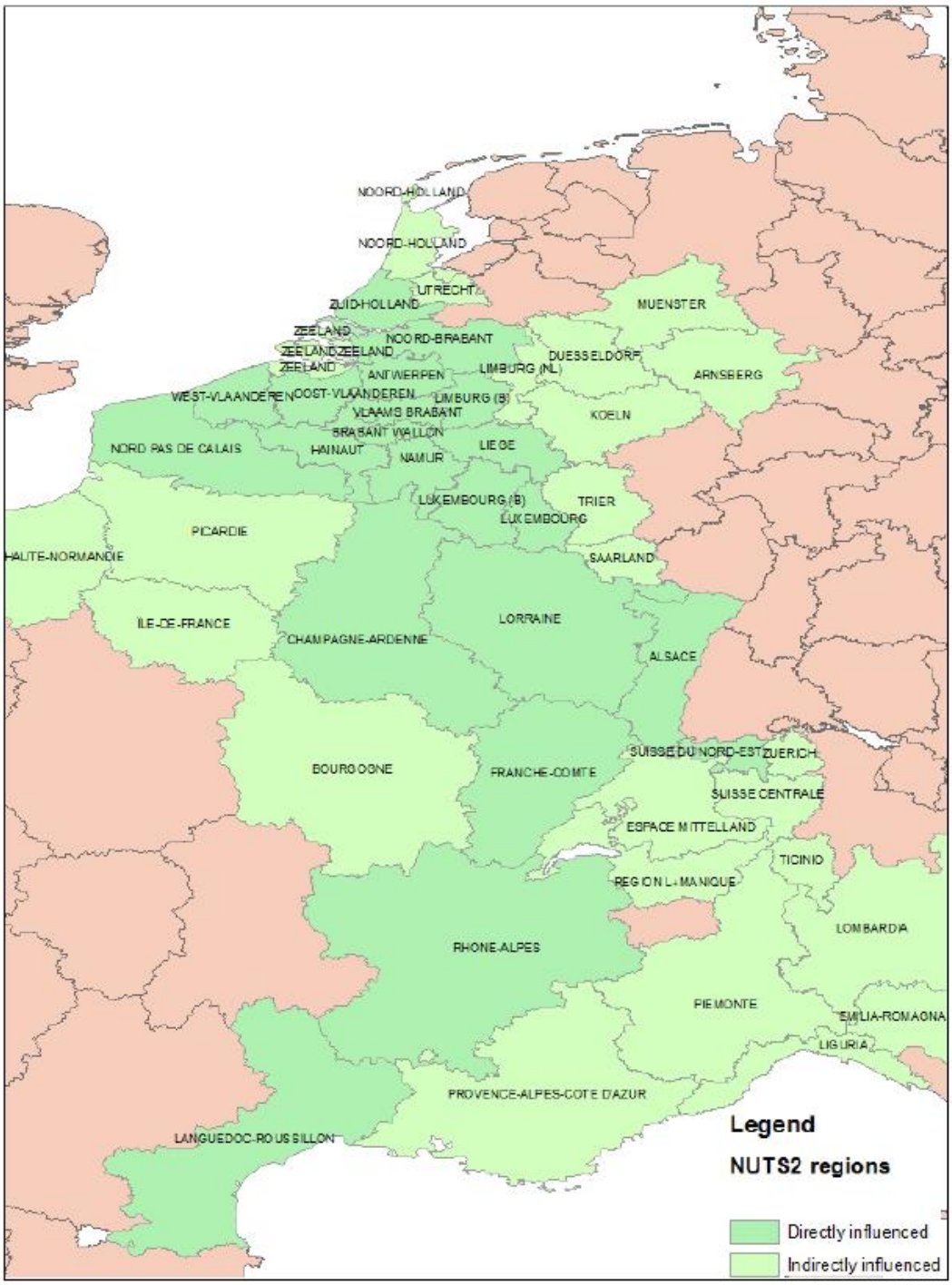
The analysis of the socio-economic variables focussed on those variables with a direct link to traffic demand such as yearly GDP per capita growth, population, fuel prices, industries, etc.

The Belgian and Dutch regions have the highest yearly GDP per capita growth, higher employment growths and are most densely populated. The largest number of local manufacturing and construction units were in the North of Italy, the North East of Belgium and the Netherlands and the region of Lyon – confirming the strength of the corridor in connecting ports to large industrial areas.

Comparing the period 2005-2009 with 2000-2004 the economic crisis showed clearly a lower yearly GDP per capita growth and PPS, even negative employment growth for some regions in the period 2005-2009. This crisis was also reflected in the traffic on RFC 2, which decreased dramatically in 2009. These evolutions are important as they confirm the strengths and weaknesses of the corridor.

Moreover, to set up forecasts, the analysis started from the current traffic flows and from the economic growth. These parameters will be important to determine the overall future traffic flows.

The figure below shows graphically the regions of which the general socio-economic situation is discussed.



Map 12: regions influenced by RFC 2

2.1.2 The transport market characteristics along the corridor

Rail transport system

RFC 2 is designed to ensure the freight transport from Rotterdam to Lyon and Basel, crossing five European countries. In order to allow this transit, the infrastructure has to be compatible with standard freight trains.

The European Commission has proposed standards in the Regulation for the development of the Trans – European Transport Network (2011). In particular, the EC has proposed requirements to be respected by a rail transport infrastructure in order to become part of the TEN–T core network.

The Directive 2008/57/EC also indicates the Technical Specification for Interoperability (TSI) of the rail system for new and upgraded railway lines.

The proposed TEN-T core network standard requirements are listed on the table below.

Criteria	Appreciation
Nominal Track Gauge	1 435 mm
Number of tracks	≥ 2
Design speed	≥ 100 km/h : for freight trains
Axle load	≥ 22,5 tonnes
Maximum Train length	≥ 750 meters (1)
Electrification	25 kV AC, 50 Hz 3 kV DC 15 kV AC, 16.7 Hz (admitted) 1,5 kV DC
Signalling	ERTMS level 1

(1) ≥ 750m for lines with regular freight traffic, otherwise ≥ 600m

Table 7: proposed TEN-T core network standard requirements

Moreover, two other technical characteristics, which are not indicated in the TENT core network standard requirement, seem to be usually expected by railways undertakings:

- Loading gauge: a criteria to appreciate a route is availability, or not, of gauge B, or gauge P/C45 in case of combined transport,
- Gradient: another criterion to appreciate a route is a gradient lower than 12.5‰.

The figures in the Chapter 1 “Characteristics of RFC 2 and measures necessary for creating RFC 2” show the sections of the Corridor that meet the proposed TEN-T core network requirements.

Road transport system

Road transport relies on an extremely dense and intertwined infrastructure network, which is efficient for long distance transport.

Traffic congestion is mainly situated in urban areas; express roads and motorways bypasses allow most of the time to avoid these congested areas in big agglomerations.

Inland waterway system

The inland waterway network serves only partially RFC 2. Although main generators of freight traffic in the corridor's perimeter are connected to this network,

- relations between them may require transport distances greater than on the road network (for example, between Lyon and Antwerp / Rotterdam),
- it is not always possible to use large volume vessels because of limits of the river gauge in France (e.g. to link Antwerp and Paris or Lyon, or Luxembourg to Lyon).

2.2 Assessment of the market

2.2.1 Actual freight market estimation (per O/D)

The total rail freight demand in all involved countries is 121.4 million tons for year 2010.
Our methodology filtered out the specific corridor regions and the specific corridor flows.
As a result, international rail demand, which is defined as the traffic crossing at least one border of the corridor, was 21.8 million tons in 2010.

The Transport Market Study focuses only on this last type of demand (international rail demand on the corridor sphere of influence). The total number of international trains on the corridor sections was around 34.000 trains per year, including empty trains.

The international goods transported on the corridor are 75% industrial goods (bulk, metal, agricultural, etc.) and 25% miscellaneous goods mainly transported in containers. This last category is the most growing market. Rail modal split is currently at 8.1% of the total freight transport in the corridor geographical area.

If the attractiveness of the corridor can be increased there is the indicative potential of 7.0 million tonnes through corridor shift (from Corridor 1 to RFC 2). There is also potential from the road modal shift to rail. This is more complex to estimate, still benefits are also much larger, with a maximum of 28.0 million tonnes.

		DESTINATION											
		NL	BE	LU	FR	CH	DE	IT	UK	ES	SE	PL	
ORIGIN	NL	-	664	-	542	-	313	-	-	-	-	-	1 519
	BE	1 256	-	1 119	4 814	331	661	1 163	156	289	229	56	10 075
	LU	-	622	-	105	26	2	133	-	-	-	-	887
	FR	178	4 929	387	-	336	194	456	-	-	-	-	6 480
	CH	-	177	28	34	-	-	-	-	-	-	-	239
	DE	-	713	0	136	-	-	-	92	-	-	-	940
	IT	-	1 121	25	32	-	-	-	-	-	-	-	1 179
	UK	-	95	-	-	-	45	-	-	-	-	-	140
	ES	-	117	-	-	-	-	-	-	-	-	-	117
	SE	-	244	-	-	-	-	-	-	-	-	-	244
	PL	-	-	-	-	-	-	-	-	-	-	-	-
		1 434	8 680	1 560	5 663	694	1 215	1 752	248	289	229	56	21 820

Table 8: tons carried by international trains on RFC 2 in 2010 (in thousand tons)

The Origin/Destination matrix shows that almost 34,000 trains crossing at least one border of the corridor are running each year on the corridor sections (here are the exact figures for year 2010).

		DESTINATIONS											
		NL	BE	LU	FR	CH	DE	IT	UK	ES	SE	PL	
ORIGINS	NL	-	867	-	562	-	290	-	-	-	-	-	1.718
	BE	1.331	-	1.711	7.522	555	836	1.863	130	241	445	224	14.857
	LU	-	1.505	-	357	43	2	185	-	-	-	-	2.092
	FR	351	7.318	394	-	514	234	653	-	-	-	-	9.463
	CH	-	241	46	387	-	-	-	-	-	-	-	674
	DE	286	1.027	1	207	-	-	-	77	-	-	-	1.599
	IT	-	2.118	119	410	-	-	-	-	-	-	-	2.647
	UK	-	79	-	-	-	38	-	-	-	-	-	117
	ES	-	98	-	-	-	-	-	-	-	-	-	98
	SE	-	447	-	-	-	-	-	-	-	-	-	447
	PL	-	150	-	-	-	-	-	-	-	-	-	150
		1.968	13.850	2.271	9.444	1.112	1.399	2.701	207	241	445	224	33.861

Table 9: number of international trains on RFC 2 sections in 2010

The breakdown of the corridor traffic by NUTS regions is described in Table 10. In this table, figures are calculated as the sum of import and export of one NUTS 2 region for international flows. Tonnage shares are ranked in decreasing order.

Country	NUTS 2 Region name	Tons %	Ton-km %
Belgium	Prov Antwerpen	**18,2**	**14,1**
France	Nord - Pas-de-Calais	**10,1**	3,6
Belgium	Prov Liège	6,4	2,9
Luxembourg	Luxembourg	5,6	2,5
Belgium	Prov Oost-Vlaanderen	4,7	3,4
France	Lorraine	4,3	2,3
Belgium	Prov. Hainaut	4,3	1,7
Italy	Lombardia	3,4	**3,8**
Netherlands	Noord-Holland	2,5	1,3
Belgium	Prov West Vlaanderen	2,4	2,3
TOTAL	**in tons, ton-km / year**	**21.820.000,00**	**13.159.000.000,00**

Table 10: breakdown of traffic by NUTS region

The figures show that the Antwerp region is the most active on the corridor. The region has, at first, a significant industrial activity. It also has an advantageous geographical position as it is located near a port and, in addition, it absorbs a significant amount of North and South flows in the corridor.

In general, one can notice a strong connection between the rail traffic and the existence of seaport infrastructure.

The region containing the city of Liège has significant steel industry which is supplied internationally via Dunkirk (Nord – Pas-de-Calais).

Looking beyond the top-3, the Luxembourg region obtains the fourth place in the activity ranking, due to its geographical position. The high activity of the Hainaut province is due to its geographical location, close to France and especially close to active regions such as Nord – Pas-de-Calais and Lorraine.

The Lombardy region, containing Milan, has a mix of high population and economic activity in Italy's industrialised North. Lombardy is more positioned towards the corridor and especially its corridor crossing point Basel than the also industrialised Emilia-Romagna area. The Swiss city of Basel itself and the surrounding region of Nordwestschweiz, present a relative large amount of traffic. In fact, this region is in the top 14 of regions which attract the highest amount of traffic on the corridor. On the other hand, the Alsace region, neighbouring to the Lorraine region, ranks only on the 25th position.
Further research showed that the Alsace region has a more national character and interacts highly only with Germany (traffic that is excluded from the corridor sphere of influence and therefore out of the study).

The South-Holland region (including Rotterdam) also interacts strongly with Germany and rail freight corridor 1 resulting in a low ranking as well.

Other regions which are lower than anticipated are: the Haute-Normandie area, including the port of Le Havre, the Lower-Normandy region, including the port of Cherbourg and Rhône-Alpes (including Lyon).

Research of all Rhône-Alpes traffic (not only the corridor) shows that there is a notable interaction between Lyon, Spain and Italy, yet 81% of the activity in the Rhône-Alpes region is based in France. This means that Rhône-Alpes is an active rail freight region, but most of its traffic does not cross RFC2 borders. The same analysis applies for the regions which are South of Rhône-Alpes: Languedoc-Roussillon, Provence-Alpes-Côte d'Azur and Liguria (which includes Genoa). In these regions, there is an important national rail freight traffic and an international Corridor 6 freight traffic but only a small international RFC2 traffic.

The Paris area is an exceptional case with its low international traffic. The socio-economic background demonstrates that the region activity is high: local unit manufacturing, mining, construction, accommodation (food) of a large number of people per year. The data shows that for rail freight this is largely a domestic affair as only 6% of transport with Paris as an origin or a destination is international on the corridor. By contrast the Brussels Capital Region has 41% international and Nord-Holland 33%.

International throughout traffic (also called transit traffic) of Paris is of course significant. This is also true for Antwerp and Basel. However, in the case of Paris, there is more transit traffic from Spain and Germany which are countries that are outside the scope of RFC2.

In terms of ton-km, Belgium is the biggest exporter with almost 6.3 billion ton-km and the biggest importer, with 4.9 billion ton-km. Due to the travel distance Italy has a large ton-km share on the corridor, despite the alternative of Corridor A/1.

The Netherlands and Luxembourg have a low share of tkm.

The average length of a journey on RFC2 is 603 kilometres.

		DESTINATIONS											
		BE	CH	DE	ES	FR	IT	LU	NL	PL	SE	UK	
ORIGINS	BE	-	248,00	297,00	410,00	2.625,00	1.194,00	418,00	480,00	56,00	372,00	156,00	6.256,00
	CH	131,00	-	-	-	38,00	-	15,00	-	-	-	-	184,00
	DE	332,00	-	-	-	49,00	-	-	-	-	-	184,00	565,00
	ES	166,00	-	-	-	-	-	-	-	-	-	-	166,00
	FR	2.078,00	209,00	43,00	-	-	361,00	120,00	102,00	-	-	-	2.913,00
	IT	1.189,00	15,00	-	-	27,00	-	21,00	-	-	-	-	1.252,00
	LU	231,00	-	-	-	69,00	117,00	-	-	-	-	-	417,00
	NL	229,00	-	240,00	-	337,00	-	-	-	-	-	-	806,00
	PL	-	-	-	-	-	-	-	-	-	-	-	-
	SE	396,00	-	-	-	-	-	-	-	-	-	-	396,00
	UK	146,00	-	57,00	-	-	-	-	-	-	-	-	203,00
	Total	4.900,00	472,00	636,00	410,00	3.146,00	1.671,00	574,00	582,00	56,00	372,00	340,00	13.159,00

Table 11: Rail transport per country on the corridor in million ton-km for 2010

The top commodity type transported by rail is metal products (NSTR5). This indicates the heavy industrial nature of the corridor, both in terms of input and output. The table below shows that a lot of bulk goods are transported on the corridor. The foodstuff and animal fodder share transported by rail represent only 2% of the total international activity. Second in ranking is commodity type 9 for miscellaneous goods mainly transported in containers. This commodity type is the only one growing in terms of volumes with 25% of the market shares.

COMMODITY	NSTR Code	in 1000 tons	%
Agricultural products and animals	0	1091	5%
Foodstuffs and animal fodder	1	436	2%
Solid mineral fuels	2	1527	7%
petroleum products	3	1964	9%
Ores and metal waste	4	1309	6%
Metal products	5	6546	**30%**
Crude minerals, building materials	6	1964	9%
Fertilizers	7	218	1%
Chemicals	8	1309	6%
Machinery and miscellaneous	9	5455	**25%**
	TOTAL	**21820**	**100%**

Table 12: Commodity distribution on the Corridor for 2010

Rail data is put into perspective when other modes are considered such as road and Inland Waterway transport (IWW). Road traditionally has a big share of freight transport. For IWW this is not always true in Europe. RFC 2 is suitable for IWW since most regions are connected by water and the waterways can handle quite some capacity as well. IWW traffic moving along a North-South route faces trends similar to rail freight traffic.

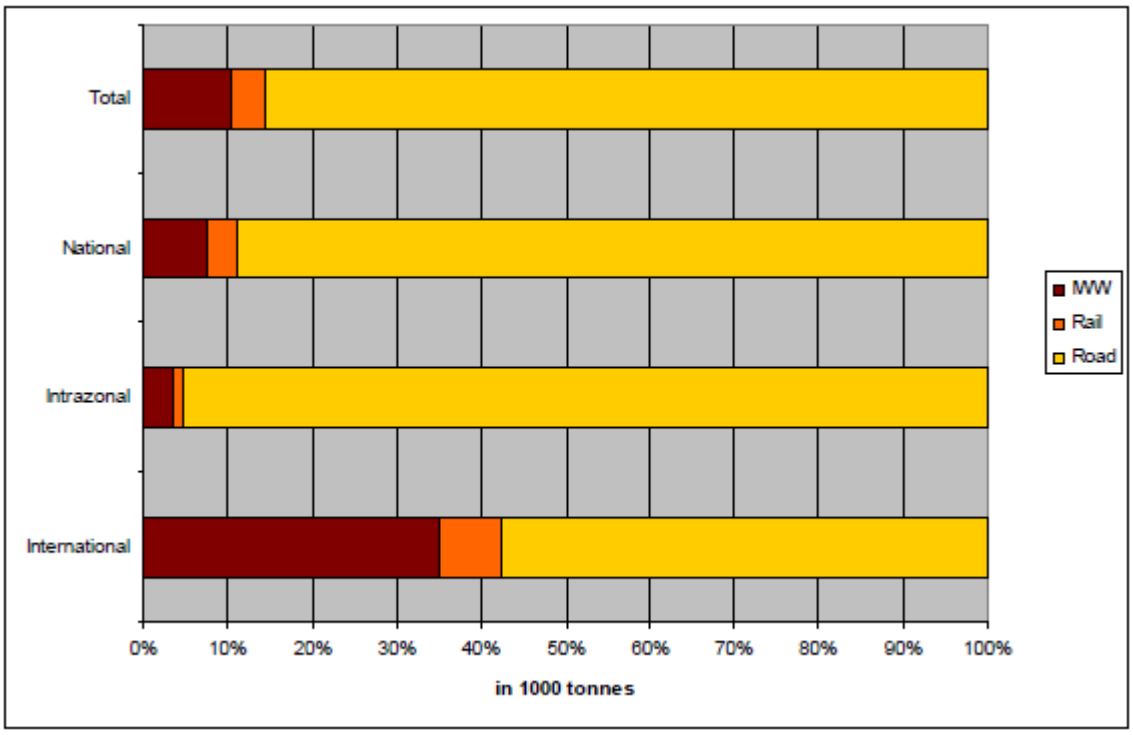


Table 13: Modal split per traffic type for 2010

The modal share of rail amounts to 8.1%.

The international rail freight RFC 2 traffic amounts to 21.8 million tons. This is 17.9% of the total rail freight RFC 2 (national and international) traffic that amounts to 121.4 million tons.

2.2.2 Assessment of customer needs

Objective

The objective of the interviews was to get an insight in the pros and cons of the rail system on RFC 2. The interviews serve as the basis for the assessment of customer needs of stakeholders.

Overview of stakeholders consulted

All interviews were conducted in the September-November 2012 period.

The next tables show:

- the number of stakeholders interviewed per category;
- the number of interviews per country;
- the number of shippers interviewed per category.

Category	Number
Railway operators	10
Intermodal operators	14
Logistics service suppliers	8
Shippers	19
Terminal operators	8
Ports	8
Others	4
Total	71

Table 14: Overview stakeholders interviewed

Country	Number
France, Switzerland, Luxemburg	39
Belgium	17
Netherlands	19

Table 15: Number of interviews per country[8]

Sector	Number
Automotive	1
Chemicals	3
Iron, ore, steel	5
Agriculture	2
FMCG (fast moving consumer goods)	7

Table 16: Number of shippers interviewed per category

General observations

During the interviews, it has been highlighted that most stakeholders were not (yet) active on the corridor. The stakeholders either prefer Corridor 1 (especially to the Alsace region in France and Basel in Switzerland), or they prefer road or barge.

There is a growing interest in RFC 2 related to the increasing congestion and expected works on Corridor 1. In general, the overall opinion is that in principle RFC 2 has good prospects, but it is essential that improvements are implemented on the service, organisational, operational and technical levels.

Most of the necessary improvements need to be implemented in France and Belgium.

The improvements mentioned mostly concern a more client oriented attitude expected from the rail industry in general (railway undertakings and infrastructure managers).

[8] The total in table15 differs from the total in table 14 as in some companies several persons have been interviewed

Regarding the development of volumes in the coming years (horizon 2016), most respondents expect volumes to be stable after several weak years. Especially the automotive and the related steel sectors are weak, as is the chemical sector.

Competition with other modes / comparison with other corridors

Competition with other modes

There is strong competition from the other modes, especially from road transport. Main reasons for this strong competition are:

- Destinations on RFC 2 are within the road competing distance. 80-90% of maritime containers have a destination within 250 km.
- Road transport rates are declining due to the entrance on the market of drivers from CEE countries.
- Road transport is more flexible.
- Road transport is more reliable, and if something happens, problems can easily be solved.
- Road transport is faster (road transport from X to Y has an A-B schedule; rail transport from X to France has an A-E schedule)[9].
- SNCF stopped their single wagon load services in France.

Inland waterway transport is not always an option along the corridor. Along the Rhine for destination in Alsace, Lorraine and Basel, this mode of transport is hampered by problems with water depth, which gives chances to rail transport.
Inland waterway transport from origins in the Netherlands and Belgium to destinations in the North-Western part of France (Nord-Pas-de-Calais) and Paris is seen as a better option than rail transport. For the other parts of France, inland waterway transport is usually not an option. There are too many locks and too many transhipment points. Some routes are attractive for barges, like the route between Le Havre and Paris region, and the route between Fos-sur-Mer and Lyon.

Comparison with the other Corridors

As regards comparison with Corridor 1, most respondents indicate that they prefer this corridor over RFC 2. Main reasons for this are:

- Price level on RFC 2 is too high (20% to 25% higher than Corridor 1). (shippers & logistic service providers)
- Services are more client-oriented on Corridor 1. If problems arise, operators do their best to find solutions and stay as close as possible near the agreed schedule. Another example is the slow reaction on path requests in France. Respondents indicate that ad hoc requests should be realised within days, not weeks. A path request from the Netherlands to Basel is handled on Corridor 1 within 72 hours, on RFC 2 this may take at least 2 weeks. (all)
- From the North Sea ports to Basel, more countries must be crossed in RFC 2 than in Corridor 1. Consequently, there are less problems on corridor 1 with rules and regulations, technical issues, language issues etc. (all)

[9] A-B or A-E schedule indicate the transport time in days between destinations. A-B indicates next day arrival, whereas A-E indicates arrival after 5 days.

Freight rates rail, road, barge

It is difficult to compare the price of the rail mode with the price of other modes and the price of the rail mode on RFC 2 with the price of the rail mode on Corridor 1. The perception of interviewees varies quite substantially from one market player to another. However, the general consensus is that prices on RFC 2 are currently higher than on Corridor 1.

Remarks made by stakeholders on freight rates include:

- Rail prices have been increasing for years with 4.5% to 5% per year. But the prices of road are stable or increase at a lower rate (all)
- Increase of RFF charges was 4.3% between 2011 and 2012, and will increase further at a rate of 4.8% in 2013.
- Prices of new rail operators are substantially lower than prices of historical operators. (all)
- Improved productivity of both employees and traction should decrease prices. (all)
- Automotive: Price: if road=100 (index figure), then rail is 130/140; this is the case for all origin-destinations. (shippers & logistic service providers)
- Basel via France is 20% to 25% more expensive for the end-customer (i.e. shipping customers) than via Germany. (all)

Barriers for the development of the corridor

Overview of main barriers

Respondents have been asked to inform the Management board on what they think are the main barriers to access the corridor (the fact that a barrier is listed by a respondent doesn't necessarily mean that the Management board agrees with the existence of this barrier).

The main barriers mentioned by them include:

- Lack of a client oriented attitude,
- Lack of reliability,
- Lack of flexibility,
- Lack of information.

Besides these barriers, other issues include operational barriers, technical barriers and organisational barriers. As a general comment, it should be noted that respondents indicate that most barriers are found in France and Belgium. Although this makes sense as most kilometres are made in these countries, it only counts for the technical barriers. However for the other barriers there is no relation between the kilometres and the size or number of the barriers.

Lack of a client oriented attitude

Many respondents indicate that railway operators and rail infrastructure managers lack client orientation and client friendliness at all levels, from management to drivers.

In general what needs to be changed is that the client requests must be leading, not offered services, and operators need to understand the clients' transport needs.

Lack of reliability

At the heart of logistics is the importance of service reliability. Its success is based upon the ability to deliver freight on time with no damage. Shippers indicate that they don't have problems with longer transit times of rail transport compared to road transport. But shippers also indicate that they cannot deal with unreliable schedules, especially given the increasing complexity of logistics chains.

Longer transit times can be tackled with good planning. This means that unexpected delays can have important negative consequences for production processes.

Lack of flexibility

Flexibility, especially when compared to road transport, is not the strongest point of rail transport. However, shippers and railway operators complain about the lack of flexibility, and are apparently under the impression that progress can be made here.

An important tendency in logistics which influences the demand for flexibility is that the planning horizon of even the bigger shippers shortens, especially in the current crisis situation.

Lack of information

Information in modern logistics chains is essential. Information steers all production and assembly processes.

Given the importance of information, it is remarkable that a large majority of the respondents indicate that information services related to rail transport are very insufficient.

The following list shows some of the complaints regarding information services as indicated by respondents:

- Usually there is no information available about where the wagons are; especially after border crossings, it is often unclear where the cargo is. In fact wagons tend to disappear on a regular basis, even weekly. (shippers & logistic service providers)
- There is often no information given about delays. And when such information is given, no information is given about the new Expected Time of Arrival (ETA). (shippers & logistic service providers)
- Infrastructure managers not always give advance information about maintenance and/or repair works to operators and shippers. Respondents would like to receive such information in advance whenever possible. Preferably this information is also accompanied by a proposal of a possible solution to overcome these works. (railway undertakings)

Apart from the lack of information, respondents also indicated that information exchange is not standardised, especially information exchange with infrastructure managers.

An additional aspect of information

Another important but completely different aspect of the lack of information regarding rail transport can be most effectively illustrated by the following statement of one of the respondents (shipper):

> "Road transport is easy. You go to a trucking company. But to whom should you go if you want to transport via rail? How can you obtain the right information, the scheduled services, the price etc.?"

This statement seems to indicate that something is lacking in the promotion of rail transport.

Operational barriers

Respondents mentioned a large number of operational barriers, of which the most mentioned are:

- Extra staff is needed for shunting / coupling in France and Belgium. (railway undertakings)
- It is difficult and time consuming to get approval for locs and wagons in France and Belgium which are already approved in the Netherlands. (railway undertakings)
- SNCF has remodelled its single wagon services and offers less opportunities. Respondents indicated that single wagon services are still needed, even by shippers with large volumes. Shippers indicated that they are not (always) capable of offering large enough volumes. (shippers & logistic service providers)
- For Belgium and the Netherlands, separate wagon lists are required. In the Netherlands this procedure is easy via a simple email, in Belgium this procedure is seen as difficult. Shippers complain about a complicated website they have to use for this procedure. This is an example that there is no standard exchange of data and information between IMs and RUs (railway undertakings)
- In France each SNCF region has its own locs, and changing locs costs time. The reason behind this is that each region takes care of the maintenance of its own locs and therefore generates employment (railway undertakings)
- To enter a terminal in Belgium, first a safety agreement should be signed between the infrastructure manager Infrabel and the train operator. (railway undertakings)
- In Antwerp all terminals/shunting areas are behind each other. If one area is occupied, it is impossible to pass. This is better organised in, for example, Basel. (railway undertakings)

Technical barriers

Respondents mentioned a large number of technical barriers, of which the most mentioned are:

- The route via the Netherlands – Germany to Basel requires two different safety systems. The route via the Netherlands – Belgium – France requires three safety systems
- In Roosendaal, it is not possible to change locs of long trains. (railway undertakings)
- The slopes in the Belgian Ardennes limit the tonnage a train can carry. (railway undertakings)
- Not all cargo can be routed via Thionville – Basel (limited to P/C45); P/C70 is needed in the Arzwiller tunnel. A number of respondents indicate that they expect that adaptation of the Arzwiller tunnel could lead to 20% more volume. (railway undertakings)
- Limited tonnage on different parts of the route (1600/1300/1400 tons) (railway undertakings)
- Differences in maximum length (only 620 meters in Belgium during day) (railway undertakings)
- On Calais-Lille not all containers allowed (limited to P/C45) (railway undertakings)

Organisational barriers

Respondents mentioned a large number of organisational barriers, of which the most mentioned are:

- Regional passenger trains usually get priority over international freight trains, despite EU regulations. (railway undertakings)
- In France many intermodal terminals have been closed. Now the number of terminals in France is too low, and as a consequence terminal costs are relatively high. (all)
- Private operators have a lack of engine drivers. Drivers prefer working for state owned companies because of better primary and secondary working conditions (high wages, more holidays, security etc). (railway undertakings)

- The training of engine drivers is monopolised and in the hands of state owned companies. The training is too expensive and takes too long. Respondents indicate prices and duration are a factor 3 to 5 too high. (railway undertakings)
- In Belgium all tracks can be run from both directions what makes maintenance easier, because trains can use the opposite track. This is not possible in France. (railway undertakings)

Other barriers

Other barriers mentioned by respondents include:

- Railway operators active in France need a local office there. (railway undertakings)
- Though refunds can be awarded after delays, respondents indicate that in practise the cause of the delay is always force majeure, so no refund is paid. (railway undertakings)
- There are language problems for drivers and other staff. (railway undertakings)
- Respondents indicate that Antwerp has relatively high parking fees. (railway undertakings)
- Many respondents indicate that freight rates are often uncertain, even after lengthy negotiations (all)
- In Belgium it is very difficult to calculate traction rates, for customers wanting to order rail freight services. Via a website the rates can be calculated, but this requires rather complicated formulas with up to 12 variables that need to be filled in. Respondents indicate that they would appreciate it if the calculation software would be freely available. (railway undertakings)
- Given the number of countries involved in RFC 2, respondents mentioned that too much national legislation is a barrier for their operations. (all)
- On RFC 2 there is too little competition compared to Corridor 1. On RFC 2 apparently there are 6 operators active, while on Corridor 1 there are 20 operators active. (all)
- The last mile is too expensive. Examples given include €1000 in Lyon/Strasbourg compared to € 300 in Germany. (all)
- Engine drivers authorised in the Netherlands and in Germany are not allowed to work in France. (railway undertakings)

Prospects

Respondents were asked about the prospects they see for RFC 2. The following prospects were mentioned:

Market circumstances

- The lack of capacity on Corridor 1 will make RFC 2 a real option for shippers. (all)
- The increasing attention for environmental impact of transport will benefit rail transport, which is seen as more environmental friendly. (all)
- As a possible consequence of increasing attention for environmental impact, road transport could become more expensive due to higher road user charges. This could be beneficial for rail transport. On the other hand, road freight rates are under pressure due to increasing numbers of CEE road transport operators entering the market. (all)
- Congestion on roads could also strengthen the competitive position of rail transport. (all)

- Innovative packaging technology allows longer transport time. Due to this development, perishable commodity types like fruit and vegetables could become interesting for the rail market. (all)
- Some respondents state that the regions Ile-de-France (Paris), Rhône-Alpes (Lyon) and Nord-Pas-de-Calais (Lille) are very important economical areas. These areas will continue to grow and therefore the corridor has prospects. (all)
- The opening of the new Gothard tunnel, the opening of the new line Lyon-Turin, and better accessibility of Dunkirk, Zeebrugge, Antwerp and Rotterdam ports are seen as prospects for the corridor. (all)

Rail sector issues

- RFC 2 now runs to Lyon. An often mentioned prospect is to expand the corridor towards Spain, and combine cargo to/from Spain on the corridor. (all)
- South of Lyon, according to some respondents, is an area where the chemical industry is active. Railway operators should match the need for transport services of this area with the chemical flows north-south to get full loads both ways. (all)
- Several respondents state that if P/C70 is implemented in the tunnel of Arzwiller, volume will potentially go up with 20%. (Railway undertakings)
- Some respondents indicate that offering night jumps in rail transport offers good possibilities, though at the same time they indicate that such night jumps are attractive for many customers and therefore there will soon be a capacity bottleneck. (all)
- The pricing policy in the rail sector should be made more commercially and tailor made. As an example mentioned by some respondents, in the current situation shippers pay the same freight rates whether they bring large or small volumes. (all)
- Some respondents state that safety rules are important, but that safety rules in the rail sector may be overdone. A more reasonable safety framework would facilitate rail transport. (all)

Key success factors

Price is the key

The following statement of one of the respondents is illustrative of the relationship between price and quality factors like reliability and flexibility.

> “Reliability is one thing, but it is also relative. The main issue is costs. Reliability and speed are only an element of costs!”

In the end, and this is supported by statements of other respondents, price is the most important factor. If the price is not right, volumes will be transported by other modes. Respondents indicate that more competition is needed between rail operators on the corridor to get better prices.

An important instruction here is that even if rail transport would become reliable and flexible and client oriented etc., in the end rail transport will not be attractive if the price is not right. The price is not only the terminal to terminal price, but the door to door price. Especially the last mile can have significant impact on the total price.

Other key success factors

Assuming that the price of rail transport is competitive with the price of other modes, the next important key success factors are:

I. Service orientation

Service orientation requires a client oriented attitude and the offering of services in line with client demands instead of supply. Regular services are a prerequisite. Some respondents would want to be offered a complete door-to-door concept. Important for the management of the corridor is that there is one central point customers can communicate with.

II. Reliability

This requires a strong reduction of the number of interruptions (strikes, maintenance, etc.), guaranteed departures and arrivals. Again, transit time is not the issue as long as there is no delay. Delay is not permitted as alternatives are not available. Once the container or wagon is in the rail system, it is out of control of the forwarder – shipper.

III. Flexibility

Shippers mention flexible volumes and flexible bookings (bookings week A for week B would be preferable).

IV. Information

This concerns tracking and tracing facilities, advance information on delays, maintenance and repair works, reliable price information, easy accessible price information. This also concerns promoting the corridor and its "success stories".

Respondents' recommendations

Respondents were asked to give recommendations for railway operators and rail infrastructure managers. Below the most important are listed:

Service orientation

- Create trust, openness and stability. (all)
- Understand customers' needs, understand your role in the transport chain. (all)
- Do not react in reflex answers like: this is government policy, there is a lack of funds or we only can improve services if we invest in hardware / infrastructure. (all)
- Rail transport works extremely well in Germany and Switzerland, but in France/Belgium the service is not adapted to the needs of shippers. Listen to the needs of clients! (all)
- Strongly improve market orientation of incumbent freight operators, and create a total independence between RFF and SNCF. (all)

Market opportunities

- Develop rail-ports in France. (all)
- Provide and/or support "last mile" solutions. (all)
- Start daily reliable departures and daily arrivals in Lyon instead of 3 x per week. (logistic service providers)
- Extend the corridor to Paris and Calais/Dunkirk (all)
- Develop 1 stop shopping. Establish a single point of contact and a uniform communication system. (railway undertakings)

Other issues

- Harmonise infrastructure requirements. (railway undertakings)
- Standardize specific data and information exchange processes, especially the processes with infrastructure managers (railway undertakings)
- Review the gauge calculation (P/C70 issue) between Thionville and Basel (railway undertakings)

2.3 Market projections

2.3.1 The forecasts on the geographical and socio economic context

The forecasts have been made using the Transtools model V2.5 and were based on the data gathered in the previous task. Two economic background scenarios (high economic growth and low economic growth), a reference scenario and a project scenario were analysed for three points in time: 2014, 2020 and 2030. The project scenario can be summarized as follows:

Corridor Implementation	2014	2020	2030
45 minute travel time reduction	x	x	x
15 minute border crossing time reduction		x	x
Liefkenshoek: trains from or to the left bank of the port of Antwerpen : 10% time gain		x	x
New junctions at Busigny and Aulnoye (for alternative Calais/Dunkirk–Arras–Cambrai–Aulnoye instead of Lille-Valenciennes-Aulnoye) 10% time gain		x	x
2nd track Fleurus-Auvelais : time gain			x
Reorganisation of Bettembourg command post: 5% time gain			x
New junctions in the Metz node: 5% time gain			x
4 tracks on the north of Strasbourg: 10% time gain			x
refitting of Oude-Landen junction at Ekeren and the Krijgsbaan junction			x
cost reduction of 10%		x	
cost reduction of 20%			x

Table 17: project scenario

The tables below summarise the results, expressed in number of international trains, in thousands of tons and also the evolution over the years.

Number of trains	Year	Short term	Mid term	Long term
	2010	2014	2020	2030
Low economic growth + reference	33853	33853	34986	36799
Low economic growth + Corridor Implementation		33882	35083	36981
High economic growth + reference	33853	33853	38237	41981
High economic growth + Corridor Implementation		33882	38343	42190
Low economic growth + reference (% growth vs 2010)	0,00%	0,00%	3,35%	8,70%
Low economic growth + Corridor Implementation (% growth vs 2010)		0,09%	3,63%	9,24%
High economic growth + reference (% growth vs 2010)	0,00%	0,00%	12,95%	24,01%
High economic growth + Corridor Implementation (% growth vs 2010)		0,09%	13,26%	24,63%

Table 18: forecast results in number of trains

International tons (x1000)	*Year*	*Short term*	*Mid term*	*Long term*
	2010	*2014*	*2020*	*2030*
Low economic growth + reference	*21764*	*21764*	*22537*	*23631*
Low economic growth + Corridor Implementation		*21784*	*22600*	*23749*
High economic growth + reference	*21764*	*21764*	*24654*	*27015*
High economic growth + Corridor Implementation		*21784*	*24724*	*27151*
Low economic growth + reference (% growth vs 2010)	*0,00%*	*0,00%*	*3,55%*	*8,58%*
Low economic growth + Corridor Implementation (% growth vs 2010)		*0,09%*	*3,84%*	*9,12%*
High economic growth + reference (% growth vs 2010)	*0,00%*	*0,00%*	*13,28%*	*24,13%*
High economic growth + Corridor Implementation (% growth vs 2010)		*0,09%*	*13,60%*	*24,75%*

Table 19: forecast results in thousands of tons

Compared to today, the project scenarios lead to an additional growth in the number of trains of around 9% for the low growth scenario and 25% for the high growth scenario by 2030. Note that these % do not take into account possible shifts from Corridor 1 due to congestion and works on Corridor 1. These shifts might be substantial but Transtools does not take into account capacity constraints and hence does not take into account congestion. Note that shifts due to works on Corridor 1 might only be temporary. Moreover the OD matrix used as a starting point is limited to the regions defined in Task 1 and the matrix developed in Task 2. As it is possible that some relevant traffic flows are not included within this matrix, possible shifts towards RFC 2 might be slightly underestimated. However, given that the matrix was constructed in such a way to account for most relevant traffic the total effect of this will be small.

2.3.2 Improvements in the rail transport system

This section of the study identifies limits of the current and future railway infrastructure. Two main issues are highlighted: capacity bottlenecks and sections with limited capacities for freight trains, and lack of any alternative route for some sections. These parts are currently developed in the Investment Plan at Section 4.

Taking into account the results of the traffic forecasts, the expected traffic increase, even in high-growth scenario and 2030, should be supported by the infrastructure improvement projects already identified and described, or those who are being defined by IMs.

2.3.3 SWOT analysis

The objective of the SWOT analysis is to identify the key internal and external factors that are important for the success of the corridor. The SWOT analysis is mainly based on the stakeholder assessment.

The SWOT analysis for RFC 2 shows the following points:

Strength:
Handling large and regular volumes,
More access points than IWW (Inland Waterways),
Less hampered by driving bans on weekends and holidays,
Not influenced by high and low water levels,
Good connections with ports,
Avoiding road traffic congestion

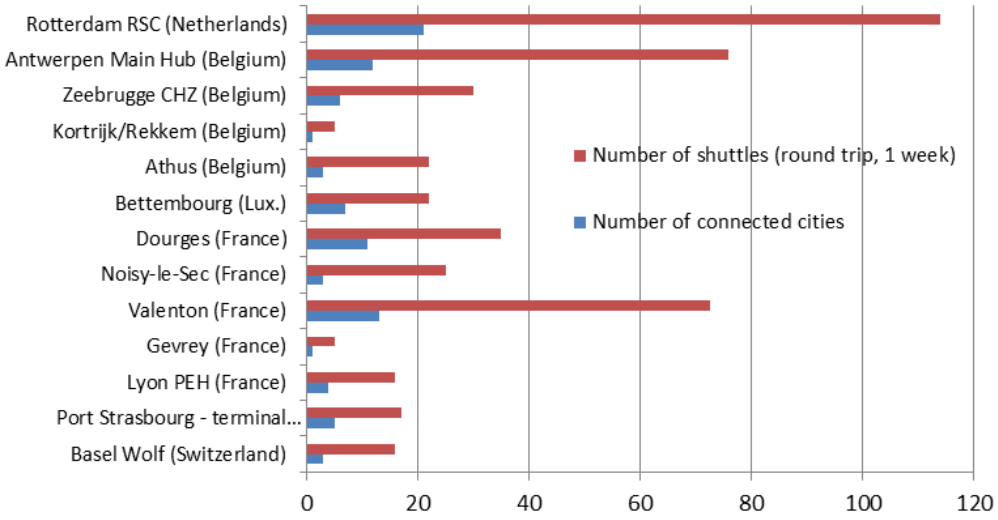
Weakness:
Lack of client oriented attitude,
Weak information services,
Lack of reliability,
Lack of flexibility,
Too much national legislations,
Handling small and irregular volumes,
Current price level is too high compared to road transport,
Technical bottlenecks.

Opportunities:
Improved competitive position compared to road transport,
Increasing environmental awareness,
Congestion on roads,
Increasing levels of road tolls,
New markets,
Expansion of client basis,
RFC 2 is situated near large economic centres,
Capacity issues on Corridor 1 may make RFC 2 an option,
Technical improvements.

Threats:
Decreasing competitive position with road transports,
Weight and dimensions of trucks increasing,
Road cabotage allowed,
Opening rail national markets takes too much time,
Economic crisis,
Changing maritime transport patterns,
Last mile costs.

2.3.4 Practices and operational models

Whereas previous sub-task 3.2 mostly focused on railway infrastructures, this part focuses on *soft measures*, that is to say practices and operational models. Three main aspects were treated: combined transport terminal operating, rolling stock and international paths together with cross-border management.
In order to compare terminals, ratios were used to measure productivity on 13 major combined transport terminals, selected to cover perimeter and extensions, and diversity of situations (port, etc.). They represent 411 return services (56% of return services generated on the corridor).
For example the following chart presents the weekly number of shuttles (round trip) and number of connected cities.



T*able 20: weekly number of shuttles (round trip) and number of connected cities*

The foremost conclusion is the diversity of situations observed: diversity in service offered (frequency, number of cities served, etc.), hinterland diversity, diversity in terminals layouts (e.g. area available, length and number of tracks) as well as operating procedures (transfer engines, etc.). This diversity is the consequence of combined transport operators' adaptability regarding on the one hand market specificities and, on the other hand, terminals' physical constrains. No particular operating model comes to light, in reality there are as many operating models as there are terminals.

This diversity is reflected only partly in transhipment costs, which are estimated at around 25-35 euros / ITU in case of inland terminals, and are above 50 euros / ITUS in case of seaport terminals. Hence, differences in economic and technical ratios are a consequence of technical and operational choices made by taking into account the terminals physical constrains, rather than of a better or a worse terminal efficiency.

However, terminals can be classified into three categories on the basis of traffic, other criteria being less useful for classification:

- main terminals have yearly traffic over 200,000 TEUs, with more than 50 shuttles per week. They represent 60% of the traffic sample and 69% of shuttles. These are: Rotterdam RSC, Valenton and Antwerpen Main Hub;

- intermediate terminals have yearly traffic between 50,000 and 150,000 TEUs. They represent 34% of the traffic sample and 21% of shuttles. These are: Dourges, Bettembourg, Noisy-le-Sec, Zeebrugge CHZ, Athus and Strasbourg Terminal nord;

- traffic of the lowest economic importance terminals have is less than 50,000 TEUs per year. There are less than 30 shuttles per week. This is Basel Wolf, Lyon PEH, Kortrijk and Dijon.

Category	Country	City	TEUs (2012)
1	NL	Rotterdam	666.000
1	FR	Valenton	297.000
1	BE	Antwerp	270.000
2	FR	Dourges	148.100
2	LUX	Bettembourg	126.000
2	FR	Noisy le Sec	120.000
2	BE	Zeebrugge	119.000
2	BE	Athus	105.000
2	FR	Strasbourg	83.600
3	CH	Basel	45.700
3	FR	Lyon	37.300
3	BE	Rekkem	34.000
3	FR	Dijon	10.800

Table 21: terminal traffic in 2012 (in TEUs)

As frequently highlighted by participants, many malfunctioning persist regarding both rolling stock (locomotive accreditation, trains) and international paths. These malfunctioning hinder the rail mode's competitiveness on international journeys compared to its main competitor, road transport. Implementation of competitive freight corridors, in particular RFC 2, is a real opportunity to facilitate international rail flows by smoothing out all of those journeys' obstacles (rolling stock accreditation, border crossing, etc.).

2.4 Multi criteria analysis and impact on the stakeholders

In the Multi Criteria Analyses the estimated impact on the performance of the corridor of the different soft measures to the different stakeholders was analysed (Coordination of works, Capacity allocation / Corridor One Stop Shop, Traffic Management, Traffic Management in the event of a disturbance, Train Performance Management and Authorised applicants).

It shows that:

- The measures of the Corridor have the strongest impact on "Reliability of service" and "Client oriented attitude". This indicates that the measures are fully in line with the results of the market study that identified reliability of service and client orientation as very important areas for overall improvement of the performance of the corridor.
- Capacity allocation/C-OSS seems to be the measure with the highest impact as it is immediately compulsory and it is a radical change compared to the reference situation.
- Coordination of works is second as this topic has been partly ignored so far. Therefore the new measures will have a strong impact. Coordination of works seems to be the easiest measure to implement.

- The impact of the traffic management measures is expected to be overall positive, but is considered less obvious as it is a complex topic and changes are hard to implement in this matter.

Recommendations of the Transport Market Study consultants

Based on the results of the market survey, the SWOT analysis, the analysis of the market conditions, the infrastructure analysis and previous experiences with other corridors an Action Plan has been proposed, focusing on enabling growth of rail freight volumes on the RFC 2. The Action Plan is targeting to all stakeholders and not limited to the Infrastructure Managers.

The Action Plan aims at enhancing the overall framework condition of the Corridor, which includes improving the capacity of the railway, as well as the rail freight services. The proposed solutions cover a very large range of barriers the railway transport stakeholders face to. It should be noted that most of the proposed actions are already implemented or in the process of being implemented.

These solutions are the focus of the Action Plan and can be bundled in 6 clusters:

- **Corridor management**

This cluster refers to actions aimed at enhancing the corridor management. There are several solutions for the identified problems which can be overcome or at least alleviated if there is one actor with a clear agenda taking actions on it, while being supported by all key stakeholders at the highest level. Solutions such as the introduction of multi system locomotives and authorisation for cross-border trade, harmonisation of standards and safety requirements, promotion and organisation of a one stop service with common language, implementation of tracking, tracing and surveillance systems and others fall under this cluster. The Corridor management should be leading the way to initiate solutions to turn infrastructure managers and railway undertakings into client oriented companies, improve information services and strive for standardisation and find solutions for technical problems.

- **Client oriented attitude**

This cluster is focused on transforming the rail corridor organisation into a client oriented service organisation at all levels. The introducing the recommendations of the recently established RAG (Railway Advisory Group) and TAG (Terminal Advisory Group) will increase the client orientation of the IM's.

- **Information services and standardised / harmonised procedures**

This cluster is focused on finding solutions for the lack of information all clients complain about. The cluster also includes actions aimed at standardisation of information exchange between client, railway operators and infrastructure managers.

- **Pricing**

This cluster focuses on actions bringing clarity in pricing schemes, harmonisation of pricing systems and analysis of the total costs of rail transport, including terminal costs and last-mile costs

- **Legislation**

This cluster aims to harmonise national legislation in such a way that rail transport along the corridor is facilitated.

- **Technical barriers**

Action in this cluster focuses on finding solutions for the technical problems as identified in the previous Tasks.

The table below lists the different possible actions for each of these clusters.

Table 22: possible actions for each barrier, as proposed by consultants

Corridor management		
Action	**Stakeholder**	**Description**
Establish working groups within the Corridor Management, with participation of all stakeholders	IM	Establish working groups in the following fields: – Information services – Pricing & marketing – Legislation – Technical barriers
Develop action and implementation plans for working groups	IM	– Develop action plans for the working groups based on prioritised barriers – Check prioritisation with stakeholders and especially clients – Develop realistic implementation plans
Infrastructure improvement projects	IM	– Favour implementation of rail capacity projects – Support technical studies aiming at increasing railway capacity beyond already planned projects
Improvement of paths coordination at borders		– Improve national paths' coordination at borders (i.e take into account time for administrative and management procedures)
Develop a monitoring procedure	IM	– Monitor progress of the defined Actions
Liberalisation	- Ministry - IM	– Continue to work on minimising the dependence between the IMs and the incumbent railway undertakings in corridor states. – Facilitate more competition on the corridor
Extension of the Corridor	Ministry & IM	– Consider extension of the Corridor
Client orientation		
Action	**Stakeholder**	**Description**
License/safety certificate	Ministries/ NSA	– Speed up license/safety certificate process along the corridor to facilitate quicker access of the RUs.
Path allocation and real time traffic	IM (all described actions)	– Analyse the different national procedures for path allocation. – Design an efficient and effective and flexible procedure that is in line with client's demand. – Reduce response time for path requests by setting up corridor monitoring system, particularly with regard to ad-hoc path requests. – In case of maintenance and construction works, provide paths on alternative route with similar performance (energy, speed, tonnage, etc) – Provide the paths which adapt as much as possible to the logistical requirements of the applicants (e.g. several route options and associated charge options and transport time.) Dialogue with the railway undertakings concerning their satisfaction of the paths allocated compared to their requests. – Improve the transparency of path allocation processes – In case of delays aim to keep the train as close as possible to the original path – Give an unique path ID number from end-to-end
Train personnel in client orientation	RU	– Develop and implement training for personnel (all levels) in client orientation. Discuss additional activities with drivers that save costs (i.e. opening gates during shunting etc)
Language	Ministry & IM – All - All	– Investigate on opportunities for a single working language on Corridor (operational level, information level) – Give language training to personnel that works on the corridor – Recruit new personnel with good language skills

Information services and standardised / harmonised procedures		
Action	**Stakeholder**	**Description**
Set up / improve tracking & tracing information services	IM (all described actions)	– Set up information services that allow clients to monitor international transport progress – Distribute new ETAs in case of delays – Set up a corridor monitoring system
Harmonise / standardise information requested by different stakeholders	IM (all described actions)	– Harmonise information requested by IMs (i.e. wagon lists differs in B and NL) – Harmonise how information should be supplied to IMs (differs in B and NL)
Give information about delays due to maintenance / construction works	IM (all described actions)	– Distribute in advance and as early possible information of maintenance and construction works that cause delays – Give easy access to information on maintenance and construction works – Make critical traffic information (e.g. delays) timely available to the terminal operators, RUs, and the rail operators.
Promotion	IM	– Actively promote the use of the Corridor. Be good and tell it.
Pricing		
Action	**Stakeholder**	**Description**
Harmonise price and tariff systems	IM (all described actions)	– Analyse national price and tariff systems. – Offer better information on factors influencing rail charges variation in middle-term – Prepare recommendations to harmonise different levels of calculation of access charges and/or other charging methods. – Distribute information on prices and tariffs and methods to calculate these among all interested parties.
Develop new pricing policies	IM	– Make flexible and tailor made price arrangements with clients. Clients complain about rigid pricing systems and lack of facilities like price savings for larger volumes. Discuss with clients about pricing policies.
Monitor total costs	IM	– Monitor total costs for clients using the corridor. An insight in other costs (terminals, last mile, parking fees) is essential to stay competitive.
Legislation		
Action	**Stakeholder**	**Description**
Approval of locos and wagons	NSA	– Introduce cross-acceptance of authorisation procedures of locs and freight wagons along the corridor.
Approval of loc drivers	NSA	– Harmonise approval of loc drivers. In the current situation loc drivers approved in The Netherlands and in Germany are not allowed to work in France.
Technical issues		
Action	**Stakeholder**	**Description**
Strive to introduce TSI and TENT-T core network standards for rail corridors	IM (all described actions)	– Investigate introduction possibilities of uniform loading gauge profile (P400 or UIC GC), train length (750m at least) and axle load (22,5t) throughout the corridor – Explore opportunities for operating longer, heavier, and faster trains along the Corridor, paying attention to their fitting with the track, waiting tracks, sidings, and the rail terminals
Investigate Arzwiller tunnel	IM	– Investigate possibilities to upgrade the Arzwiller tunnel gauge.
Prioritise bottlenecks and plan removal	IM	– Removal of bottlenecks, construction of dedicated freight tracks, urban bypasses and encouragement of the building of new (open-access) terminal capacities
Improvement of shunting areas	IM & RU	– Implement measures to make operations at shunting areas more flexible (e. g. Antwerpen is a major problem area)
Lengthening of yard tracks to allow 750m's trains operations	IM	– Lengthening of yard tracks to allow 750m's trains operations between Lorraine and Belgium/Luxemburg. Significant increase of 750m's trains number is expected
Speed up track maintenance	IM	– Monitor new technological developments in track maintenance

The proposed actions will lead to:

- **Enhancing the quality of rail freight services**: more transparency, more competition, new concepts to enable a more efficient traffic management.
- **Enhancement of infrastructure capacity**: uniform loading gauge profile (P400 or UIC GC), train length (750m) and axle load (22,5t) throughout rail freight corridors, measurement of the existing loading gauge, intensive capacity extension and removal of bottlenecks and encouragement of the building of new (open-access) terminal capacity
- **A level intermodal playing-field**: introduction of a more competitive infrastructure access charging scheme providing an intermodal level playing field.
- **Moderate investments in infrastructure**: the transport forecast shows a moderate growth of the freight volumes on the corridor, which can be absorbed with the current infrastructure; if some of the most stringent bottlenecks are deleted.

Management board conclusion

The Management board reviewed the Transport Market Study and took note of stakeholders' comments. It has already taken into consideration or will take into consideration many of these comments. Indeed, the implementation of RFC 2 in itself as well as actions which will be taken by the corridor following studies which are currently being carried out constitute, at this stage, the Management board's answer to reduce barriers on RFC 2.

Concerning the setting up of RFC 2,

- the amount of pre-arranged paths provides more flexibility for applicants;
- allocated pre-arranged paths benefit from a legal protection and therefore be more reliable
- the corridor - one-stop shop enables applicants to have a single contact point;
- the coordination of works at corridor level secures capacity;
- the coordination of traffic management provides more reliability;
- by publishing the Corridor Information Document, including the Implementation Plan, as well as works scheduled on the corridor lines, the Management board provides more information to customers;
- the creation of the railway advisory group enables the Management board to be closer to market's needs and therefore more customer oriented;
- the train performance management contributes to the improvement of rail performance.

Following meetings held up to now with the Railway advisory group, the Management board has undertaken to work with railway undertakings on the following four subjects, with the ultimate aim to implement news measures to improve railway service:

- infrastructure charges and railway undertaking costs;
- infrastructure upgrade (loading gauge in a first step, then longer trains along the whole corridor);
- cross border acceptance to border stations;
- coordination of works.
- The Management board will set up and regularly update an action plan in which will be listed the main barriers to the development of rail freight and the measures to reduce them, as discussed with the RAG

3. Objectives of the freight corridor

The performance of the Corridor will be monitored via different KPI or other measurements. The content of these are described more into detail in chapter 5.8.3. For all KPIs, measurable objectives are fixed. These can be found in this chapter.

3.1 Train Performance Management: a corridor oriented performance scheme

3.1.1 RFC 2 and Train Performance Management

RFC 2 has pledged itself to continue the Train Performance Management (TPM) project, as described more into detail in chapter 5.8 of this implementation plan. The aim of TPM is to build an international common system and international common procedures, which enable a corridor organization to measure, analyse (raw data, weak points, operational information…) and take actions to improve train performance. TPM within RFC 2 is based on the experience in RNE corridors 2 and 5, to create a common approach for Train Performance Management. This harmonized method could be used on other corridors or lines in the future.

RNE, as service provider of choice, has drafted a general guideline for the setting up of the project in the different corridors. In early 2013, RFC 1 and RFC 2 together drafted a practical handbook in addition to this guideline, in the scope of best practices. This way, we intend to stimulate a common method to measure, analyse and improve the performance across different corridors.

RFC 2 agrees to continue its participation to RNE coordination meetings, to share its experiences, and to continuously update the best practices.

The TPM expert working group (EWG) meets twice a year with RU representatives. In these meetings, the EWG will give an overview on the progress made and discuss with the RUs the next steps to be taken. This means that the global punctuality objectives will be refined per axis and possibly per measuring point and will be updated during these meetings. This aspect of TPM will be part of the RFC 2 annual customer satisfaction survey (see also chapter 5.8.4).

3.1.2 RFC 2 and European Performance Regime

The partners in the European Performance Regime (EPR) project are still discussing on how and if to implement the outcomes of the project in the medium/long term. However, some project participants (IMs and RUs, together with RFC 1 and RFC 2) discussed on how to take advantage from the features of the project that are immediately applicable and can bring an added value to the tasks already performed in the field of quality monitoring and improvement, such as the TPM within the frame of the rail freight corridors and RNE corridor organisations. These tasks consist of, among others, the provision of punctuality and performance reports for specific routes along the corridors. Data quality remains an important issue that should be tackled more effectively in the framework of such reports, thus it has been decided to test the application of the tools and procedures related to data quality developed within EPR in the production of the TPM reports.

RFC 2 chooses, as a first step, to participate in this test where the EPR tool can help to improve the data quality of the information coming out of TIS, which is used for TPM. If these tests would prove to have an added value to TPM, the EPR tool will be used for this reason.

In the medium/long term, the possibility remains to merge TPM with EPR. However, in the short/medium term, RFC 2 does not plan to implement the financial part of EPR. The following graphics explain the connection between the two projects.

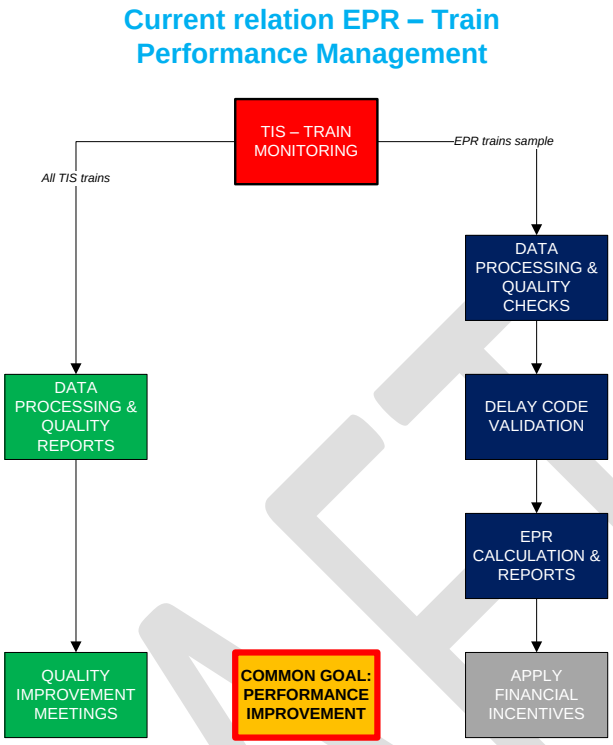


Chart 3: EPR and TPM today

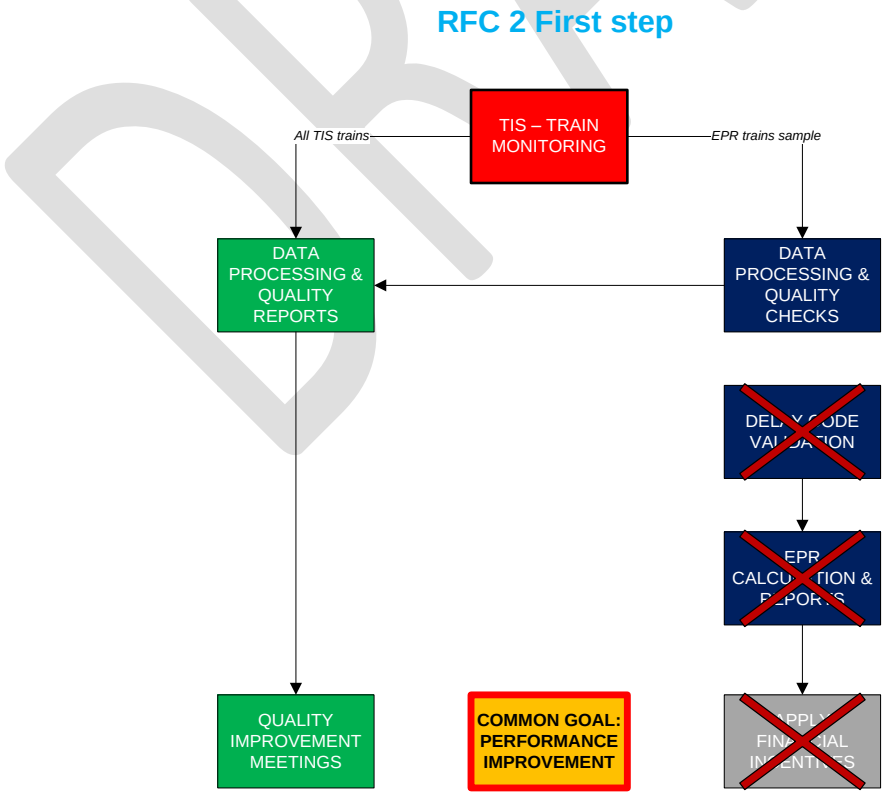


Chart 4: RFC 2 performance management system (first step)

RFC 2 Possible second step

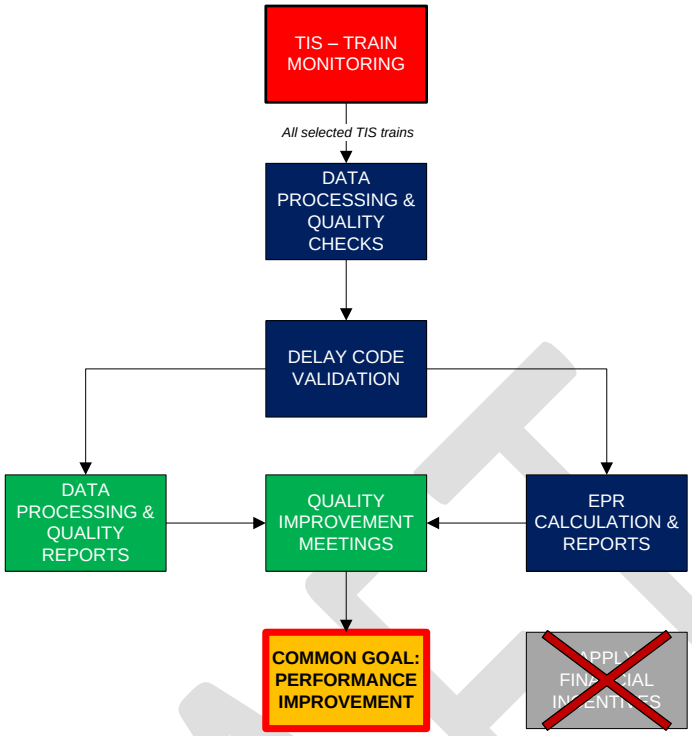


Chart 5: RFC 2 performance management system (possible second step)

3.2 Punctuality Objectives

It is the goal of the RFC 2 to improve punctuality on the Corridor. This goal can be reached by 3 methods. The Train Performance Management, harmonisation of the PaP Catalogue and the removal of traffic bottlenecks. TPM is described in chapter 3.1, and further in detail in chapter 5.8. The removal of bottlenecks is described more in detail in chapter 1.2.2, 3.3.5 and 4.3.1.

The set up of the yearly PaPs catalogue can help to improve punctuality by implementing specific procedures on harmonisation at border points. Furthermore, an improvement in punctuality can be achieved by insisting on realistic train paths and offer buffer time between train paths between Corridor sections. With these three strategies, RFC 2 intends to contribute to the improvement of punctuality on problematic Corridor sections and passing points.

To fix a measurable objective, we have taken into account the punctuality (KPI 3) of the past years, measured from more than 30 minutes delay, on a selection of Corridor trains, in 26 measuring points along the Corridor.

For the near future, the Corridor will not see a big rise in available capacity due to works, with the exception of the Liefkenshoek Rail Link in the Port of Antwerp. Continuing works for example on the installation of the ETCS system or maintenance during the night on the heavily charged Alsace-line, makes an improvement of the current punctuality very unlikely.

2011	2012	Objective 2013 - 2015
82%	82%	80%

3.3 Capacity Objectives

Capacity on RFC 2 is situated mainly in three different fields; trains running on the Corridor lines, the number of PaPs offered, and the average running time on Corridor sections.

3.3.1 Trains running on the Corridor

The total amount of Corridor trains is measured in KPI 1. All trains crossing at least one Corridor border, and running at least 70 continuous kilometres on the Corridor are taken into account. This means that not only trains running on PaPs are considered. The evolution of the total amount of Corridor traffic is influenced heavily by the economic growth of the Corridor region. However, the Corridor aims to increase the amount of Corridor trains in the following matter, compared to the year 2013, taking into account a low economic growth: The same objective is fixed for the Ton/Kms statistic (KPI 2).

2020	2030
+ 3%	+ 9%

3.3.2 Strategy for the number of Pre-arranged Paths

Each year, around X-22, based on a proposal from the RFC 2 C-OSS working group, the Management board (MB) makes a preliminary decision about a PaP strategy (as far as quantity is concerned). This proposal is based on the following parameters:

- offer previous timetable
- quantity of allocated PaPs of previous timetable
- total of allocated paths of previous timetable
- total of used paths of previous TT timetable
- Transport Market Study interpretation
- promotional paths (to offer more flexibility to the market and to act proactively on possible growing demands, on top of the Transport Market Study results)

The proposal might be adjusted based on the annual satisfaction survey and capacity requirements (possessions).

- At X-18, this proposal is presented to the RAG for consultation
- At X-17, a coordination meeting is held between timetabling teams of the respective IMs and allocation bodies, where the Permanent team presents the constraints to all IM/ABs (including windows in all countries).
- At X-16, the MB makes a final decision about the number of PaPs and construction can start.

3.3.3 Status of previous and upcoming offers

2013 timetable

In January 2012, the RNE Corridor 5 catalogue for the 2013 timetable was published. It consisted of 6 paths per direction on the following 5 corridor sections:

Rotterdam – Antwerp
Antwerp – Bettembourg
Namur – Basel
Antwerp – Lille
Bettembourg – Lyon

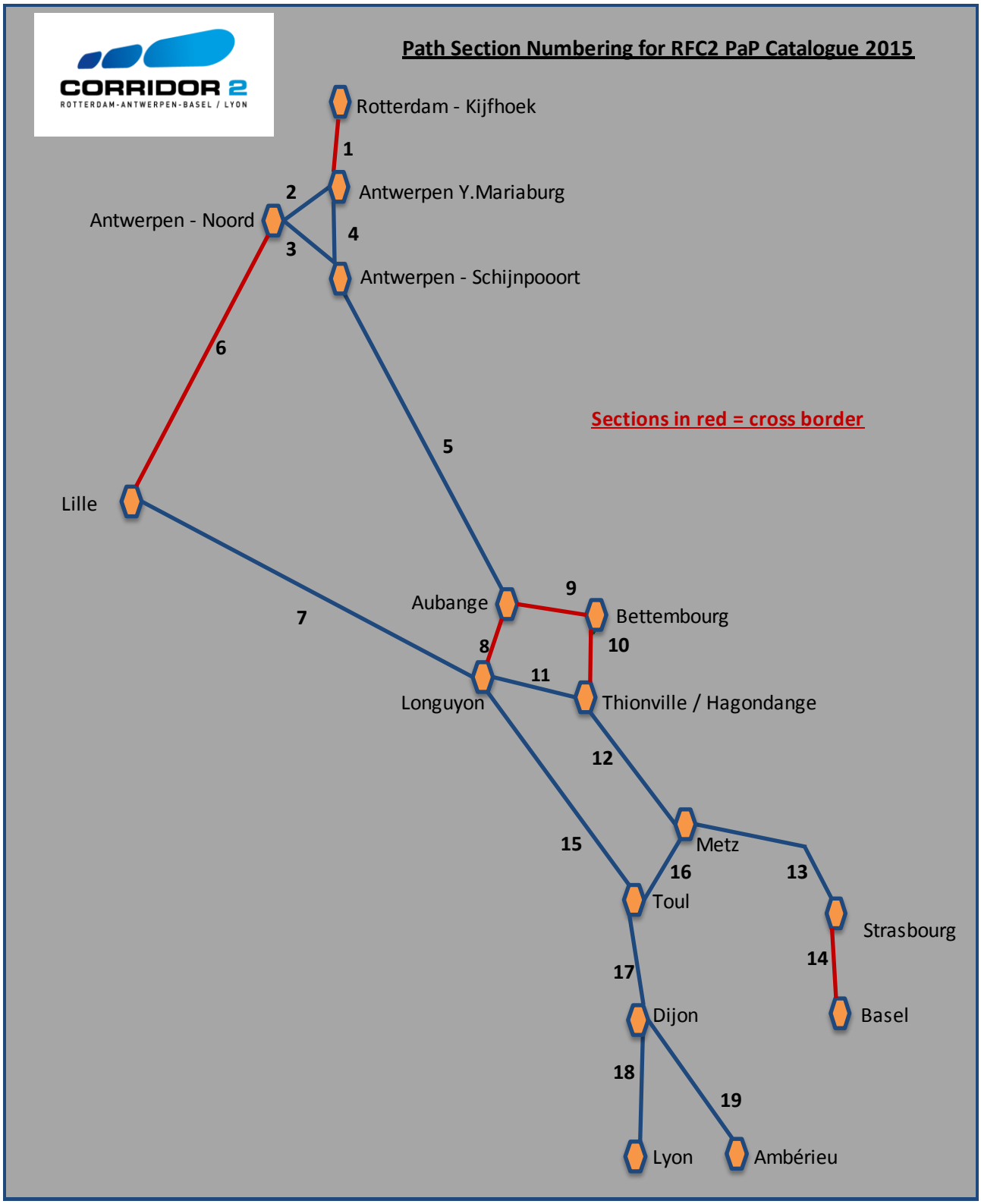
2014 timetable

In February 2013, the RNE Corridor 5 catalogue for the 2014 timetable, which served as the final test case for the first rail freight corridor PaP catalogue, was published. This catalogue consisted of a market oriented offer on ten different corridor sections:

Start	End	NS / SN
Antwerpen	Aubange	19 / 11
Aubange (Lux)	Bettembourg	10 / 6
Aubange (Fr)	Thionville	15 / 9
Bettembourg	Thionville	3 / 3
Thionville	Basel SBB RB	18 / 18
Antwerpen	Lille Délivrance	4 / 6
Antwerpen	Rotterdam	18 / 18
Lille Délivrance	Lyon	1 / 1
Lille Délivrance	Strasbourg	1 / 1
Lille Délivrance	Basel SBB RB	1 / 2

Table 23: 2014 timetable paths

For the first PaP catalogue of RFC 2, for the 2015 timetable, to be published in January 2014, the Corridor has fixed the following objective on number of PaPs per corridor section offered (KPI 5):



Map 13: Path section numbering for PaP catalogue 2015

Corridor Section Table			
Path Section Number	Corridor Section	TOTAL	
		NS	SN
1	Rotterdam-Antwerpen Mariaburg	18	18
2	Antwerpen Mariaburg-Antwerpen Noord	15	15
3	Antwerpen Noord-Antwerpen Schijnpoort	36	29
4	Antwerpen Mariaburg-Antwerpen Schijnpoort	9	9
5	Antwerpen Schijnpoort-Aubange	18	11
6	Antwerpen Schijnpoort-Lille	18	18
7	Lille-Longuyon	9	10
8	Aubange-Longuyon(via MsM)	15	9
9	Aubange-Bettembourg	10	7
10	Bettembourg-Thionville/Hagondange	10	10
11	Longuyon-Thionville/Hagondange	20	14
12	Thionville/Hagondange-Metz	26	25
13	Metz-Strasbourg	25	24
14	Strasbourg-Basel	22	22
15	Longuyon-Toul	4	4
16	Metz-Toul	6	6
17	Toul-Dijon	10	10
18	Dijon-Lyon	11	11
19	Dijon-Ambérieu	8	8

Table 24: objective on number of PaPs per corridor section offered for the PaP catalogue 2015

3.3.4 Objectives short term

Since the 2014 timetable catalogue consisted of paths according to market demand, it is the goal of RFC 2 to extend this offer for the future catalogues with a number of 'additional paths'. These paths will be published on top of the amount of paths the market demands for two reasons. This way the Corridor offers more flexibility to the market in number of paths and alternative routes, and it anticipates on possible extra traffic and promotes the use of under exploited lines and trajectories.

The exact amount of these paths will be fixed at X-16 by the Management board of the Corridor, based on the strategy agreed upon by the same Management board at X-22.

3.3.5 Objectives long term

It is the objective of the RFC 2 to offer a complete PaP offer (at X-11) on all Corridor principal lines. This means that for each Corridor section, an offer will be presented which contains a number of paths that correspond to the market need (according to RFC 2 analysis) + a number of additional paths, to increase flexibility of the offer, and to anticipate and promote new and possible traffic.

For some Corridor sections, we can foresee an improvement of available capacity because of major bottleneck removal works. These Corridor bottlenecks are described more in detail in chapter 4.3.1.

Antwerp

The opening of the Liefkenshoek Rail Link, which connects the two main areas of the Port of Antwerp, and is foreseen for the second half of 2014, will create a significant amount of extra capacity.

This tunnel, which will run under the river Scheldt is being constructed to relieve the pressure from the Kennedy tunnel, the only Antwerp rail connection between the left and the right bank of the river Scheldt at the moment. This means that in the future, trains will be able to run from the right bank of the port to the left bank, without having to leave the port and run through the bottlenecks of Antwerp-Berchem station and the Kennedy tunnel.

Lille

The works and the strategy to use alternative routes should make possible an increase in traffic of 20 to 40%, with a peak of 50% more train paths (all rail traffic) in the Lille area during peak hours (2020-2025).

Strasbourg

In the Strasbourg area, a complete saturation of the rail traffic is foreseen for 2020. The goal of the different projects is to prevent this from happening, and to be able to improve the train offer by 2020. These projects take place around Strasbourg, Mulhouse, and the entire section in between.

3.4 Average Journey Time Objectives

The goal of RFC 2 is to be a fast, efficient and quality rail link. This objective means increasing the efficiency, reliability and durability of end-to-end rail freight traffic, thereby strengthening the railway's competitive position, in line with European freight transport targets. Therefore it is vital to continue the optimisation of harmonisation of train paths between the different IMs and ABs.

The follow-up on the average Journey time is monitored in KPI 4. The objective is based on the following parameters:

- preview of works
- preview of infrastructure investments
- past catalogue path journey time evolution
- timetable journey time evolution

Taking into account these parameters, the Corridor has defined the following objectives:

KM/H per Corridor route							
Route	Length	Direction	Catalogue 2013 timetable	Catalogue 2014 timetable	Objective catalogue 2015 to 2017 timetables	Objective catalogue 2020 timetable	Objective catalogue 2025 timetable
Antwerp - Bettembourg	340,4	NS	61,1	58,9	55	55	55
		SN	59,2	59,4	55	55	55
Antwerp - Basel	717,8	NS	54,0	46,6	50	52	55
		SN	55,4	52,4	50	52	55
Antwerp - Lille	153,4	NS	51,1	57,9	52	52	55
		SN	49,2	47,9	52	52	55
Rotterdam - Antwerp	74,3	NS	55,7	60,2	55	55	55
		SN	51,2	57,2	55	55	55
Aubange - Basel	409,4	NS	57,8	39,6	45	50	55
		SN	46,4	46,7	45	50	55
Bettembourg - Basel	355,1	NS	50,1	50,7	45	50	55
		SN	50,1	46,1	45	50	55

Table 25: objective of average journey time on the corridor routes

3.5 Allocation Objectives

The Corridor OSS will allocate capacity on the Corridor. To be able to measure the success of this new way of allocating capacity, the Corridor has chosen the following objectives for the concerning KPIs:

KPI 6: Requests for pre-arranged paths

The number of requests for pre-arranged paths will be measured for two periods:

- X-11 till X-8
- X-8 (-1 day) till X-2 (without feeder/outflow sections).

RFC 2 objectives:

- For the route Antwerp – Basel:
  - X-11 till X-8: 30 % of PaPs offered (in kms per year). The lengths of the Corridor sections can be found in annex 5.
  - X-8 (-1 day) till X-2: 10% of the PaPs offered at X-7.5 (in kms per year).

- For the rest of the Corridor:
  - X-11 till X-8: 15 % of PaPs offered (in kms per year).
  - X-8 (-1 day) till X-2: 5% of the capacity offered at X-7.5 (in kms per year).

KPI 7: Allocated pre-arranged paths

The number of pre-arranged paths which are allocated by the C-OSS will be measured for two periods:

- X-11 till X-8
- X-8 (-1 day) till X-2

RFC 2 objective = 75% of the requests during the given period

KPI 8: Reserve Capacity

The Corridor intends to have at least one path per section of principal line and running day available for Reserve Capacity in November 2013. For November 2014, the Corridor wants to provide Reserve Capacity of at least 10% of the capacity provided in the 2015 timetable PaP Catalogue (in kms). To be able to calculate this, the lengths of the Corridor sections for timetable 2015 have been fixed, and can be found in annex 5.

KPI 9: Allocated Reserve Capacity

The Corridor chooses to not yet fix an objective on the number of pre-arranged paths allocated by the C-OSS during the reserve capacity phase. At this point, it is too unclear on how the market will respond to this type of available capacity. The Corridor therefore chooses to await the first evaluation on the published capacity and fix an objective accordingly, at the end of 2014.

4. Investment plan

4.1 Description of the plan

4.1.1 Methodology

RFC 2 collected data about investments from its Infrastructure Managers members. The investments planned by IMs are either renewal or development. Some IMs combine both investment types if possible.

4.1.2 List of projects

In total, RFC 2 identified 71 projects or programs which may go live in a 10 year time horizon for a total cost of approximately 6 billion euros. The table below provide the complete list of these projects.

WARNING: this list displayed in the table below is provided on an indicative basis. A number of technical, political or financial factors may affect the completion of the listed projects. It is therefore possible that at least some of these projects will not be put into service or will be delayed. Similarly, the dates and costs presented in this list may be modified from time to time in the future.

INDICATIVE LIST OF RFC 2 PROJECTS IN THE NETHERLANDS								
Route	**Railway section**	**Nature of Projects**	**Benefits for Corridor 2**	**Start date of the works**	**End date of the works**	**Current phase**	**Cost estimation in M€**	**Comments**
ROTT - ANTW	Rotterdam - Antwerp	Signalling enhancement (ERTMS…)	Interoperability	2016		Technical study		ERTMS deployment - Starting date is indicative

INDICATIVE LIST OF RFC 2 PROJECTS IN BELGIUM								
Route	**Railway section**	**Nature of Projects**	**Benefits for Corridor 2**	**Start date of the works**	**End date of the works**	**Current phase**	**Cost estimation in M€**	**Comments**
ANTW - AUB - BETT	Antwerp - Liefkenshoek Rail Link (excluding PPP financing)	Creation of new structure (line, tunnel, bridge, leapfrog)	Bottleneck relief		2014	Works phase	86,60	
ANTW - AUB - BETT	Adaptation of passing tracks for 750 m trains	Creation of siding, passing tracks, extra tracks	Capacity improvement	2018	2025	Technical study	27,10	
ANTW - AUB - BETT	L27A - Construction junction "Oude Landen"	Creation of siding, passing tracks, extra tracks	Capacity improvement	2019	2025	Technical study	79,00	
ANTW - AUB - BETT	L27A - Modification junction "Krijgsbaan"	Creation of siding, passing tracks, extra tracks	Capacity improvement	2019	2025	Technical study	82,00	
ANTW - AUB - BETT	L147 Auvelais - Fleurus: doubling of tracks	Creation of siding, passing tracks, extra tracks	Capacity improvement	2022	2024	Technical study	23,50	
ANTW - AUB - BETT	ICAT-MAX (catenary enhancement)	Others	Capacity improvement	2012	2013	Works phase	3,60	
ANTW - AUB - BETT	Railway sections from Antw to Lux border	Signalling enhancement (ERTMS…)	Interoperability	2012	2019	Preliminary study	96,78	
ANTW - AUB - BETT	Antwerp - 2nd railway access	Creation of new structure (line, tunnel, bridge, leapfrog)	Capacity improvement			Preliminary study		
ANTW - LIL	Railway sections from Antw to Mouscron border point	Signalling enhancement (ERTMS…)	Interoperability	2014	2017	Preliminary study		
ROTT - ANTW	L12: Antwerpen - Essen	Signalling enhancement (ERTMS…)	Interoperability	2017	2018	Preliminary study		Starting dates are indicative

INDICATIVE LIST OF RFC 2 PROJECTS IN FRANCE (1)

Route	Railway section	Nature of Projects	Benefits for Corridor 2	Start date of the works	End date of the works	Current phase	Cost estimation in M€	Comments
METZ - BASEL	Basel - Mulhouse	Signalling enhancement (ERTMS…)	Interoperability	2014	2014	Approved and financed (but works have not started yet)	4,00	ERTMS deployment
ALL	All French sections	Signalling enhancement (ERTMS…)	Maintenance of performance	2012	2014	preliminary study	39,00	Signalling system: national renewal programm security systems
ANTW - LIL	Railway sections from Lille to Tourcoing border point	Renewal of signalling system	Maintenance of performance		2017	Preliminary study		Signalling system: national renewal program
ANTW - LIL	Railway sections from Lille to Tourcoing border point	Renewal of tracks	Capacity improvement	2013	2017	Approved and financed (but works have not started yet)	18,29	
LIL - LONG	Tourcoing - Lille - Longuyon	Signalling enhancement (ERTMS…)	Interoperability			Preliminary study	82,42	ERTMS deployment
LIL - LONG	Hirson-Longuyon	Creation of siding, passing tracks, extra tracks	Capacity improvement		2020		100,00	Both sides running tracks on "Artère Nord Est"
LIL - LONG	Railway sections from Lille to Longuyon	Renewal of signalling system	Maintenance of performance	2011	2023	preliminary study	18,70	Signalling system: national renewal program
LIL - LONG	Railway sections from Lille to Longuyon	Renewal of tracks	Capacity improvement	2013	2017	Approved and financed (but works have not started yet)	134,31	
LIL - LONG	Corridor Lines in North Region	Adjustment of gauge	Capacity improvement	2016	2016	Preliminary study		
LIL - LONG	NIFT	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2013	2015	Approved and financed (but works have not started yet)	85,14	
LIL - LONG	Lille Valenciennes	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2020	2025	Preliminary study	200,00	
LIL - LONG	Hazebrouck Station	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2016	2017	Technical study	15,00	
LIL - LONG	Lens Station	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2016	2018	Technical study		
LIL - LONG	Béthune Station	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2017	2018	Technical study	3,00	
LIL - LONG	Fives - Abbeville	Level crossings	Safety / Security		2014	Preliminary study	1,00	Level crossing 38 Beuvry enhancement, study for removal to be launched
LIL - LONG	Fives - Hirson	Level crossings	Safety / Security		2014	Technical study	1,00	Level crossing 55 Raismes enhancement work phase
LIL - LONG	Armentières Lestrem and Somain Lourches Cambrai	Signalling enhancement (ERTMS…)	Capacity improvement	2012	2016	Technical study	86,10	Terminal access enhancement and TCC enhancement
LIL - LONG	Calais-Rémilly	Adjustment of gauge	Capacity improvement			Preliminary study		Study on gauge enhancement to allow P400 gauge trains
LUX - LYON	Hagondange Conflans	Creation of siding, passing tracks, extra tracks	Capacity improvement	2020	2025	Preliminary study	60,00	Conflans siding creation and tunnels gauges enhancement between Hagondange and Conflans (GB1)
LUX - LYON	Toul-Dijon	Creation of siding, passing tracks, extra tracks	Capacity improvement		2020	Preliminary study	150,00	Both sides running tracks
LUX - LYON	Lorraine	Electrification	Capacity improvement					Study about the electrical capacity of the network in Lorraine region started in 2013
LUX - LYON	ls-sur-Tille - Culmont-Chalindrey	Level crossings	Safety / Security		2013	Technical study	4,00	Level crossing 9 Villegusien suppression by rail bridge and by-pass of level crossing 8
LUX - LYON	Culmont Chalindrey - Toul	Level crossings	Safety / Security		2013	Technical study	1,00	Level crossing 82 Neufchateau enhancement
LUX - LYON	Railway sections from Luxemburgian border to Lyon	Renewal of signalling system	Maintenance of performance	2011	2023	preliminary study	412,89	Signalling system: national renewal program

INDICATIVE LIST OF RFC 2 PROJECTS IN FRANCE (2)

Route	Railway section	Nature of Projects	Benefits for Corridor 2	Start date of the works	End date of the works	Current phase	Cost estimation in M€	Comments
LUX - LYON	Railway sections from Luxemburgian border to Lyon	Renewal of tracks	Capacity improvement	2013	2017	Approved and financed (but works have not started yet)	717,65	
LUX - LYON	Railway sections from Luxemburgian border to Lyon	Signalling enhancement (ERTMS…)	Interoperability	2017	2020	Preliminary study	264,70	ERTMS deployment
LUX - LYON	Dijon - Is-sur-Tille	Level crossings	Safety / Security		2014	Approved and financed (but works have not started yet)	5,00	Level crossing 11 Ruffey les Echirey suppression by rail bridge
LUX - LYON	Dijon - Is-sur-Tille	Level crossings	Safety / Security		2014	Technical study	1,00	Level Crossing 15 Bretigny-Norges enhancement
LUX - LYON	Baudrecourt-Rémilly	Creation of siding, passing tracks, extra tracks	Capacity improvement		2020	Preliminary study	10,00	Both sides running tracks
LUX - LYON	Mâcon - Ambérieu	Level crossings	Safety / Security	2012		Preliminary study	10,00	Level Crossing 29 Bourg en Bresse removal
LUX - LYON	Mâcon - Ambérieu	Level crossings	Safety / Security	2012		Preliminary study		Level Crossing 34 de Tossiat
LUX - LYON	Ambérieu - Grenay (CFAL Nord)	Creation of new structure (line, tunnel, bridge, leapfrog)	Bottleneck relief			Technical study		New line: east by-pass of Lyon
LUX - LYON	Grenay - Sibelin (CFAL Sud)	Creation of new structure (line, tunnel, bridge, leapfrog)	Bottleneck relief			Technical study		New line: east by-pass of Lyon
METZ - BASEL	Colmar	Creation of siding, passing tracks, extra tracks	Capacity improvement			Preliminary study		Creation of a new track in Colmar Station
METZ - BASEL	Strasbourg node	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2013	2013	Technical study	90,00	
METZ - BASEL	Vendenheim-Strasbourg	Creation of siding, passing tracks, extra tracks	Capacity improvement		2020	Technical study	125,00	Creation of a 4th track between Strasbourg and Vendenheim
METZ - BASEL	Lutterbach-Richwiller	Creation of siding, passing tracks, extra tracks	Capacity improvement					Creation of 2 freight passing tracks at the HSL sidings in Lutterbach and Richwiller
METZ - BASEL	Alsace	Electrification	Capacity improvement			Preliminary study		A study on the electrical capacity of the network in Alsace region started in 2012
METZ - BASEL	Noisy le Sec - Strasbourg	Level crossings	Safety / Security		2013	Technical study	11,00	Level crossing 129 Laneuveville (before Nancy) enhancement of 1M€, removal estimated at 10M€
METZ - BASEL	Noisy le Sec - Strasbourg	Level crossings	Safety / Security		2014	Technical study	1,00	Level Crossing 85 Blesmes enhancement
METZ - BASEL	Noisy le Sec - Strasbourg	Level crossings	Safety / Security		2012	Works phase	10,00	Level crossing 107 Fain Veel removal by rail bridge
METZ - BASEL	Metz Mulhouse	Others	Capacity improvement			Preliminary study	0,00	Feasability study of a freight route from Metz to Mulhouse without going through Strasbourg
METZ - BASEL	Nœud de Vendenheim	Others	Bottleneck relief	2012	2013	Works phase	93,50	Modification of tracks, TCC renewal
METZ - BASEL	Railway sections from Metz to Basel	Renewal of signalling system	Maintenance of performance	2011	2023	preliminary study	38,70	Signalling system: national renewal program
METZ - BASEL	Railway sections from Metz to Basel	Renewal of tracks	Capacity improvement	2013	2017	Approved and financed (but works have not started yet)	140,34	
METZ - BASEL	Railway sections from Metz to Mulhouse	Signalling enhancement (ERTMS…)	Interoperability	2020	2022	Preliminary study	121,50	ERTMS deployment
METZ - BASEL	Railway sections from Metz to Mulhouse	Signalling enhancement (ERTMS…)	Capacity improvement	2020	2022	Preliminary study	180,00	Capacity improvement in Mulhouse, Kibitzenau and Colmar
METZ - BASEL	Réding - Saverne	Adjustment of gauge	Capacity improvement			Preliminary study		Study on gauge enhancement to allow P400 gauge trains

INDICATIVE LIST OF RFC 2 PROJECTS IN LUXEMBOURG								
Route	**Railway section**	**Nature of Projects**	**Benefits for Corridor 2**	**Start date of the works**	**End date of the works**	**Current phase**	**Cost estimation in M€**	**Comments**
ANTW - AUB - BETT	Rodange - Bettembourg	Creation of new structure (line, tunnel, bridge, leapfrog)	Capacity improvement			Preliminary study	150,00	New tunnel between Belval Sud and Differdange
ANTW - AUB - BETT	Luxembourg - Bettembourg	Creation of new structure (line, tunnel, bridge, leapfrog)	Capacity improvement		2021	Technical study	550,00	New line between Luxembourg and Bettembourg
ANTW - AUB - BETT	Rodange - Bettembourg	Creation of siding, passing tracks, extra tracks	Capacity improvement			Preliminary study	30,00	Modernisation and layout improvement of Belval-Usines station
ANTW - AUB - BETT	Rodange - Bettembourg	Creation of siding, passing tracks, extra tracks	Capacity improvement	2013	2019	Technical study	51,00	Modernisation and layout improvement of Differdange station
ANTW - AUB - BETT	Rodange/Kleinbettingen - Bettembourg	Creation of siding, passing tracks, extra tracks	Capacity improvement		2021	Technical study	251,80	Modernisation and layout improvement of Bettembourg station
ANTW - AUB - BETT	Kleinbettingen - Bettembourg	Creation of siding, passing tracks, extra tracks	Capacity improvement		2025	Technical study	336,50	Layout improvement in Luxembourg station
ANTW - AUB - BETT	Luxembourg - Kleinbettingen	Electrification	Interoperability	2014	2015	Technical study	65,00	Re-electrification Luxembourg - Kleinbettingen in 25kV 50Hz
ANTW - AUB - BETT	Whole network	Others	Interoperability	2010	2014	Works phase	51,10	GSM-R deployment
ANTW - AUB - BETT	Rodange - Bettembourg and Luxembourg - Bettembourg	Renewal of tracks	Maintenance of performance	2012	2016	Works phase	15,00	Differdange - Belval Usines + Berchem - Bettembourg frontière
ANTW - AUB - BETT	Luxembourg - Kleinbettingen	Signalling enhancement (ERTMS…)	Interoperability	2012	2014	Works phase	43,50	New CCS incl. Signal boxes and ETCS (1,5 M€ for ETCS and 42 M€ for the rest of the investments)
ANTW - AUB - BETT	Luxembourg - Kleinbettingen	Track enhancement	Higher speed			Preliminary study	328,50	Track renewal and upgrade to 160km/h
ANTW - AUB - BETT	Whole network	Adjustment of gauge	Capacity improvement			Preliminary study		Study on gauge enhancement to allow P400 gauge trains

INDICATIVE LIST OF RFC 2 PROJECTS IN SWITZERLAND								
Route	**Railway section**	**Nature of Projects**	**Benefits for Corridor 2**	**Start date of the works**	**End date of the works**	**Current phase**	**Cost estimation in M€**	**Comments**
METZ - BASEL	Basel - Mulhouse	Signalling enhancement (ERTMS…)	Interoperability	2014	2014	Approved and financed (but works have not started yet)	4,00	ERTMS deployment

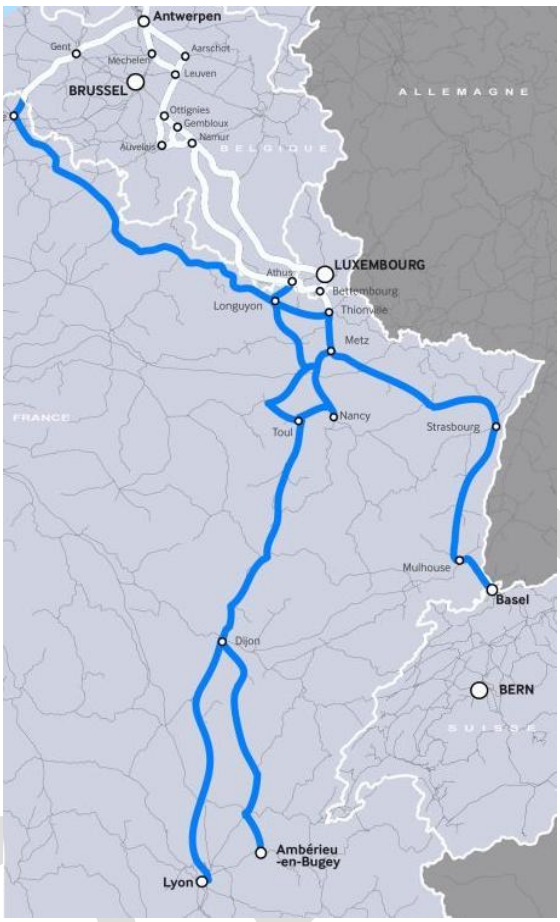
Table 26: indicative list of RFC 2 projects

We also identified 7 corridor routes to present these investments projects.

	Total number of works sites / programs	Total costs per axis
All French regions - renewal of security systems (signaling)	1	39
Antwerpen - Athus - Bettembourg	20	2271
Antwerpen - Lille	3	18
Athus/Bettembourg - Lyon	16	1676
Lille - Longuyon	14	727
Metz - Basel	15	775
Rotterdam - Antwerpen	2	No costs estimation
TOTAL	71	5506

Table 27: breakdown of projects/program by routes in Million €

Route n° 1 – The French sections



Map 14: RFC 2 French sections

Dispatched on the entire French network	Renewal of signalling system	Total costs per axis	Total number of projects/ programs
ALL	All French regions - renewal of security systems (signalling)		1
Costs	39	39	

Table 28: Project/program related to all French sections

This program concerns the renewal of safety installations of the signalling system in France.

Route N°2 – Antwerp Aubange Bettembourg

Map 15: Antwerp – Aubange – Bettembourg route

616,5 KM	Renewal of tracks	Electrification	Creation of siding, passing tracks, extra tracks	Creation of new structure (line, tunnel, bridge, leapfrog)	Adjustment of gauge	Signaling enhancement (ERTMS…)	Track enhancement	Others	Total costs per axis	Total number of works sites / programs
ANTW - ATH - BETT	1 program in LUX	1 works sites in LUX	8 works sites (4 in LUX and 4 in BE)	4 works sites (2 in BE and 2 in LUX)	1 program in LUX	2 programs (1 in BE and 1 in LUX)	1 work site Luxembourg - Kleinbettingen	2 works sites (1 in BE and 1 in LUX)		**20**
Costs	15	65	881	787		140	329	55	**2271**	

Table 29: projects/program related to the Antwerp-Aubange-Bettembourg route

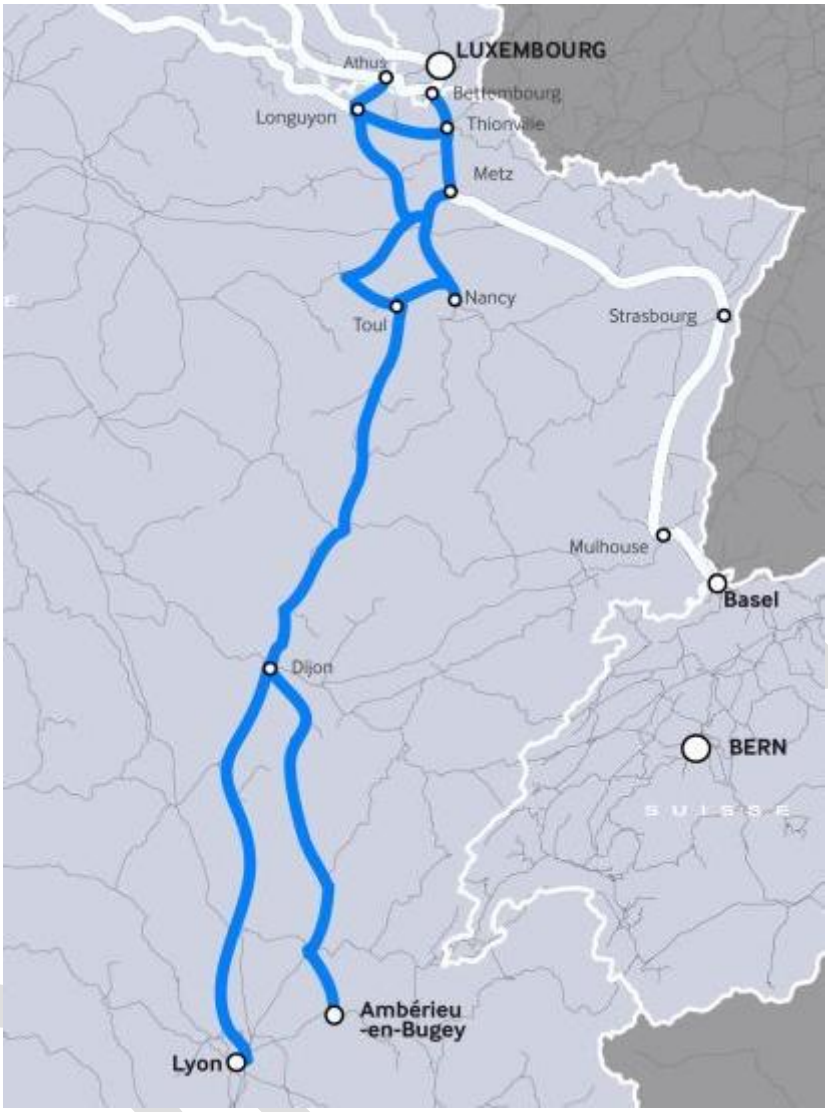
Route N°3: Antwerp Lille

Map 16: Antwerp – Lille route

133 KM	Renewal of tracks	Renewal of signaling system	Signaling enhancement (ERTMS…)	Total costs per axis	Total number of works sites / programs
ANTW - LIL	1 program in FR	1 program in FR	2 programs (1 in BE and 1 in FR)		**4**
Costs	18	No cost estimation	82	**101**	

Table 30: projects/program related to the Antwerp-Lille route

AXIS N°4: Luxembourg Lyon



Map 17: Luxembourg-Lyon route

903 KM	Renewal of tracks	Renewal of signaling system	Electrification	Creation of siding, passing tracks, extra tracks	Creation of new structure (line, tunnel, bridge, leapfrog)	Signaling enhancement (ERTMS…)	Level crossings	Total costs per axis	Total number of works sites / programs
ATH/BETT - LYON	1 program in FR	1 program in FR	1 program in Lorraine region	4 works sites in FR	2 works sites in FR	1 program in FR	6 works sites in FR		**16**
Costs	718	413		260		265	21	**1676**	

Table 31: projects/program related to the Luxembourg-Lyon route

Route N°5: Lille Longuyon

Map 18: Lille - Longuyon route

269 KM	Renewal of tracks	Renewal of signaling system	Creation of siding, passing tracks, extra tracks	Adjustment of gauge	Signaling enhancement (ERTMS…)	Level crossings	Total costs per axis	Total number of works sites / programs
LIL - LONG	1 program in FR	1 program in FR	6 works sites in FR	2 programs in FR	1 program in FR	2 works sites in FR		**13**
Costs	134	19	403	No cost estimation	86	2	**644**	

Table 32: projects/program related to the Lille-Longuyon route

Route N°6: Metz Basel

Map 19: Metz - Basel route

314 KM	Renewal of tracks	Renewal of signaling system	Electrification	Creation of siding, passing tracks, extra tracks	Adjustment of gauge	Signaling enhancement (ERTMS…)	Level crossings	Others	Total costs per axis	Total number of works sites / programs
METZ - BASEL	1 program in FR	1 program in FR	1 program in Alsace region	3 works sites in FR	1 program in FR	2 programs (1 in CH and 1 in FR)	3 works sites in FR	2 works sites in FR		**15**
Costs	140	39		175		306	22	94	**775**	

Table 33: projects/program related to the Metz Basel route

Route N°7: Rotterdam Antwerp

Map 20: Rotterdam - Antwerp route

101 KM	Signaling enhancement (ERTMS…)	Total costs per axis	Total number of works sites / programs
ROTT - ANTW	2 works sites (1 in BE and 1 in NL)		**2**
Costs	No cost estimation	**No cost estimation**	

Table 34: projects/program related to the Rotterdam-Antwerp route

Projects have also been split by technical nature, by benefits and by country.

4.1.3 Nature of the projects

Nature of project	Costs per nature of investment in M€	%
Renewal of tracks	1 026	19%
Renewal of signalling system	470	9%
Renewal of tunnel, bridge, etc.	-	0%
Electrification	65	1%
Creation of siding, passing tracks, extra tracks	1 719	31%
Creation of new structure (line, tunnel, bridge, leapfrog)	787	14%
Adjustment of gauge	-	0%
Signalling enhancement (ERTMS…)	918	17%
Track enhancement	329	6%
Level Crossings	45	1%
Noise reduction	-	0%
Others	148	3%

Table 35: nature of investment projects/programs

Pure renewal projects (track or signalling systems) make 25% of the total in value, mostly in France. ERTMS deployment makes 15% of the total in value.

4.1.4 Benefits of the projects

	Benefits for Corridor 2 in M€	
Bottleneck relief	573	10%
Safety / Security	45	1%
Environment	-	0%
Higher speed	329	6%
Interoperability	729	13%
Punctuality improvement	-	0%
Maintenance of performance	524	10%
Capacity improvement	3 306	60%

Table 36: benefits of investment projects/programs

4.1.5 Breakdown per country

Costs in France in M€	
Renewal of tracks	1011
Renewal of signalling system	470
Renewal of tunnel, bridge, etc.	0
Electrification	0
Creation of siding, passing tracks, extra tracks	838
Creation of new structure (line, tunnel, bridge, leapfrog)	0
Adjustment of gauge	0
Signalling enhancement (ERTMS…)	774
Track enhancement	0
Level Crossings	45
Noise reduction	0
Others	94
total	3231

Costs in Belgium in M€	
Renewal of tracks	0
Renewal of signalling system	0
Renewal of tunnel, bridge, etc.	0
Electrification	0
Creation of siding, passing tracks, extra tracks	212
Creation of new structure (line, tunnel, bridge, leapfrog)	87
Adjustment of gauge	0
Signalling enhancement (ERTMS…)	97
Track enhancement	0
Level Crossings	0
Noise reduction	0
Others	4
total	399

Costs in Luxembourg in M€	
Renewal of tracks	15
Renewal of signalling system	0
Renewal of tunnel, bridge, etc.	0
Electrification	65
Creation of siding, passing tracks, extra tracks	669
Creation of new structure (line, tunnel, bridge, leapfrog)	700
Adjustment of gauge	0
Signalling enhancement (ERTMS…)	44
Track enhancement	329
Level Crossings	0
Noise reduction	0
Others	51
total	1872

Costs in The Netherlands in M€	
Renewal of tracks	0
Renewal of signalling system	0
Renewal of tunnel, bridge, etc.	0
Electrification	0
Creation of siding, passing tracks, extra tracks	0
Creation of new structure (line, tunnel, bridge, leapfrog)	0
Adjustment of gauge	0
Signalling enhancement (ERTMS…)	0
Track enhancement	0
Level Crossings	0
Noise reduction	0
Others	0
total	0

Costs in Switzerland in M€	
Renewal of tracks	0
Renewal of signalling system	0
Renewal of tunnel, bridge, etc.	0
Electrification	0
Creation of siding, passing tracks, extra tracks	0
Creation of new structure (line, tunnel, bridge, leapfrog)	0
Adjustment of gauge	0
Signalling enhancement (ERTMS…)	4
Track enhancement	0
Level Crossings	0
Noise reduction	0
Others	0
total	4

(a nought means that there is no cost estimation)

Table 37: breakdown of the projects per country

4.1.6 Breakdown per calendar year

Start Date of the works	%
2010	0%
2011	1%
2012	26%
2013	17%
2014	13%
2015	17%
2016	13%
2017	8%
2018	0%
2019	1%
2020	2%
2021	0%
2022	0%

Table 38: breakdown of theprojects/programs per start date of the works

Most of the works are concentrated on a 5 years scale between 2012 and 2016

France	Costs in FR	Funder 1	Funder 2	Funder 3
Renewal of tracks	1010,59	IM		
Renewal of signaling system	509,29	IM		
Electrification		Local Govt	IM	
Creation of siding, passing tracks, extra tracks	913	State	Local Govt	IM
Adjustment of gauge		EU	State	IM
Signaling enhancement	734,72	EU	State	IM
Level Crossings	45	State	Local Govt	IM
Others	93,5	State	Local Govt	IM

Belgium	Costs in BE	Funder 1	Funder 2	Funder 3
Creation of siding, passing tracks, extra tracks	211,6	State		
Creation of new structure (line, tunnel, bridge, leapfrog)	86,6	State		
Signaling enhancement	96,78	EU	State	
Others	3,6	State		

Luxembourg	Costs in LUX	Funder 1	Funder 2	Funder 3
Renewal of tracks	15	State		
Electrification	65	State		
Creation of siding, passing tracks, extra tracks	669,3	State		
Creation of new structure (line, tunnel, bridge, leapfrog)	700	State		
Signaling enhancement	43,5	EU	State	
Track enhancement	328,5	State		
Others	51,1	State		

The Netherlands	Costs in the NL	Funder 1	Funder 2	Funder 3
Signaling enhancement		EU	State	IM

Switzerland	Costs in CH	Funder 1	Funder 2	Funder 3
Signaling enhancement	4	State	IM	

Table 39: project financing, including EU contribution

4.2 Deployment plan relating to interoperable systems

RFC 2 already complies with the interoperability criteria defined in Directive 2008/57/EC as far as loading gauge, axle load, train speed and train length are concerned. To comply with the control command technical specifications for interoperability, RFC 2 is currently deploying ETCS (European Train Control System) on its lines.

4.2.1 ERTMS strategy along the corridor

The implementation of ETCS on Corridor routes is one of the fundamental goals which led to the creation of the ERTMS Corridors, including Corridor C which has subsequently been renamed RFC 2. The creation of ERTMS corridors was itself inspired by the obligations set by the TSI CCS (Control Command Signalling).[10]
This European train control-command system is designed to eventually replace national legacy systems, imposing specific equipment on engines running on several networks.

The ETCS specifications are drawn up under the aegis of the European Railway Agency (ERA), in collaboration with representatives of the railway sector such as EIM, CER and UNIFE. One of the main problems is building a system capable of adapting to networks whose braking and signalling philosophies and operating rules have been developed on national bases which are sometimes very different from one another.

Following a period of stabilisation of the specifications, version 2.3.0d was made official and, until end of 2012, was the only version that could be implemented from both an infrastructure / track and a rolling stock perspective.

At a technical level, ETCS level 1 uses a specific transmission mode, Eurobalises installed on tracks, to send information from track to on-board, while level 2 uses the GSM-R to exchange information bi-directionally between track and on-board. So far, level 1 has typically been superimposed on traditional national lateral signals, while level 2 was used for new lines.

RFC 2 decided to equip its principal routes as a priority with version 2.3.0d level 1, except for SBB which preferred to wait for the next version, called "Baseline 3", made official in December 2012, to equip the 8 kilometres between the French border and the Basel-Muttenz marshalling yard.

Equipping the Corridor with ETCS depends on national projects incorporated into national ETCS deployment strategies. These projects did not start at the same time and each project has its own planning. The ETCS deployment realised through these national projects is not limited to corridor sections.

On the main routes ETCS version 2.3.0d is or will be installed, except on the short Swiss corridor section where Baseline 3 will be deployed. As 2.3.0d on board systems cannot run on Baseline 3 tracks, to reach Muttenz, the final destination of the Corridor, locomotives will have to be equipped with baseline 3 on-board equipment, or have to be changed in Saint-Louis near the Swiss border or will have to equipped with a KVB/PZB set of control systems. On top of that, equipping locomotives with Baseline 3 on-board systems enables to offer limited supervision. It also provides other functions that improve ETCS interoperability.

[10] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:051:0001:0065:EN:PDF

ETCS level 1 (punctual information given to the trains by in-track balises) is or will be installed all along the principal routes of former Corridor C. Infrabel intends to install level 2 (continuous information exchanged between track and on-board systems through GSM-R) on the alternative route Namur-Athus via Libramont. The section between Antwerp and Rotterdam is also likely to be equipped with 2.3.0d level 2. In Switzerland Baseline 3 balises will implement the Limited Supervision mode. Therefore it is highly recommended for railway undertakings to equip their rolling stock with baseline 3 on-board systems. For 2.3.0d on-board system, the recommendation is to implement the braking curves algorithm specified in baseline 3.

Once ETCS is installed, the deactivation of national legacy systems has to be decided on a country per country basis.

- In Belgium, the complete network is expected to be equipped by 2022.Legislation to fade out legacy system in favour of ETCS has come into force the 9th of July 2013. From the 1st of January 2016 onwards, the class B system Memor-crocodile will be put out of service on those lines equipped with ETCS level 1 version 2.3.0d; ETCS (or TBL1+) on-board systems will be mandatory to run on those lines;
- In 2025, ETCS will become compulsory for a train to be allowed to run on the Infrabel tracks. Legislation to fade out legacy system in favour of ETCS has come into force the 9th of July 2013. From the 1st of January 2016 onwards, the class B system Memor-crocodile will be put out of service on those lines equipped with ETCS level 1 version 2.3.0d;
- In Luxembourg, trains will have to be equipped with ETCS from 2017 onwards;
- In France, it is intended that on-board ETCS will be compulsory for a train to be allowed to run on a railway line 10 years after it has been equipped with in-track ETCS
- In Switzerland, all new vehicles purchased after July 1st 2014 will have to be equipped with ETCS or be easily adaptable to ETCS.

4.2.2 ERTMS deployment plan

The planning of ETCS deployment along the corridor lines that will be established in November 2013 and the nature of the ETCS deployment system are described in the following maps[11]:

[11] Connecting lines, except Maasvlakte - Kijfhoek, are not displayed on the maps of this section 4.2.2.

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4.2.3 Cost Benefit Analysis

4.2.3.1 Costs

In this section, we focus on the sole Antwerp-Luxembourg-Lyon/Basel sections as the ERTMS deployment projects are relatively mature on these lines and therefore cost estimation can be considered as more reliable than the costs of other sections where ERTMS studies have not even started. For the sake of homogeneity, we have also ignored the Namur – Kleinbettingen line as it is expected to be equipped with ERTMS level 2.

The average cost per kilometre, calculated on the basis of the equipment of the Antwerp-Aubange-Longuyon-Lyon/Basel routes, is approximately 320k€ per kilometre. Obviously, this ratio varies a lot. It is significantly different in large nodes than in the country side.

Costs of all ERTMS investment projects can be found in table 26 (section 4.1.2).

4.2.3.2 Benefits

Interoperability

Until the deployment of ETCS, railway undertakings have to change their locomotives every time they cross a border or they have to equip these locomotives with multiple expensive on-board control command systems. The first choice has a negative impact on travel time and on rolling stock management. The second is expensive.

With ETCS, they will be able to use locomotives that can run from the origin to destination with a single on board control command system. This will facilitate asset management, save journey time and reduce costs.

On top of that, ETCS should reduce the need for a driver to be intensively trained to know the complete set of rules related to each national legacy system, except in Switzerland where ETCS limited supervision forces the driver to know national regulations.

National legacy systems (“Class B”) renewal

All the Infrastructure Managers of RFC 2 consider that ETCS will replace in the mid run or in the long run, the national control command systems in use, and will hence provide a solution to the obsolescence of these legacy systems. The deadline is not the same among infrastructure managers. In Luxembourg and Switzerland, the replacement is needed in the short run, in Belgium and France the national systems still have some time to run and the replacement is not yet necessary.
In Switzerland, the existing control command systems, ZUB and Signum are close to obsolescence and SBB aims to quickly replace them with the European interoperable system.
This benefit however should not be overestimated as the deployment of ETCS will not be as simple as the mere renewal of legacy systems. The complexity will depend on the characteristics of the

legacy systems but in some cases, the new and the old systems will have to cohabit for many years and the old system may even have to be renewed after the deployment of ETCS.

Increased competition

ETCS is an opportunity for a railway undertaking to use its own rolling stock and act with open access, opening up competition and potentially bringing prices at market level

Reduction of externalities

With cost savings and increased competition, the railway mode should become more attractive and gain market share, hence reducing road congestion and noise, greenhouse effect emissions and air pollution. On top of that, players who will switch from road to rail will enjoy cost savings or journey time reduction.

Safety

ETCS is a state of the art tool as far as safety is concerned and, at various degrees, its deployment provides infrastructure managers with an increase of safety compared to the safety provided by their legacy systems.

In Belgium, Infrabel's ETCS Masterplan which aims at equipping the entire Belgian network with ETCS by 2022, will globally improve the safety compared to the existing control systems. Similarly, all rolling stock running in Belgium will be directed to be fitted with ETCS. The current planning makes ETCS on rolling stock mandatory from 2025 onwards, in addition to the TSI-CSS which dictates that all equipment bought after 1st January 2012 shall be equipped with ETCS.

In Luxembourg, the Memor II+ system presently equipping the network has been from the very beginning considered as an interim system to be replaced by ETCS. As Memor II+ is a relatively simple system, its replacement with ETCS will greatly improve the level of safety in Luxembourg by 2015.

In France, the existing KVB system does not control all the block signals. In contrast, ETCS will be installed on all signals, including block ones, hence improving the overall safety on the network.
In Switzerland, during a first phase, ETCS will be deployed with the limited supervision mode. With this mode, the level of safety will be the same as the existing ones. In particular, the speed supervision function will be installed depending on the real risk.

ETCS level 1 with Limited Supervision mode allows a quick and cost efficient migration. Still, the future of ETCS is ETCS level 2 due to capacity reasons and for performing the operational interoperability. The ETCS level 2 is planned for the timeframe when interlockings have to be replaced due to their life cycle end (starting around 2025). ETCS will then bring the optimal benefit with regards to capacity and safety.

Recovery in the event of disturbances

In France, ETCS will allow a faster recovery in the event of disturbances compared to the current KVB legacy system which is driven by the so called VISA driving principle. Consequently, the deployment should lead to more robust performances

Conclusion

The computation of a monetary value for the benefits listed above is difficult, as corridor members/partners use different methods to assess them. This is specifically the case for the assessment of safety improvement. On top of that, the value of time saved thanks to ETCS when operating a railway node is a factor that cannot be determined, as it is sensitive to the node characteristics, and the time and conditions of operation.

All in all, corridor members and partners share the view that the ground deployment of ETCS does not provide an immediate financial return on investment nor a positive socio-economic net asset value. The traffic gains induced by the use of ERTMS are presently difficult to assess, especially in the starting phase when few trains will be running in ETCS mode.

What is more, the socio-economic benefits of ETCS vary a lot from one country to another as it depends on the characteristics of the legacy control command system and on the size of the country.
To take an extreme case, the socio economic interest of the deployment of ETCS in France is far from being obvious as ETCS deployment in that country:

- is costly due to the length of the French network and on the complexity and heterogeneity of the legacy signalling system;
- will only provide a modest improvement of safety given the superior safety performance of the legacy system (KVB).

4.3 Capacity management plan

4.3.1 Bottlenecks removals

4.3.1.1 Investments to improve the access to the Port of Antwerp

Liefkenshoek Rail Link

Context

The Liefkenshoek Rail Link consists in the construction of a railway freight line connecting the left bank (Beveren) to the right bank (Antwerp) of the River Scheldt. This railway link will increase the railway capacity in the Port of Antwerp.

This 16.2 km double track railway line crosses the River Scheldt and the Kanaal dock. The railway line L10 will leave from the fan of sidings Zuid in the Waasland harbour on the left bank and will go underground under the Waasland canal, the River Scheldt and the Kanaal dock to end up at the right bank, where it will connect with the existing railway line north of the marshalling yard Antwerpen Noord.

Through this new railway link the single wagon load traffic on the left bank can be brought in an efficient way to the marshalling yard Antwerpen Noord for further shunting and composing of trains for the different hinterland destinations.

Motivation

The further development of the Waasland harbour and especially the putting into service of the Deurganck dock makes the construction of this railway link under the River Scheldt, the so called Liefkenshoek Rail Link, a necessity.
With the start of the first container terminal in the Deurganck dock an increase of freight traffic from the left bank could be noticed. This increase leads to extra freight trains running between the left bank and the station of Antwerpen-Berchem via the Kennedytunnel, if no new railway link under the River Scheldt was to be built. The handling of these extra freight flows via the existing route (L10, L59, station Antwerpen-Berchem, change of head in Antwerpen-Schijnpoort, L27A in the direction of Mortsel, Lier and Mechelen) would be problematic, taking into account the possible capacity problems on L59 (Antwerpen-Berchem – Antwerpen-Zuid and the junction Zwijndrecht-Fort). On top of that, a negative impact on the passenger traffic should be avoided.

The Liefkenshoek Rail Link will provide a shorter and direct link between the railway installations on the left bank and the marshalling yard Antwerpen Noord, both for direct trains and for single wagon load traffic.

On the right bank problems arise near the junction Schijn 27A (on the East side of Antwerpen-Noord). At this moment, the junction Schijn reaches the theoretical capacity limit per day.

Budget

Infrabel is building the line through a public-private-partnership (PPP). The total estimated investment for the Liefkenshoek Rail Link amounts to 765 million €.

Timing

The Liefkenshoek Rail Link will be operational in the second half of 2014.

Flyover Schijn (project Oude Landen)

Context

The long-term solution to improve the access to the Port of Antwerp consists in constructing a completely new railway line between the marshalling yard Antwerpen-Noord and Lier, the so-called second rail access to the Port.

The construction of the flying junction, called Oude Landen, in order to replace the current junction Schijn at the entrance of the marshalling yard Antwerpen-Noord, is a first step on the way to enhancing the capacity on the line L27A between Ekeren and Mortsel. The construction of this junction is in line with the end situation (second rail access) and fits into the current layout of the tracks.

The enhancement of the capacity on the line L27A is necessary in the first instance to:

- offer a solution for the existing capacity problems during peak moments during the day;
- tackle the expected future rail freight traffic growth as a consequence of the expansion of the port on the one hand and the expected increase of the rail market share in handling freight traffic on the other hand.

Motivation

Capacity on line L27A

In order to justify the above mentioned issue, it's useful to look at a number of figures, such as the actual number of trains compared to the theoretical capacity of the railway line and the level junction, and this on a daily basis and during peak moments. In determining the theoretical capacity the following characteristics are taken into account: the heterogeneity of the rail traffic (passenger + freight), regularity, maintenance of the railway infrastructure and the sequence of trains.

The line L27A between Ekeren and Mortsel has a theoretical hourly capacity of 13 train paths per direction or 26 train paths in both directions together. This amounts to a maximum of 470 commercial train paths a day.

The (current) level track intersections in Ekeren (Y Schijn) and Mortsel (Y Krijgsbaan) have a theoretical capacity of 10 train paths per hour and per direction. That is 20 train paths in both directions together or 360 train paths a day. With a flyover this number rises to 13 paths per hour and per direction, meaning 470 train paths a day (both directions together).

Looking at the complete section Y Schijn – Y Krijgsbaan it can be seen that the capacity of that section of the line L27A is limited by the capacity of the level junctions (360 train paths) Schijn and Krijgsbaan. If the junction Schijn can be avoided by transforming it into a flyover (Project Oude Landen) the number of trains on the line L27A will be restricted by the level junction Krijgsbaan. That's why the number of trains on the line L27A can amount to maximum 360, increased with 40 trains joining or leaving the L27A in the junction near Berchem-Oost (L59) or Driehoekstraat (L12). Only if the junction Krijgsbaan will be transformed into a flyover, then the capacity on the line L27A can be used at its maximum level (470 train paths).

Comparison of the current traffic versus the capacity over a 24 hour period

Looking at the current traffic figures, we can see that about 200 trains pass via the L27A. Taking into account the above described limiting condition this would mean that the level junction Schijn still has sufficient spare capacity (200 train paths << 360 train paths = capacity).

It should be pointed out here however, that the impact of the crisis (2008-2009) has not been overcome yet; even worse, the traffic still has not reached the same level as before the crisis. Looking at the figures before the crisis (2007), on average 300 trains can be counted between the 2 junctions on L27A. Spare capacity remains after the revitalisation of the freight traffic after the crisis, but this spare capacity will be fully used once the expected growth of rail freight becomes reality.

Comparison between the current traffic figures and the capacity on an hourly basis

As expected, the train journeys are not evenly spread over the day and at certain times, peaks can be noticed. These peaks can emerge, even if the total amount of journeys on a daily basis remains under the daily capacity limit.

Looking at the capacity of the level junction in Ekeren (Y Schijn), we notice that the capacity is restricted to 20 train paths an hour (both directions together) – see above. The actual number of trains before the crisis (see environmental impact assessment - EIA) show, that the maximum capacity is reached on certain weekdays between 2 and 3. In 2009, during the full blown crisis, a new measuring was conducted and this figure was confirmed. This means, that already today, “traffic jams” occur during these peak moments.

Traffic prognosis

In the frame of the EIA (2006) for the project Oude Landen an estimation of the future freight traffic flows on the line L27A was made. Despite the fact that the EIA dates from before the crisis, it can be assumed that the figures are representative, because these kind of prognosis are long term studies in which influences, such as a crisis, are automatically taken into account.

In the aforementioned study, an estimation has been made per year and per modal split scenario of the number of train journeys on the line L27A. It was supposed that the Liefkenshoek Rail Link will be in operation.

Starting from a limited change in modal shift (10 %) - realistic scenario – the following train numbers were forecasted:

2015: 363 (both directions)

2020: 386 (both directions)

2025: 409 (both directions)

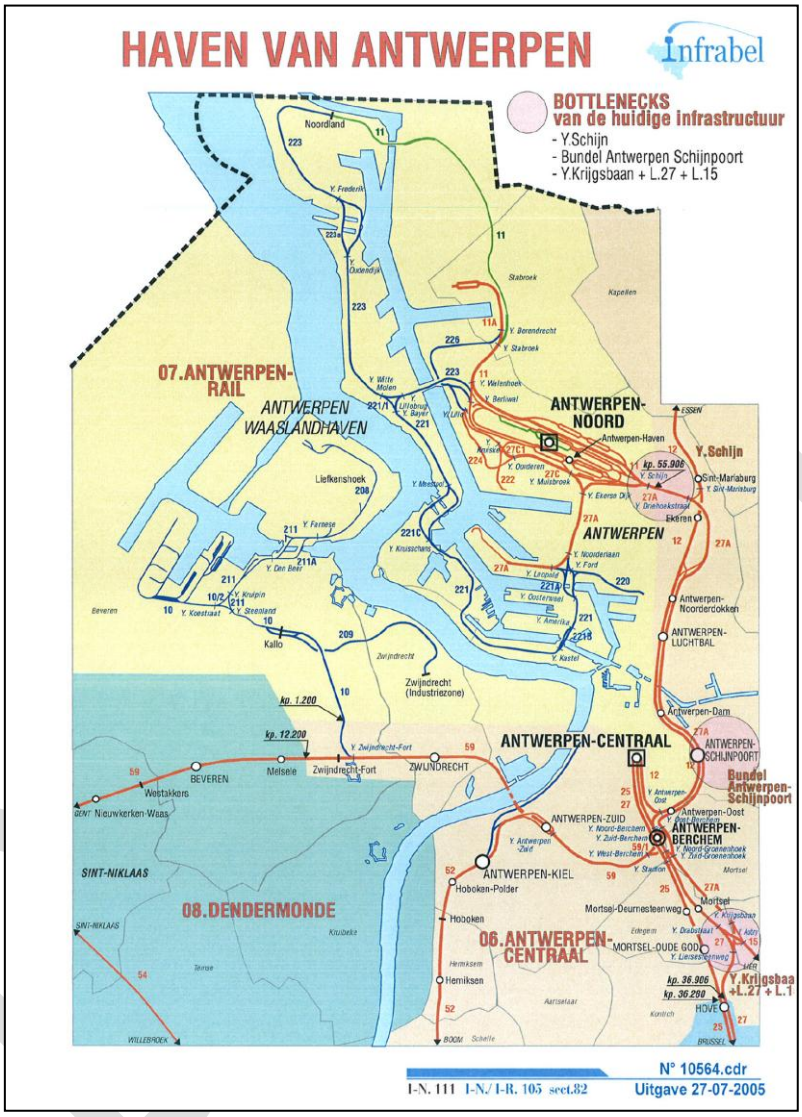
2030: 444 (both directions).

This clearly shows that the forecasted train numbers exceed the number of available train paths as of 2015 (availability: 360 train paths < forecast: 363 train paths). If the junction Schijn is transformed into a flyover (project “Oude Landen”), capacity problems will arise on the line L27A from about 2025. Only after the transformation of the junction Krijgsbaan, the line L27A will dispose of its maximum capacity.

As a consequence, serious capacity issues may arise on the short term. This requires a structural phased approach, in which the flying junction Schijn is just a first step. This will increase the capacity of the junction to 470 train paths a day. L27A will be able to handle more trains a day (400 instead of 360) than today.

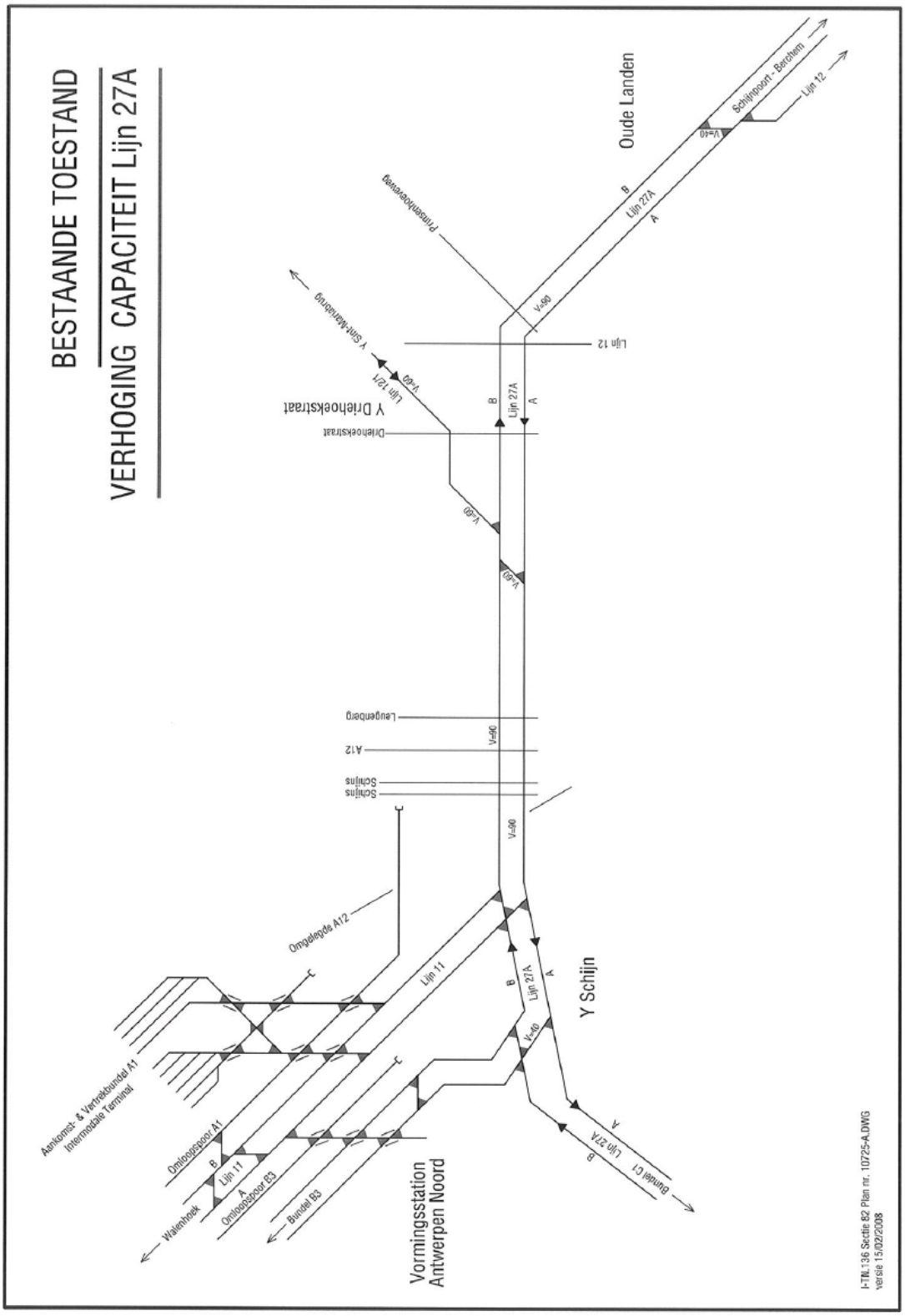
Multi-annual Investment plan 2013-2025

In the multi-annual investment plan 2013-2025 the transformation of the junction Schijn into a flying junction is foreseen for the period 2019-2025 for a total amount of 79 million €$_{2012}$.



Map 23: Port of Antwerp[13]

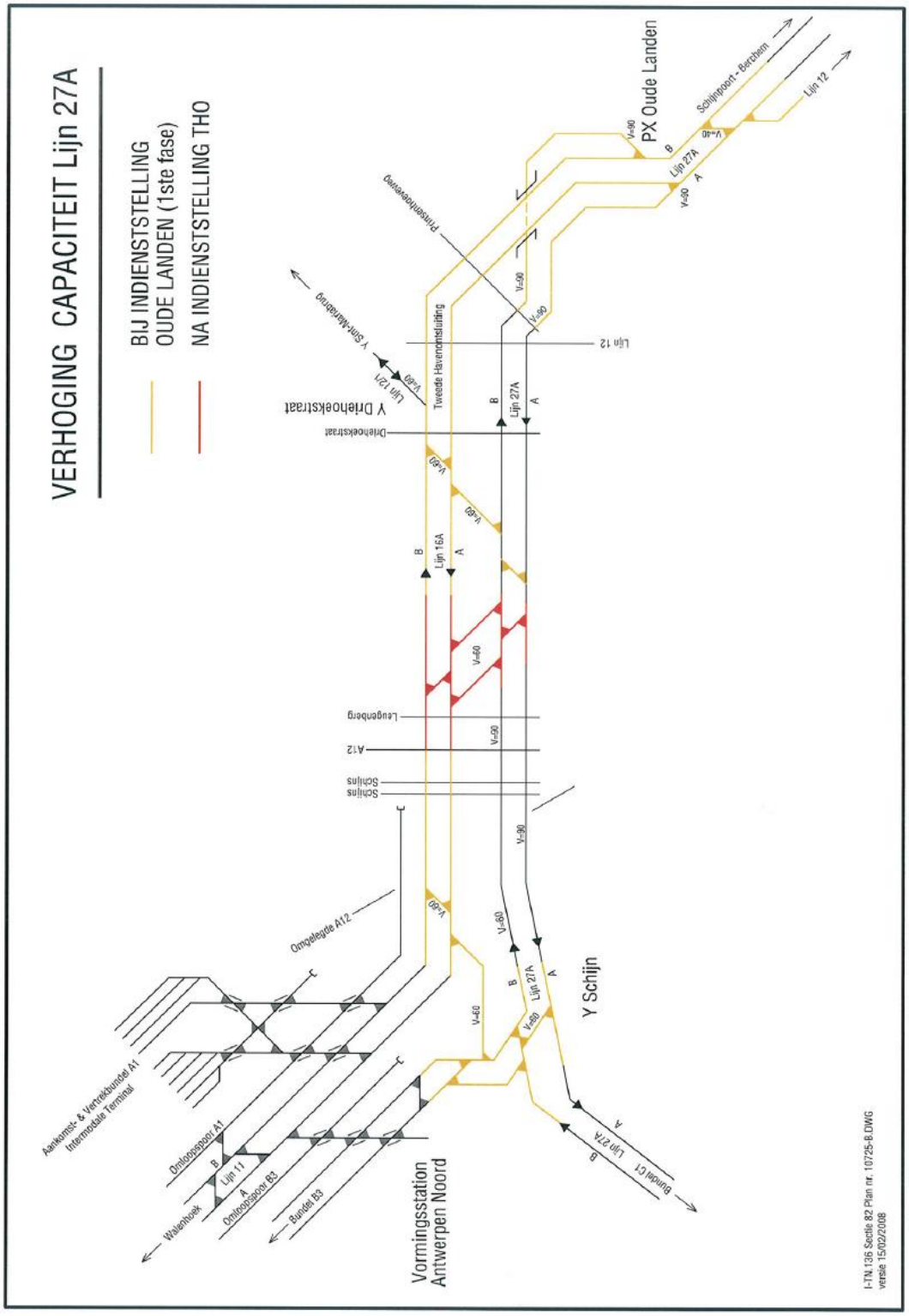
[13] Translation in English of legend of the map :
"Bottlenecks on the current infrastructure:
- Y Schijn (junction)
- Fan of sidings Antwerpen-Schijnpoort
- Y Krijgsbaan (junction) + L27 + L15"



Map 24: capacity enhancement of line 27A (current situation)

Capacity enhancement Line 27A

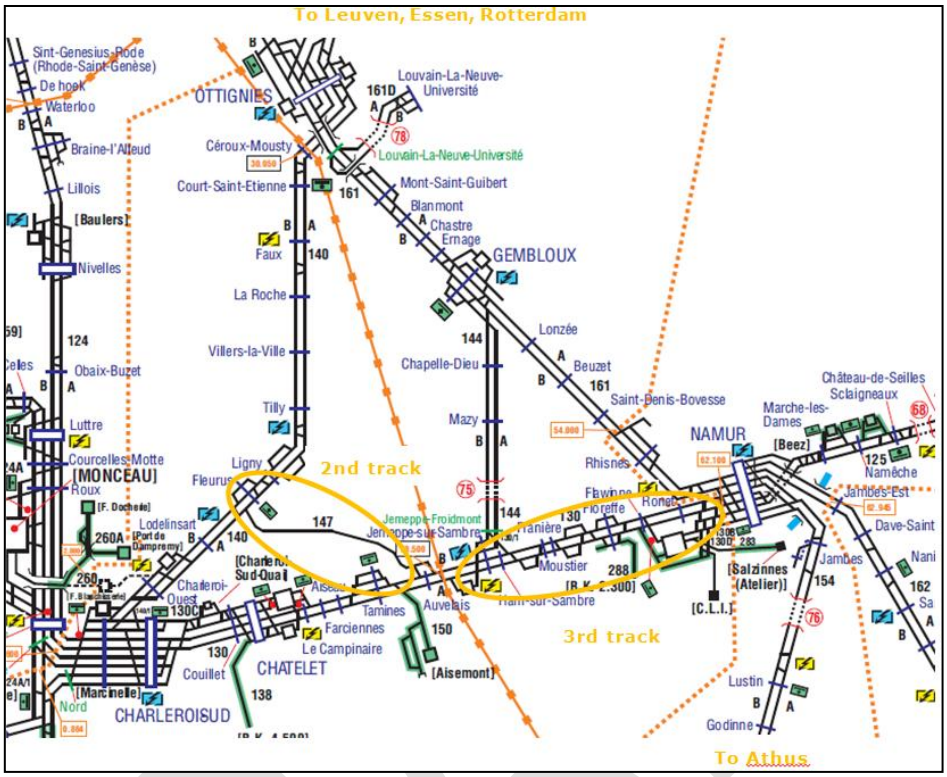
- After putting into service of the project Oude Landen (1st phase)
- After putting into service second access to the port



Map 25: capacity enhancement of line 27A
(with project project Oude Landen (1st phase) and second access to the port)

4.3.1.2 Second track Fleurus-Auvelais

This project is planned in order to reroute more freight trains on Ottignies-Fleurus-Auvelais-Namur, where less passenger trains run compared to Ottignies-Namur. The project should be implemented in 2024.



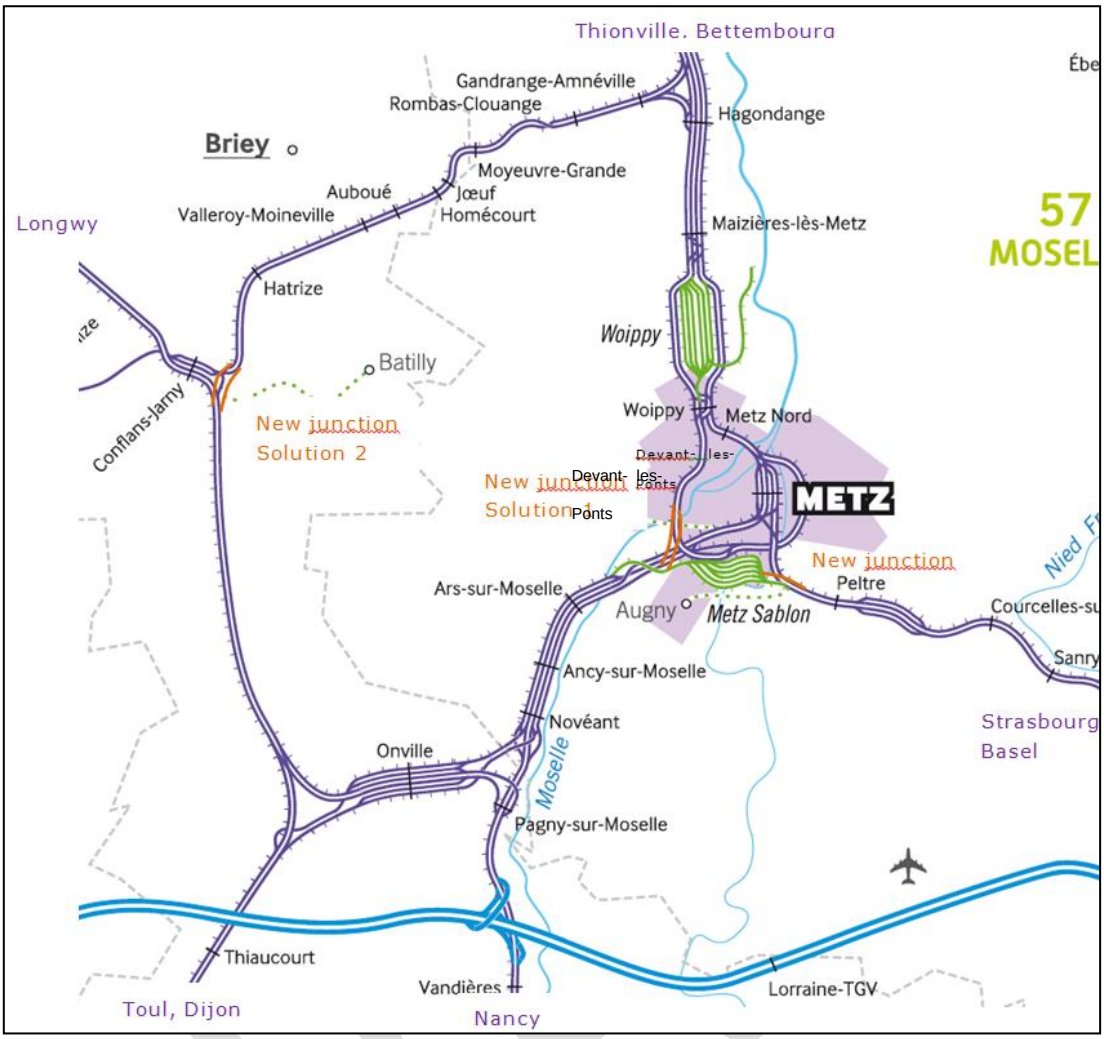
Map 26: Second track Fleurus-Auvelais

4.3.1.3 Bettembourg central signalling centre

In Luxembourg, the main project concerns the renewal of the Bettembourg central signalling centre, combined with an improvement of the track layout and the building of a new line between Luxembourg and Bettembourg It will offer the possibility to increase reliability and capacity, improving the access to the marshalling yard.

4.3.1.4 Metz node

The Metz node is under-dimensioned both for North-South traffic (the section Woippy-Metz-Nord-Metz-Ville, with its two tracks, constitutes a bottleneck) and for East-West-traffic. Access to Metz-Sablon marshalling yard from or to Strasbourg is in conflict with passenger traffic and the installations are not fitted for 750 m long trains, which makes Woippy marshalling yard more attractive and does not enable further development of the Longwy-Conflans-Jarny route to Strasbourg and Basel in alternative of the Bettembourg-Thionville route.
Currently, the only project for short or mid-term consists in the adaptation of Metz-Sablon marshalling yard for 750 m long trains which could make the Longwy-Conflans-Metz route more attractive to avoid Esch-Bettembourg line for the access to Strasbourg and Basel. Nevertheless, this project is not sufficient for the development of traffic in the long term.
The Metz node will remain a bottleneck even after the planned works. For the Longwy-Conflans-Jarny-Metz-Strasbourg route, an uneven junction between Metz-Sablon marshalling yard and the Metz-Strasbourg line should be done.



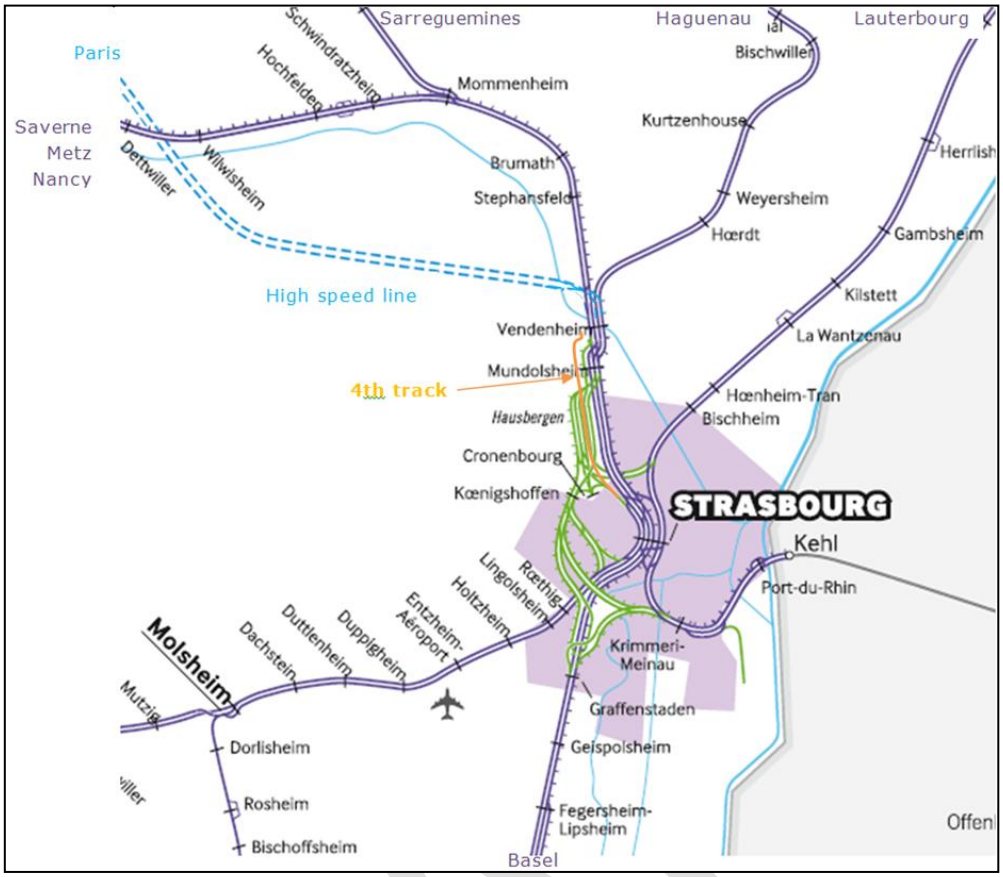
Map 27: New junctions to increase the Metz node capacity

4.3.1.5 Metz-Nancy

This section does not have enough capacity for freight trains during passenger rush hours. Only 0.5 path/hour/direction can go through Nancy's North access.

4.3.1.6 Strasbourg node

To prepare the implementation of the second portion of the high speed line in 2017, a first equipping is on work phase to use three both-side running tracks (plus one dedicated to freight). It will not be sufficient, that is why a further equipping is planned in 2020 so that four both-side running tracks with no speed restriction could be used for the north entrance of Strasbourg for all traffics: two tracks more dedicated for TGV (high speed trains) and TER (regional trains) to Haguenau, two for freight, intercity trains to Nancy and Metz and TER to Saverne and Sarreguemines. Thanks to this project, the capacity for the north-south freight in the Strasbourg node could be increased from 2 to 4 paths per hour per direction all day long.



Map 28: Fourth track Strasbourg-Vendenheim

4.3.1.7 Lille bypass

In order to allow freight trains to and from the ports of Dunkirk and Calais during rush hours, a junction has been built in Arras for these trains to take the Lens-Arras-Valenciennes route instead of going through the Lille node. As the Valenciennes-Maubeuge section is also circulated by regional trains with a project to increase their speed, two other junctions will be built at Busigny and Aulnoye to reroute freight trains in rush hours. The capacity will be at least of two freight trains per hour and direction all day long. Layout improvement in the stations of Hazebrouck, Lens and Bethune will also ease traffic for trains not stopping at these stations. This project, called NIFT (*Nouvel Itinéraire Fret de Transit*), is planned for 2015.

4.3.1.8 Lyon loop line

A new line to bypass the centre of Lyon is planned. It will enable trains of the Dijon-Ambérieu route to access to the Alps or to the Rhone Valley (connection with corridor 6) without going through Lyon. This project will be carried out in the long-term.

4.3.1.9 Other improvement projects

Other projects are planned to ease operations on RFC 2.

- Equipment to allow both-side running are planned in France, in order to operate the line on one track in case of works or disruption. The section Dijon-Macon is being equipped, even though the Dijon-Amberieu route can be used in case of works. For RFC 2, priority would be the Toul-Dijon section on which works are made over period of four hours during day time, thus reducing capacity for the whole corridor as there is no alternative route to Lyon.

- The short section Baudrecourt-Remilly on the Metz-Strasbourg axis cannot be run on both sides. Trains must be rerouted towards Nancy in case of works with a 45 minutes increase in travel time.

- For north-south traffic through Lorraine that cannot be driven through the Longwy-Conflans-Commercy route (e.g. for a changeover at Bettembourg, Thionville or Metz-Woippy), going through the Metz node is not easy. A flying junction between Metz-devant-les-Ponts and the Metz-Nancy line should be created. Another solution for those trains is the rerouting through Conflans-Jarny. Then a direct junction should be done.

- The freight traffic between Basel and the French border is limited to 2 trains per hour per direction, due to flat junctions and the signalling system. To increase the capacity, the signalisation should be upgraded.

4.3.2 Train length increase

740/750 m long train can run on RFC 2 except in Belgium during day time. Works are in progress to extend some siding tracks, along the Athus-Meuse (Namur-Athus) axis, Ottignies-Auvelais-Namur as well as on the Namur-Arlon line. More works are planned on the other axes:

- Ottignies : modification within the frame of the RER;
- Moustiers et Ronet : modification within the frame of the L130 line investments;
- Tilly and Athus: modification from 2018 as part of the budgetary item “trains 740M RFC 2”;
- Bertrix : only an ETCS adaptation is necessary. This will be performed within the frame of an ETCS change request.

In France, some 850 m trains are allowed to run and effectively run on the Bettembourg-Lyon section.

4.3.3 Loading gauge increase

In order to enable the transport of trailers/trucks on trains along Rail Freight RFC 2 to fit market needs, RFC 2 has requested European funding to assess the opportunity to enhance loading gauge on the sections of the corridor where they are too low.

The Corridor Transport Market study performed in 2012 and 2013 showed that there was a major market demand for the transport of trailers/trucks. This has been unanimously reaffirmed by railway undertakings (advisory group meeting of 18 January 2013).

As P400 loading gauge already exists in Belgium and the Netherlands, and as a similar study will be performed in Switzerland, the studies would concern the North-East of France and the Swiss and Luxembourg part of the corridor.
The global study would consist of four studies:

- study of the North-East section (*Artère Nord-Est*) of the corridor, covering the Calais –Rémilly route;
- study of the Lorraine and Alsace sections of the corridor ;
- study of the Luxembourg section of the corridor;
- study of the Swiss section of the corridor.

These studies would enable to assess the best solution and the related cost for the necessary infrastructure upgrade to have P400 loading gauge on the Rotterdam – Antwerp – Metz - Basel route of the corridor. If the project goes live, it will facilitate the traffic of trains carrying trailers/truck across borders (France, Belgium, Luxembourg, Germany, and Switzerland). It will also enable the connection with other lines with similar gauge, such as Perpignan – Luxembourg.

5. Implementation of Article 12 to 19 of Regulation 913/2010

5.1 Coordination of works

5.1.1 Procedure for the publication of works

The coordination and communication process should cover

1) Pre-arranged paths
2) All works which may reduce the available capacity on the corridor.

RFC 2 wants to include this second category because:

- Not all trains will use a pre-arranged path;
- The “first” and/or “last mile” that gives access to the RFC 2 terminals have to be taken into account;
- Some RUs prefer tailor-made paths for the time being;
- The publication of works enables the RUs to take these works into consideration for planning purposes;
- IMs want to provide good services to the RUs.

The approved “Capacity restriction management” process (RNE GA December 2010) was taken as a basis and amended as necessary for the process “coordination of works” because it describes the steps to be performed by the IMs.
The proposal should be used as a basis for a common process. The details of this process may be adjusted by the Corridor MB if necessary to cover the needs of a specific corridor.

5.1.2 The Coordination Process

Starting the Process

The start of the coordination process depends on requirements and existing international timetabling processes. The needs of RUs and other participants for information about planned capacity restrictions in advance of the annual timetabling process shall be the basis of the process.

At the start of the process – i.e. about 24 month in advance of the timetable change – as much information as possible about capacity restrictions should be provided by the IMs. Due to different procedures for planning and financing works on the infrastructure, mainly because of national laws and regulations, not every IM will be able to give all information at that time. Nonetheless, all available information shall be provided.

As mentioned in the RNE guidelines, it is requested to start the coordination process at X-24. This recommendation is based on the following facts:

X-24 information

For the existing RNE corridors, first information about capacity restrictions is provided by the IMs before X-24 and published on the RNE website at X-24. This first information is updated every 6 months.

Publication of Pre-arranged paths at X-11

According to the Regulation, pre-arranged paths on RFCs must be published at X-11 (Art 14.3: “not later than 3 month before the final date for receipt of requests for capacity”). To have the pre-arranged paths ready for publication, the IMs have to start the construction at X-16.

Taking the existing X-24 information and the need for information about capacity restrictions at X-17 into account, it is highly recommended to start the information process at X-24. To be ready for publication at X-24, the information must be gathered at X-25 or X-26.

Updating the Information

The initial publication of coordinated possessions will be at X-24. Coming closer to the timetable change, available information will be more detailed and additional possessions have to be taken into consideration. Additional coordination between IMs on the RFC will be necessary.

Additional publication should be done at

X-17 Additional/detailed information which can be taken into consideration before starting the construction of pre-arranged paths
X-12 Update prior to the publication of pre-arranged paths at X-11
X-9 Update prior to the deadline for path requests at X-8
X-4 Until usage of the path
Update prior to final allocation and for planning of reserve capacity for ad-hoc trains

Between the deadlines given above updates should be provided in regular intervals or at least if major adaptations occur.
The content of information and decision about updating is the responsibility of the IMs of the RFC. Besides above recommended time line, IMs may decide to inform about updates at any time (e.g. quarterly, monthly, and anytime if changes occur).

The information to be published by the MB on behalf of the IMs will not be legally binding.

Responsibility for Coordination

According to the Regulation the coordination has to be performed at a corridor level and the responsibility is given to the Management board of the RFC (Art. 8.2 and 12).

The task of initiating the coordination process may be given preferably to the IMs of the RFC. It may be also any other group mutually defined by the MB and the IMs.

Coordination of Possessions

The coordination may be based on existing processes for coordinating possessions between neighbouring IMs. It has to be ensured that all possessions on the whole RFC are considered.

RFC 2 has decided that the coordination will be done in several meetings between neighbouring infrastructure managers. If two or more of these neighbouring infrastructure managers take the initiative to set up meetings to address the coordination of possession, RFC 2 will request to attend these meetings or at least to receive the minutes of these meetings. If neighbouring infrastructure managers do not spontaneously set up these meetings, RFC 2 will take the initiative to do so.

Aim of the coordination

The coordination of the possessions shall ensure that planned capacity restrictions will account for the needs of the IMs and the needs from the market point of view by rationalising and optimising the gravity of impact and duration of the capacity restriction between neighbouring IMs.

In the coordination the following principles should be considered:

1) A capacity restriction on one section of the corridor, which does not allow a re-routing, should not allow further restricting works in further sections along the corridor to limit negative impact on the capacity offer of the RFC.

2) A capacity restriction on one section of the corridor should be coordinated with capacities available on alternative routes and border transitions to reduce negative impact on the capacity offer of the RFC.

3) A capacity restriction on one section of the corridor with re-routing of all traffic shall be coordinated with additional restricting works on neighbouring sections, which are covered by the same re-routing.

The RFC 2 IMs will use the RFC 2 “Coordination and publication of works” working group to solve conflicts. If members of the group are not able to solve a conflict, they will inform their respective management and the RFC 2 Management board. The Management board will then seek to find a reasonable solution.

5.1.3 Criteria for Possessions to be published

Possessions may vary widely in duration and impact on rail traffic. Therefore criteria have to be defined for possessions which have to be published and which should not be published because they have only minor effects on capacity and/or rail traffic.

According to the Regulation the possessions have to be coordinated and published on the level of the RFCs. To provide an overall picture about the activities on the corridor and because the corridors are used for various kinds of traffic, all possessions on a corridor meeting the criteria for publication should be published. Publication should not be restricted to possessions with an impact on international trains only. RUs and other interested parties will have all information available about capacity restrictions extending defined thresholds on the lines belonging to a corridor in the same tool.

Following criteria should be taken into account:

1) Permanent total closure of the line

   A threshold (minimum duration) should be defined for mandatory publication

2) Timely total closure of the line

   A threshold (minimum number of effective days) should be defined for mandatory publication

3) Any other timely or permanent capacity restriction (e.g. single line operation)

   A threshold (minimum number of days) should be defined for mandatory publication

4) Impacts on all paths including pre-arranged paths / national and international trains
   a. Possessions with impacts on booked paths
      - requiring the re-routing of trains
      - resulting in delayed handovers at border stations
      - resulting in other significant changes to the timetable
   b. Possessions with impacts on published but non requested paths
      - requiring the re-routing of trains
      - resulting in delayed handovers at border stations
      - resulting in other significant changes to the timetable
   c. Possessions with impacts on capacity restricting the possibilities for ad-hoc traffic
      - Ad-hoc trains have to use alternate routes
      - Ad-hoc trains are not possible in a given timeframe

Thresholds for a mandatory publication should be added to items a. to c. above, e.g. number of trains to be re-routed, minimum delay at border stations, etc.

Tool for the Publication of Possessions

To have an overview of all planned capacity restrictions which is easily available to all involved parties, a common template and also IT-tools may be used. This tool shall contain all necessary data about the planned possessions. Because the information is needed for capacity planning and timetabling, all impacts of the possessions regarding the availability of the infrastructure should be described (e.g. closure of the line, single line operations), including the impacts on rail traffic (e.g. expected delays, necessary re-routings, alternate routes) and the duration of the restrictions (e.g. period, all day, specific dates and times). It is not necessary and should be avoided to provide technical details about the activities or financial issues. The detail of this information will depend on the time, when it will be available respectively published.
Furthermore, European standards coming from e.g. the TSIs regarding the contents and structure of the information shall be met.

Adaptation of an existing tool

RNE has developed an IT tool for the publication of works. The output of this tool can be seen on RNE website[14].

RFC2 decided to use this RNE tool. The tool may be fed manually or by importing the necessary data from tools used by various IMs via an interface. This interface has to be created. The permanent team of the RFC 2 will feed the tool for RFC 2 members.

If experiences show that even with possible additional adaptations the tool does not fulfil the requirements of the IMs and the RFCs concerning the data handling, availability, reliability and data security, RNE will enhance it or will develop a new tool.

If such a new tool is considered necessary, decisions are required for financing and developing a tool. The specifications have to be described taking into account the needs of the IMs, Corridor Organisations and railway undertakings.

The already existing tool satisfies the following specifications:

1) A graphic of the corridor showing the lines belonging to the corridor, the various sections of the corridor and important operating points.

2) A list of possessions planned on the corridors, for the complete corridor as well as for the various sections.

3) For each possession at least the following information shall be provided:

a) Responsible Infrastructure Manager (IM)
Full name or acronym

[14] http://www.rne.eu/x-24/items/x-24_Corridor_5.html

b) Possession Identifier

An ID-number identifying the possession on the corridor, to be allocated by the IM or corridor organisation)

c) Section of the corridor

Defined by two operating points (from – to)

d) Affected direction

Indication if both directions or one direction is affected, if only one direction is affected, the direction should be indicated (e.g. N-S, S-N, E-W, W-E)

e) Affected borders

Name(s) of the border station(s) where trains will arrive late or where re-routed trains will pass

f) Section of the corridor where the possessions are in effect

Names of the operating points (from – to, if only one station is affected, the same name will be shown in the “from” and “to” columns

g) Year

The calendar year the possession is in effect

h) Date from – to

First and last day of the possession

i) Duration

Indication of total hours the possession is in effect during the period given in X

j) Time of day

Indication if the possession is in effect all day or only part of the day

k) Reason for restriction

A short description about the type of work which is being performed or which part of the infrastructure will be effected

l) Traffic impact

Information about the impact on traffic (e.g. total closure, single line operations, capacity restrictions)

m) Description of the effects

Short description of the effects resulting from the traffic impact given in l) (e.g. expected delays, re-routing of trains,

n) Additional Information

According to a decision involved IMs, additional information may be given (e.g. status of coordination, national or IM project ID).

Deciding about additional information it should be considered that the tool will be used for capacity allocation and timetabling purposes and is not designed for technical and/or financial planning purposes.

For simplifying the use of the tool for all users, free text is possible only to a limited extent. Wherever possible, a drop-down menu shall be used to provide a list of categories or possible entries to the data fields (e.g. concerning “time of day”, “reason for restrictions”).

5.2 Corridor-One Stop Shop

5.2.1 Consistency along Corridors

All procedures concerning the functioning of the RFC 2 C-OSS are based on the principles described by the RNE Guideline for Corridor OSS and the RNE guideline for Pre-arranged Paths, to ensure a consistency between RFC C-OSS’s that is as high as possible. In that same respect, RFC 2 will follow the annual RNE PCS Process guideline which describes the PCS phases according to the international timetabling calendar and international timetabling processes.

Moreover, the Executive boards of RFC 1 and RFC 2 have drawn up a Corridor Framework for capacity allocation, which will be implemented by both Corridors. This document was published in the Official Journal of the European Union. A link to the document can be found in annex 3.

5.2.2 Tasks

In the Regulation 913/2010, the requirements for the C-OSS’s role are defined as follows:

- Contact point for applicants to request and receive answers regarding infrastructure capacity for freight trains crossing at least one border along a Corridor;
- As a coordination tool provide basic information concerning the allocation of the infrastructure capacity. It shall display the infrastructure capacity available at the time of request and its characteristics in accordance to pre-defined parameters for trains running in the freight Corridor;
- Able to take a decision regarding applications for pre-arranged paths and reserve capacity as specified in Art. 13(3);
- Forwarding any request/application for infrastructure capacity which cannot be met by the Corridor OSS to the competent IM(s) and communicating their decision to the Applicant;
- Keeping a path request register available to all interested parties.

These requirements were defined more into detail in the Corridor Framework.

In addition to this, the Corridor OSS shall provide information provided by the RFC MB in the Corridor Information Document, in accordance with Art. 18. Details about the Corridor Information Document are given on section 5.7.

RFC 2 has decided that apart from these tasks, the C-OSS will also play a coordinating role in the construction phase of the yearly PaPs catalogue.

5.2.3 Structure

RFC 2 has chosen the dedicated C-OSS structure, which implies that the C-OSS tasks will be performed by the Corridor Permanent Team (CPT). To ensure continuity in time of absence of one or more CPT members, one CPT member will be appointed as C-OSS leader. The first C-OSS

leader will be Thomas Vanbeveren, previously Corridor Manager for RNE Corridor 5 and Corridor C Quality and Capacity manager.

5.2.4 Procedures/Timeline

The C-OSS will not only be responsible for the allocation of the PaPs, it will also play a major coordinating role in the set-up of the yearly PaPs Catalogue. RFC 2 agreed, based on the RNE timetable calendar, on the following timeline:

X-22	Each year, around X-22, based on a proposal from the C-OSS, MB makes a preliminary decision about a PaPs strategy (as far as quantity is concerned)
X-18	Proposal is modified based on the annual satisfaction survey and capacity requirements and presented to RAG for consultation
X-17	Coordination meeting where the C-OSS presents the constraints to all IM/ABs (including windows for Luxembourg) Proposal is modified based on the updated possessions at X-17
X-16	MB makes a final decision about the number of PaPs and construction can start
North to South (Eastern + Western axis)	Infrabel: deadline X-14 RFF: deadline X-13 All others (simultaneously): deadline X-12
South to North (Eastern + Western axis)	RFF: deadline X-14 Infrabel: deadline X-13 All others (simultaneously): deadline X-12
X-12	MB validates PaPs before publication
X-11	Publication of PaPs in PCS by C-OSS
X-11 to X-8	Requests are registered, checked and classified by the C-OSS
X-8 to X-7,5	Allocation decision is executed by the C-OSS on request of pure PaP. This decision is communicated to the applicant. In case of conflicts decisions are made following the corridor priority rules and the decision/alternative is communicated to the applicant.
X-7,5	If not all published PaPs have been requested at X-8, the C-OSS WG (mandated by the MB) will decide which of the non-requested PaPs will be returned to the IMs at X-7.5.
X-8 to X-5,5	IM constructs feeder and outflow paths, PaP adjustments for flexible approach and tailor-made solutions for losing applications, all monitored by the C-OSS
X-5,5	Communication of the draft timetable to applicants by C-OSS, including feeder and outflow, PaP adjustments and tailor-made solutions

X-4	Communication of the final timetable to applicants by C-OSS, including feeder and outflow, PaP adjustments and tailor-made solutions Update of PaP publication in PCS if not continuous update from X-8 (according to MB decision)
X-8 to X-2	Late requests for PaPs are registered, checked and classified by the C-OSS. Allocation decision is executed by the C-OSS on request of pure Reserve Capacity and decision communicated to the applicant. IM constructs feeder and outflow paths and plans PaP adjustments for flexible approach, monitored by the C-OSS.
X-5	Non-booked PaPs will be used to cover late requests; If not all of the returned PaPs have been used by the IMs, they can be forwarded again to the C-OSS for the late requests
X-4 to X-1	C-OSS communicate the offer for late requests, including feeder and outflow and PaP adjustments
X-4,5	Decision on Reserve Capacity based on the booking situation at X-5
X-4 to X-2	Planning extra Reserve Capacity if needed (short version PaPs catalogue set-up)
X-2	Publication of Reserve Capacity offer
X-2 to X+12 (-21days)	Requests for Reserve Capacity are registered, checked and classified by the C-OSS. Allocation decision is executed by the C-OSS on request of pure Reserve Capacity and decision communicated to the applicant. IM constructs feeder and outflow paths and plans Reserve Capacity adjustments for flexible approach, monitored by the C-OSS. C-OSS communicate the offer for ad-hoc requests, including feeder and outflow and Reserve Capacity adjustments
X-4 to X+12	Continuous update of PaP publication in PCS

Table 40: Timeline for capacity management

RFC 2 has installed a C-OSS workgroup, which has defined the broad procedures for the setting up of the yearly PAPs Catalogue, as well as the procedures for the functioning of the C-OSS. These procedures will be explained more into detail in the Corridor Information Document Book IV.

5.2.5 Contact details

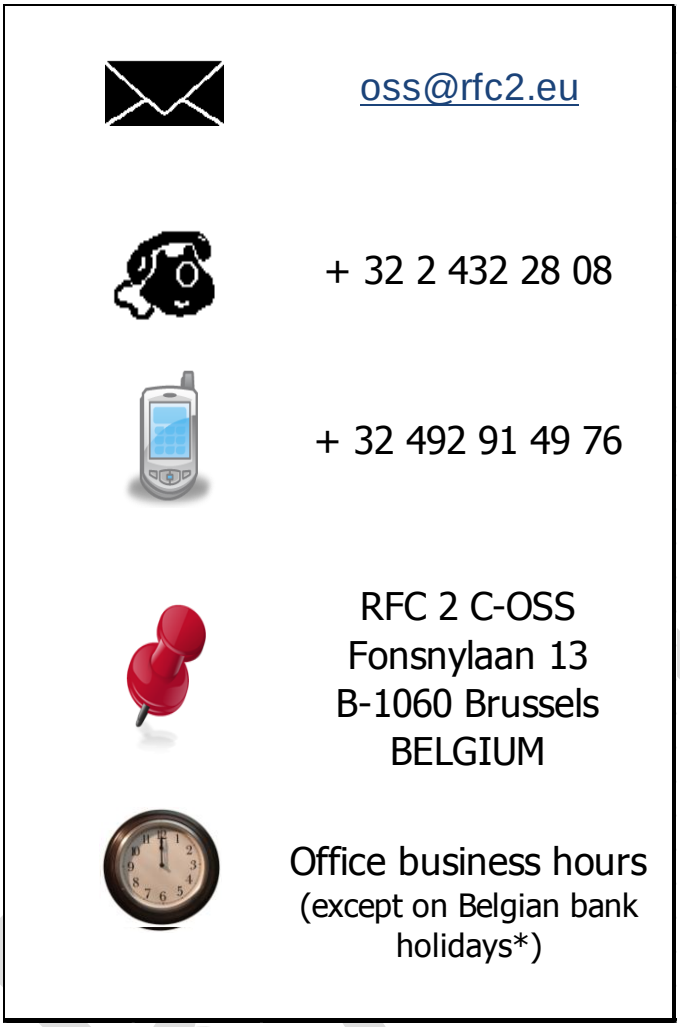


Chart 6: RFC 2 C-OSS details

Bank holidays in Belgium 2013 (after November 10, 2013)

Bank Holidays	day	date
Armistice Day	Monday	11-Nov-13
Kings Feast	Friday	15-Nov-13
Christmas Day	Wednesday	25-Dec-13
Boxing Day	Thursday	26-Dec-13

Table 41: 2013 bank holidays in Belgium

Bank Holidays	day	date
New Year's Day	Wednesday	01-Jan-14
Easter Monday	Monday	21-Apr-14
Labour Day	Thursday	01-May-14
Ascension Day	Thursday	29-May-14
Ascension Day - Extra closing day	Friday	30-May-14
Pentecost Monday	Monday	09-Jun-14
Assumption Day	Friday	15-May-14
Armistice Day	Tuesday	11-Nov-14
Christmas Day	Thursday	25-Dec-14
Boxing Day	Friday	26-Dec-14

Table 42: 2014 bank holidays in Belgium

5.3 Capacity Allocation

5.3.1 Framework

The Executive boards of RFC 2 and RFC 1 agreed on a common framework for the allocation of PaPs on their Rail Freight Corridors. This document was signed by all concerned ministers of transport, on the 20th of December, 2012. It has been published in the Official Journal of the Euopean Union on March 6, 2013 and is therefore available on the internet[15].

This document provides an overview on the principles of:

- The supply of PaPs by the national IMs and ABs
- The allocation of PaPs and Reserve Capacity by the C-OSS
- Regulatory control
- Authorised applicants (see chapter 5.4)

5.3.2 Priority Rule

The priority rule, to be applied in the event of conflicting requests for pre-arranged paths at X-8 and based on the suggestion in the RNE Guidelines for Corridor OSS, are described in the common framework for capacity allocation on the Rail Freight Corridors 1 and 2. They have been integrated in Book 4 of the Corridor Information Document. These rules are summarised in the following table:

[15] www.eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:065:0004:0012:EN:PDF

Description of the priority rule for coordination at X-8 in the event of conflicting requests for Pre-arranged Paths

L^{PAP} = Total requested length of pre-arranged path

L^{TP} = Total requested length of complete path

Y^{RD} = Number of requested running days for the timetable period.

K = The rate for priority

All lengths are counted in kilometers.

The priority is calculated according to this formula:

$$(L^{PAP} + L^{TP}) \times Y^{RD} = K$$

This formula can be used so that in a first step the priority value (K) is calculated using only total requested length of pre-arranged path (L^{PAP}) multiplied by the Number of requested running days (Y^{RD}).

If the requests cannot be separated in this way, the Total requested length of complete path (L^{TP}) will also be added in the calculation in order to separate the requests.

5.4 Authorised applicants

According to Article 15 of the Regulation an authorised applicant may directly apply to the C-OSS for the allocation of pre-arranged train paths/ reserve capacity. If the pre-arranged path/reserve capacity was allocated by the C-OSS accordingly, the authorised applicant should appoint to the C-OSS within the time, as decided by the Management board, the designated railway undertaking(s) which will use the train path/reserve capacity on behalf of the authorised applicant. The designated railway undertaking has therefore to conclude the necessary individual contracts with the IMs or ABs concerned relying on the respective national network access conditions.
The Corridor Information Document – notably in Book IV chapter 4 – will describe the rights and obligations of applicants vis-à-vis C-OSS, in particular where no railway undertaking has been assigned yet. Network Statements should contain reservation fees in order to provide an incentive for efficient use of the allocated train path.

5.5 Traffic Management

Article 16 of the Regulation 913/2010 is about traffic management:

> *Art 16.1: The Management board of the freight corridor shall put in place procedures for coordinating traffic management along the freight corridor. The Management boards of connected freight corridors shall put in place procedures for coordinating traffic along such freight corridors.*
>
> *Art 16.2: The infrastructure managers of the freight corridor and the advisory group referred to in Article 8(7) shall put in place procedures to ensure optimal coordination between the operation of the railway infrastructure and the terminals.*

The RNE working group on Traffic Management analysed by which means the requirements of Regulation 913/2010 should be fulfilled and to which extent the already existing traffic management rules and procedures applied in the different networks could be aligned.

For the moment, the resulting document does not cover all the requirements of the Regulation.

For some RFC 2 border points, the cooperation between the operations people of the neighbouring IMs already works. In such cases a more detailed document is not needed and perhaps counterproductive. For other RFC 2 border points, procedures do not exist. The Guideline must therefore be more detailed. Besides, the “best practices” could be included in the document.

In 2013, a second phase of the work package has started. The idea is to provide the RFCs with a template illustrating what a Corridor Traffic Management Guidelines should contain.

RFC 2 has set up its own working group with people from traffic management to carry out the RNE guidelines into its own organisation.

RFC 2 intends to answer the following questions:

Article 16.1
Do bi-lateral procedures exist? If they do, they have to be collected and reviewed. If no procedures exist, RFC 2 could propose to the IMs to help them in producing such procedures.
Do infrastructure managers know the real time traffic on the other side of the border? Are their staffs familiar with the IT tool developed by RNE for that purpose (TIS)? Do they need a specific TIS training?

Article 16.2
What are the procedures for a train to enter a private terminal from the principal network or to leave a private terminal to access the principal network? A dialog with TAG members should enable to assess whether these procedures satisfy terminals managers having in mind that they differ from one terminal to another.

RFC 2 will then focus on the most critical cases and, if necessary, together with the affected terminals will try to improve the coordination of operations rules.

5.6 Traffic Management in the event of disturbance

Article 17 of Regulation 913/2010 is about the traffic management in the event of disturbances.

Art 17.1: the Management board shall adopt common targets for punctuality and/or guidelines for traffic management in the event of disturbance to train movements on the freight corridor.
Art 17.2: each infrastructure manager concerned shall draw up priority rules for the management between the different types of traffic in the part of the freight corridors within the responsibility of that infrastructure manager in accordance with the common targets and/or guidelines referred to in paragraph 1 of this Article. Those priority rules shall be published in the network statement referred to in Article 3 of Directive 2001/14/EC.

Art 17.3: the principles for establishing the priority rules shall at least provide that the train path referred to in Article 14(3) and (4) allocated to freight trains which comply with their scheduled time in the working timetable shall not be modified, as far as possible. The principles for establishing the priority rules shall aim at minimising the overall network recovery time with regard to the needs of all types of transport. For this purpose, infrastructure managers may coordinate the management between the different types of traffic along several freight corridors (EN 20.10.2010 Official Journal of the European Union L 276/29).

Some requirements of the Freight Regulation are not dealt with in the RNE document on Traffic Management, namely the connection between priority rules and punctuality targets (article 17.2 requires that the former are drawn up according to the latter) and the basic principles which the priority rules should be based upon (article 17.3: the trains running on pre-arranged paths should be kept on time if they are on time).

RFC 2 intends to implement the following action plan:

Article 17.1
- Identification of the means of actions, if any, that are available to improve punctuality.
- Adoption of more precise punctuality target based on the results that could be expected from these means of actions
- If need be, additional KPIs could be created (lost minutes due to late departure, total lost minutes, etc.)

The TPM Working Group will do the interface between traffic management specialists and performance management specialists.

Article 17.2
- Assessment of the actual application of current national priority rules
- Assess whether these existing rules can and should be modified

Article 17.3
- Assess whether national rules comply with Regulation 913/2010: "*the train path […] allocated to freight trains which comply with their scheduled time in the working timetable shall not be modified, as far as possible*"
- If they do not, assess whether it is possible to modify these rules to make them compliant.

5.7 Corridor Information Document

5.7.1 Specification

The Management board of the Rail Freight RFC 2 has decided to use as a basis the RNE Corridor Information Document Common Structure. This document will thus be called “Corridor Information Document”.

The Corridor Information Document Common Structure allows the RFC 2 to follow a “wide-format” solution for the Corridor Information Document, which follows the logic of the RNE Network Statement Specification, which is largely respected by the IMs. This leads to comparable and structured information which is particularly important for clients concerned with more than one corridor.

5.7.2 Corridor Information Document Main Structure and updating process

The Corridor Information Document will be divided into five books, to clarify the specificity and independence of the key content of the document, and to facilitate the organisation and updating of the information.

The main structure of the Corridor Information Document for the 2014 and 2015 timetables is:

- Book I: Generalities
- Book II: Network Statement Excerpts Timetabling year Y
- Book III: Terminal Description
- Book IV: Procedures for Capacity and Traffic Management
- Book V: Implementation Plan

The Corridor Information Document is a single document and therefore all five books should be considered as integrated. However, the five books can be considered as independent from each other (and may have different updating needs), with the exception of Book I, where a record is kept of all changes in the CID.

Book I is the only one not directly referred to in the Regulation. Its key purpose is the management of all the content included in the four other books and to provide the reader with an efficient guide for the consultation of the CID information.

The CID for the timetabling year Y shall be published on the 2nd Monday of January of the year Y-1 (the same date as the publication of the pre-arranged paths catalogue), one month after the annual publication of the national network statements. A parallel publication/updating for the CID will be carried out every year – one for the timetabling year Y and the second for the timetabling year Y-1.

Books I, II and III will be published once a year, but it is probable that intermediate versions will be required due to changes in any of the books. Books IV and V can have a different updating process depending on the context.

Any change in the CID will be immediately published. However, it must be noted that both the Network Statements and the Implementation Plan have specific consultation processes.

In order to comply with the Regulation, the first CID shall be exceptionally published in November 2013. The next CID (timetable 2015) – shall be published, based on Directive 2012/34, on the 2nd Monday of January 2014 at the latest.

5.7.3 Content of the Five Books

The table of contents of the five books are presented in the tables below.

Book I: Generalities

#	Name	Content
-	Version Control	All previous versions of the Corridor Information Document (CID) will be identified, together with a short description of the changes. in the relevant timetabling year. This table comprehends all the 5 Books. Consequently, any change in any of the Books requires updating of Book I.
1	Introduction	States the purpose of the CID and how it fulfils the requirements of Regulation 913/2010. States the purpose of Book I. Summarises the key strategic objectives pursued by the creation of this Corridor.
2	Structure of the CID	Explains the organisation of the Corridor Info Document and the content of the other books.
3	Corridor description	Provides a brief description of the Corridor infrastructure. This description (map overview) shall be general, as the detailed characteristics will be presented in Book II - Network Statement Excerpt and Book V - Implementation Plan. The connected Freight Corridors and major railway lines for freight transport shall be presented, together with the identification of the managing entities (IMs or other corridor organisations).
4	Corridor organisation	Provides a description of the corridor organization, including its aims, mission, organogram, legal form. Describes the relation between the national IMs and the corridor organization. Describes the relation between the corridor organization and the Advisory Groups foreseen in Reg. 913/2010 Art. 8.7 and 8.8.
5	Contacts	Provides the relevant contacts in the corridor organisation.
6	Legal Framework	Lists the main legislation and regulations to be considered by RUs and applicants, including: - International regulations - The framework for capacity allocation as mentioned in Regulation 913/2010- Article 14.1 Refers to Book 2 for the remaining applicable legislation and regulations.
7	Legal Status	Describes the legal Status of the CS. Describes the generally applicable liability conditions, especially concerning OSS activities. State swhich document prevails (corridor Statement or the Network Statement) in case of inconsistencies.
8	Validity and updating process	States the dates of the period of validity for the CID. Describes how the CID is updated.
9	Publishing	Lists the available formats of the CID (e.g. printed document, website document, CD-ROM), how they can be obtained and their prices.
10	IT Tools	Describes the main IT tools that will be made available for the clients of the corridor, such as PCS, and TIS.
11	Glossary	A glossary of terms and abbreviations used in the CID.

Table 43: table of content of CID book I

#	Name	Content
-	Version Control	All previous versions of the Corridor Information Document (CID) will be identified, together with a short description of the changes in the relevant timetabling year.
1	**GENERAL INFORMATION**	**- - - - -**
1.1	Introduction	Identifies the applicable NS. Refer to the NS of the related IMs along the corridor.
1.2	Objective	Fulfillment of Regulation 913/2010 Art. 18 a: "all the information contained in the network statement for national networks regarding the freight corridor, drawn up in accordance with the procedure set out in Article 3 of Directive 2001/14/EC; "
1.3	Legal Framework	Lists the applicable legislation by IM NS, possibly in the form of a link/cross-reference. Book I will also address the legal framework concerning the corridor itself.
1.4	Legal Status	States the Legal Status of each national NS. The Legal Status of the CS itself is defined in Book I.
1.5	Structure of NS Excerpt	Provides reference to the RNE Corridor Statement Common Structure Specification and to the RNE specification for Network Statements.
2	**ACCESS CONDITIONS**	**- - - - -**
2.1	Introduction	- - - - -
2.2	General Access Requirements	Lists the applicable access conditions by IM NS in the form of a link/cross-reference.
2.2.1	Requirements to Apply for a Train Path	Lists the applicable conditions by IM NS in the form of a link/cross-reference.
2.2.2	Who is allowed to Perform Freight Train Operations	Lists the applicable conditions by IM NS in the form of a link/cross-reference.
2.2.3	Licences	Lists the applicable conditions by IM NS in the form of a link/cross-reference.
2.2.4	Safety Certificate	Lists the applicable conditions by IM NS in the form of a link/cross-reference.
2.2.5	Cover of Liabilities	Lists the applicable conditions by IM NS in the form of a link/cross-reference.
2.3	General Business / Commercial Conditions	- - - - -
2.3.1	Framework Agreement	Lists the applicable conditions by IM NS in the form of a link/cross-reference.
2.3.2	Access Contracts	Lists the applicable conditions by IM NS in the form of a link/cross-reference.

2.4	Operational Rules	Lists the Operational Rules by IM NS in the form of a link/cross-reference.
2.5	Exceptional Transports	Lists the Exceptional Transport conditions by IM NS in the form of a link/cross-reference.
2.6	Dangerous Goods	Lists the Dangerous Goods conditions by IM NS in the form of a link/cross-reference.
2.7	Rolling Stock Acceptance Process Guidelines	Lists the Rolling Stock Acceptance Process conditions by IM NS in the form of a link/cross-reference.
2.8	Staff Acceptance Process	Lists the Staff Acceptance Process conditions by IM NS in the form of a link/cross-reference.
3	**INFRA-STRUCTURE**	**- - - - -**
3.1	Introduction	- - - - -
3.2	Extent of Network	List of link/cross-reference to the national network statements.
3.3	Network Description	List of link/cross-reference to the national network statements.
3.3.1	Geography Identification	List of link/cross-reference to the national network statements.
3.3.1.1	Track Typologies	List of link/cross-reference to the national network statements.
3.3.1.2	Track Gauges	List of link/cross-reference to the national network statements.
3.3.1.3	Stations and Nodes	List of link/cross-reference to the national network statements.
3.3.2	Capabilities	- - - - -
3.3.2.1	Loading Gauge	List of link/cross-reference to the national network statements.
3.3.2.2	Weight Limits	List of link/cross-reference to the national network statements.
3.3.2.3	Line Gradients	List of link/cross-reference to the national network statements.
3.3.2.4	Line Speeds	List of link/cross-reference to the national network statements.
3.3.2.5	Maximum Train Lengths	List of link/cross-reference to the national network statements.
3.3.2.6	Power Supply	List of link/cross-reference to the national network statements.
3.3.3	Traffic Control and Communication Systems	List of link/cross-reference to the national network statements.
3.3.3.1	Signalling Systems	List of link/cross-reference to the national network statements.
3.3.3.2	Traffic Control Systems	List of link/cross-reference to the national network statements.
3.3.3.3	Communication Systems	List of link/cross-reference to the national network statements.
3.3.3.4	ATC Systems	List of link/cross-reference to the national network statements.
3.4	Traffic Restrictions	- - - - -
3.4.1	Specialised infrastructure	List of link/cross-reference to the national network statements.
3.4.2	Environmental Restrictions	List of link/cross-reference to the national network statements.
3.4.3	Dangerous Goods	List of link/cross-reference to the national network statements.
3.4.4	Tunnel Restrictions	List of link/cross-reference to the national network statements.
3.4.5	Bridge Restrictions	List of link/cross-reference to the national network statements.
3.5	Availability of the Infrastructure	List of link/cross-reference to the national network statements.
3.6	Free Chapter	List of link/cross-reference to the national network statements.
3.7	Freight Terminals	List of link/cross-reference to the national network statements.
3.8	Service Facilities	List of link/cross-reference to the national network statements.

3.8.1	Train Formation Yards	List of link/cross-reference to the national network statements.
3.8.2	Storage Sidings	List of link/cross-reference to the national network statements.
3.8.3	Maintenance Facilities	List of link/cross-reference to the national network statements.
3.8.4	Refueling Facilities	List of link/cross-reference to the national network statements.
3.8.5	Technical Facilities	List of link/cross-reference to the national network statements.
3.8.6 - 3.8.99	Other Facilities	List of link/cross-reference to the national network statements.
4	**CAPACITY ALLOCATION**	**List of link/cross-reference to the national network statements.**
5	**SERVICES**	**List of link/cross-reference to the national network statements.**
5.1	Introduction	- - - - -
5.2	Minimum Access Package	List of link/cross-reference to the national network statements.
5.3	Track Access to Services Facilities and supply of services	List of link/cross-reference to the national network statements.
5.3.1	Use of Electrical Supply Equipment for Traction Current, Where Available	List of link/cross-reference to the national network statements.
5.3.2	Refuelling Facilities	List of link/cross-reference to the national network statements.
5.3.3	Passenger Stations/ their Buildings and Other Facilities	List of link/cross-reference to the national network statements.
5.3.4	Freight Terminals	List of link/cross-reference to the national network statements.
5.3.5	Marshalling Yards	List of link/cross-reference to the national network statements.
5.3.6	Train Formation Facilities	List of link/cross-reference to the national network statements.
5.3.7	Storage Sidings	List of link/cross-reference to the national network statements.
5.3.8	Maintenance and Other Technical Facilities	List of link/cross-reference to the national network statements.
5.4	Additional Services	List of link/cross-reference to the national network statements.
5.4.1	Traction Current	List of link/cross-reference to the national network statements.
5.4.2	Supply of Fuel	List of link/cross-reference to the national network statements.
5.4.3	Services for Trains (preheating, water supply, toilet waste handling, etc.)	List of link/cross-reference to the national network statements.
5.4.4	Shunting and Other Services	List of link/cross-reference to the national network statements.
5.4.5	Services for Exceptional Transports and Dangerous Goods	List of link/cross-reference to the national network statements.
5.4.6 - 5.4.99	Other Additional Services	List of link/cross-reference to the national network statements.
5.5	Ancillary Services	List of link/cross-reference to the national network statements.
5.5.1	Access to Telecommunication Network	List of link/cross-reference to the national network statements.

5.5.2	Provision of Supplementary Information	List of link/cross-reference to the national network statements.
5.5.3	Technical Inspection of Rolling Stock	List of link/cross-reference to the national network statements.
5.5.4 - 5.5.99	Other Ancillary Services	List of link/cross-reference to the national network statements.
6	**CHARGES**	**- - - - -**
6.1	Charging Principles	List the information by IM NS in the form of a link/cross-reference.
6.1.1	Minimum Access Package	- - - - -
6.1.2	Track Access to Facilities referred to in 5.3	- - - - -
6.1.3	Services referred to in 5.3	- - - - -
6.1.4	Additional Services	- - - - -
6.1.5	Ancillary Services	- - - - -
6.2	Charging system	List the information by IM NS in the form of a link/cross-reference.
6.3	Tariffs	List of link/cross-reference to the national network statements.
6.3.1	Minimum Access Package	- - - - -
6.3.2	Track Access to Services Facilities	- - - - -
6.3.3	Supply of Services referred to in 5.3	- - - - -
6.3.4	Additional Services	- - - - -
6.3.5	Ancillary Services	- - - - -
6.4	Performance Scheme	List of link/cross-reference to the national network statements.
6.5	Changes to Charges	List of link/cross-reference to the national network statements.
6.6	Billing Arrangements	List of link/cross-reference to the national network statements.

Table 44: table of content of CID book II

Book III: Terminal Description

#	Name	Content
-	Version Control	All previous versions of Book III should be identified together with a short description of the changes in the relevant timetabling year.
1	Introduction	Detailed definition of "Terminal"
2	Terminal Overview	Provides a global overview of the existing Terminals on the Corridor,
3	Terminal Details	Provides a list of links to a dedicated RFC page on the Terminal websites, where standardised information can be found.

Table 45: table of content of CID book III

Book IV: Procedures for Capacity and Traffic Management

#	Name	Content
-	Version Control	All previous versions of Book IV should be identified, together with a short description of the changes in the relevant timetabling year.
1	Abbreviations/Glossary	A glossary of terms and abbreviations used in Book IV.
2	Introduction and legal bases	States the purpose of the procedures for capacity and traffic management and the legal base of the information provided.
3	One Stop Shop for capacity allocation	Describes the OSS functions and procedures (including information on how applicants can find the path catalogue reserve capacity). [Reg. 913/2010- Article 13]
4	Path Coordination System (PCS)	States that PCS is the only too used by the Corridor for the allocation of PaPs and RC.
5	Framework for capacity allocation	Describes the Corridor Framework for the allocation of capacity according to Art.14.1.
6	Applicants	Describes the conditions applicable to AAs. [Reg. 913/2010-Article 15]
7	Corridor Related Products	Describes the path products that RFC 2 offers.
8	Conditions for booking capacity via the Corridor/C-OSS	Describes the conditions for booking capacity via the Corridor OSS.
9	Types of capacity requests on RFC 2	Describes the difference between capacity requests for the annual timetable, late requests, ad hoc requests,…
10	Handling of capacity requests	Describes the capacity allocation process for freight trains [Reg. 913/2010-Article 14],
11	Priority Rule	idem
12	Handling of Unused PaPs at X-7.5	idem
13	Modifications	idem
14	Withdrawal of Request	idem
15	Allocation	idem
16	Complaints	idem
17	Transfer of Capacity	idem
18	Cancellation	idem
19	Non Usage Conditions	idem
20	Billing/Invoicing	idem
21	Traffic management	idem
22	Traffic management in the event of disturbance	Describes the Corridor-specific procedures for traffic management in the event of disturbance. [Reg. 913/2010-Article 17]
23	Coordination of Works	Describes the Corridor-specific procedures for the Coordination of works.

Table 46: table of content of CID book IV

Book V: Implementation Plan

#	Name	Content
-	Version Control	All previous versions of Book V should be identified, together with a short description of the changes in the relevant timetabling year.
-	Introduction	State the purpose of the procedures for capacity and traffic management
1	Characteristics of RFC 2 and measures necessary for creating RFC 2	- - - - -
1.1	RFC 2 Characteristics	List of all railway lines and Terminals designated to a corridor. Description of applicable infrastructure parameters of lines and Terminals along a corridor, relevant for investment purposes. [Reg. 913/2010- Article 9.1 (a)]
1.2	Traffic and Bottlenecks	Description of traffic patterns, bottlenecks and available capacity. [Reg. 913/2010- Article 9.1 (a)]
1.3	Measures for creating RFC 2	Description of the organizational structure of the Corridor (incl. Management board, Executive board and Advisory Groups, legal structure included) [Reg. 913/2010- Article 8]
2	Transport Market Study	Describes the essential elements of the transport market study [Reg. 913/2010- Article 9.3]
3	Objectives	Describes the objectives of the Corridor in terms of quality of service and capacity, in accordance with Reg. 913/2010 Article 19. [Reg. 913/2010- Article 9.1 (c)]
4	Investment Plan	Indicative description of the medium and long-term infrastructure investment on the Corridor. [Reg. 913/2010- Article 11]
5	Measures for the implementation of Art 12 to 19 of regulation 913/2010	- - - - -
5.1	Coordination of works	Measures foreseen for the implementation of cross-border coordination of infrastructure works. [Reg. 913/2010- Article 12]
5.2	Corridor One Stop Shop	Measures foreseen for the establishment of a Corridor OSS [Reg. 913/2010- Article 13]
5.3	Capacity allocation for freight trains	Measures for the implementation of the Corridor Framework for the allocation of capacity according to Art.14
5.4	Authorised applicants	Measures for the inclusion of non-railway undertakings among Applicants [Reg. 913/2010-Article 15]
5.5	Traffic management	Measures to come to Corridor-specific procedures for traffic management. [Reg. 913/2010-Article 16]
5.6	Traffic management in the event of disturbance	Measures to come to Corridor-specific procedures for traffic management in the event of disturbance. [Reg. 913/2010-Article 17]
5.7	Corridor Information Document	Measures to provide the necessary information [Reg. 913/2010-Article 18]
5.8	Quality of Service	Measures to come to a Corridor Quality Performance Scheme [Reg. 913/2010-Article 19]

Table 47: table of content of CID book V

5.7.4 Corridor Information Document Language

The CID is an international document and therefore its only version will be in English.

5.7.5 The preparation process

The CID will be produced by the Corridor Permanent Team. Within the Corridor Permanent Team, a project leader is appointed. However, certain information, most notably the information in Book II and Book III, must be delivered to the Corridor by Infrastructure Managers, Allocation Bodies or Terminals.

The CID project leader will carry out the following tasks:

- Define the overall yearly work programme for the CID production/updating.
- Ensure that all information suppliers comply with the requirements, in terms of timescale and quality, including translation. This will include a clear definition of responsibilities for the information.
- Provide a contact point for information suppliers to update any relevant data, and keep a registry of it.
- Initiate the yearly work programme updates, when necessary.
- Undertake the final document review in terms of consistency of content (including the provided translations) and graphical presentation.

Book II consists of national Network Statement excerpts of the corresponding timetabling year. Every chapter of this Book is made up out of links to the corresponding national Network Statement chapter. To ensure that these links stay updated, for every Infrastructure Manager/Allocation Body, a dedicated person is appointed to notify the CID project leader if any changes have been applied to their national Network Statement.

Book III provides information about the terminals on the Corridor. A list of terminals has been suggested by the Transport Market Study and a final list was identified by the IMs and ABs of the Corridor. The terminals on this list will be sent a questionnaire, previously presented in a TAG meeting and agreed upon by all participants. The terminals will then make the answers to this questionnaire available on their websites, and supply the Corridor with the hyperlink to this information. These links will then be published in the CID Book III. This means that if a terminal is linked with other Corridors, they will only have to publish the information once. RFC1 already agreed on this strategy, and RFC 2 will take the necessary actions to coordinate with the other neighbouring Corridors on this subject.

5.7.6 Legal Character of the Corridor Information Document

National Network Statements are produced in different legal contexts and this needs to be considered while analysing the nature of the Corridor Information Document. Before the publication of the first Corridor Information Document, the RFC 2 Legal Working Group will provide an overview on the legal boundaries of each book.

5.8 Quality of service

5.8.1 Train Performance Management

5.8.1.1 Introduction

RFC 2 has chosen the Train Performance Management (TPM) project to comply with Regulation 913/2010.

The aim of Train Performance Management is to build an international common system and international common procedures which enables a corridor organization to measure, analyse (raw data, weak points, operational information …) and take actions to improve train performance. TPM within RFC 2 is based on the experience in RFC 1 and 2 to create a common approach for Train Performance Management, described in the Train Performance Management Manual, and the RNE Guidelines for Freight Corridor Punctuality Targets. This harmonised method could be used on other corridors or lines in the future.

TPM follows a process on international rail traffic and relations to prepare the base for its improvements. These improvements produce benefits for all involved parties within international rail transports, for instance getting more efficiency on rail transport. This will be:

- Improved competitiveness for RUs
- Optimized use of capacity for IMs
- Shifting transports form road to rail

In consequence, this supports the target of the European Commission to shift traffic from road to rail.

Train Performance Management allows:

- an international approach for punctuality analysis
- appointing a dedicated team of Performance Managers
- the identification of quality problems as a basis for improvement
- the fulfilment of customer expectations, the improvement of customer satisfaction and the increase of railway transportation
- the fulfilment of current and future obligations with respect to the monitoring of punctuality
- the promotion of international cooperation (look across the borders), involvement of Railway Undertakings (RU) in existing international working groups
- positive influence to insure a stable national network and international traffic

5.8.1.2 History of the project

The project TPM started in December 2009. With TPM it’s possible to establish regular monitoring, analysing and improving of the train performance for designated traffic (relations). A common IT-system like TIS (former Europtirails) by which Corridors can measure, analyse and manage train performance did not exist. Because of this, there was no opportunity to improve international train punctuality based on a common international IT system. In order to provide a solid basis for the improvement of the performance, the process for its monitoring and analysing had to be described and implemented. To fulfil all requirements within the processes of data collection and performance analyses, a network of experts was built.

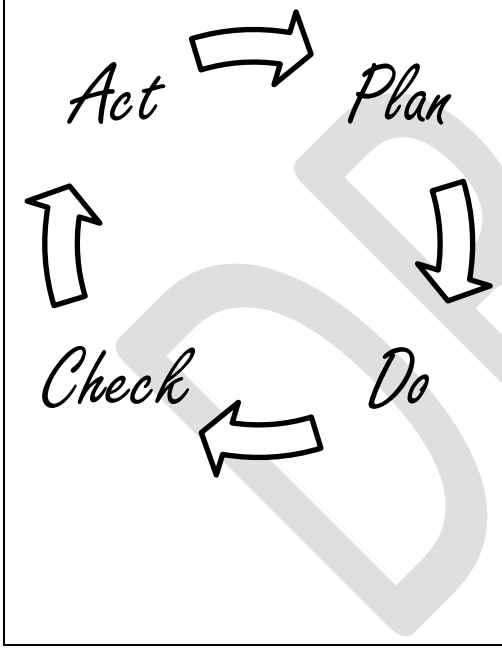
TIS is a precondition for all IMs. Without TIS, TPM cannot be applied as described. Without TIS other processes need to be created to apply a TPM.
TPM is closely linked with the RNE/UIC tools developed for EPR. Elements of EPR will be integrated in the TPM.

5.8.1.3 Objectives

The goal of TPM is an international approach for punctuality analyses to improve the quality of train performance on the Corridor, and so to improve customer satisfaction. The establishment of regular international cooperation on the quality performance (looking over the borders) between IMs themselves and also together with the RUs is a further objective.

5.8.1.4 General description of procedure

Goal of Train Performance Management is a continuous improvement through systematic monitoring and intervention (if necessary) to achieve an optimal quality in the whole production process.

<table>
<tr><td rowspan="2"> 
</td><td>Act: (improve)

Post-processing
Normative / actual value comparison

Set defaults

Identification of problems</td><td>Plan: (prepare)

Operation
Clarify and define improvement topic
Define and describe the problem
Collecting information
Find of causes
Formulation of improvements
Set of measures</td></tr>
<tr><td>Check: (evaluate)

Analysis
Monitoring of results
Registration of results
Summary of results
Visualization of results</td><td>Do: (implement)

Operation
Implementation of the measures
Keep deadlines
Documentation of measures</td></tr>
</table>

Table 48: TPM Production Process

All activities regarding quality improvements have to be covered by a circle of management, which describes all necessities of plannings, doings, checks and actings. This means in particular to create exactly defined measures for all phases of improving quality on the rail network. The main purpose of such a working approach will be at least to have a very clear process description for all involved participants. The input for all phases has to be predefined by experts, worked out within special meetings of sub-groups.

Measurement of punctuality

Punctuality of a train is measured on the base of comparisons between the planned time in the timetable of a train identified by its train number and the actual running time at certain measuring points. A measuring point is a specific location on the route where the trains running data are captured. One can choose to measure arrival, departure or both, or run through time. Punctuality measurement is based on the internationally agreed timetable for the whole train run. Some IMs allocate a new timetable in case of delays. There may be cases where train runs should not be considered and are excluded from the punctuality measurement, e.g. allocation of a new timetable in case of big delays for the remaining part of the train run (load shifting), missing running advices at specific measuring points, timetable inconsistencies at the border etc…

The main Corridor axes will be defined, on which the traffic will be monitored. Per axis, different measuring points will be selected based on the number of trains passing, data quality and handling importance. This list will be updated periodically.

It is neither possible nor advisable to monitor all the trains running along the Corridor. Therefore, a selection must be made. This selection will be revised on a regular basis. The basic principles to take a train into account in the selection are the following:

- Only trains which are available in the information tool (TIS)
- Only trains crossing at least one Corridor border point
- Only trains passing at least 80% of the measuring points of the corresponding Corridor axis

International data exchange

The objective of the international data exchange, which will become mandatory with the implementation of TAF TSI, is to provide electronic data. This defines the obligations of the parties regarding confidential information and the conditions under which this information may be passed on to third parties. Confidentially of data is a precondition to have access to the tools and to share information.

Confidentiality of data

The data shall remain the property of the IMs providing it. Notwithstanding this circumstance, the data shall be confidential for IMs and RUs receiving it. In this respect the involved organisations (IMs or RUs) may divulge information on the data according to laws or contractual provisions governing the use and confidentiality of data. This confidentiality is ensured by the use of confidentiality agreements. This defines the obligations of the parties regarding confidential information and the conditions under which this information may be passed on to third parties. Signing the confidentiality agreement is a precondition to have access to the tools and to share information.

Data quality needs to be monitored and is an integral part of Train Performance Management. A systematic procedure for the analysis of data quality issues as well as for the setting up of corrective actions is necessary. It does not concern the analysis of performance and related improvement actions. The data source is TIS and data will be processed by Oracle Business Intelligence (OBI SE 1) through standardized templates provided by RNE.

5.8.1.5 Tasks & roles of IM/RU members in Train Performance Management

The project is guided by the TPM Work Group, with dedicated tasks and roles. This expert working group consists out of:

- A Project Leader (member of the Corridor Permanent Team)
- A Corridor Coordinator (person, member of an IM, in charge of the overall coordination of IM Performance Managers along a corridor and acting as a consultation partner for the project leader in the questions of performance analyses)
- IM Performance Managers (person who represents their IM in the expert working group. This person is also the responsible for taking care of needed measures in his area to improve the punctuality (together with the concerned RU(s)).

The TPM WG will meet approximately 4 times a year. For two of these meetings, RUs are invited to participate to give feedback on ongoing issues.

Apart from the TPM WG, pragmatic bilateral working groups are set-up, with composition depending on subject and/or corridor section, to act on issues raised in the TPM WG. These working groups are lead by an IM Performance Manager (or the TPM Project Leader, when needed), and include concerned IM and RU representatives. The goal of these bilateral working groups is to investigate more deeply on the concerned issues, draft an action plan, and follow-up on measures to be taken.

The following graphic shows the work flow for each part of the whole TPM-process:

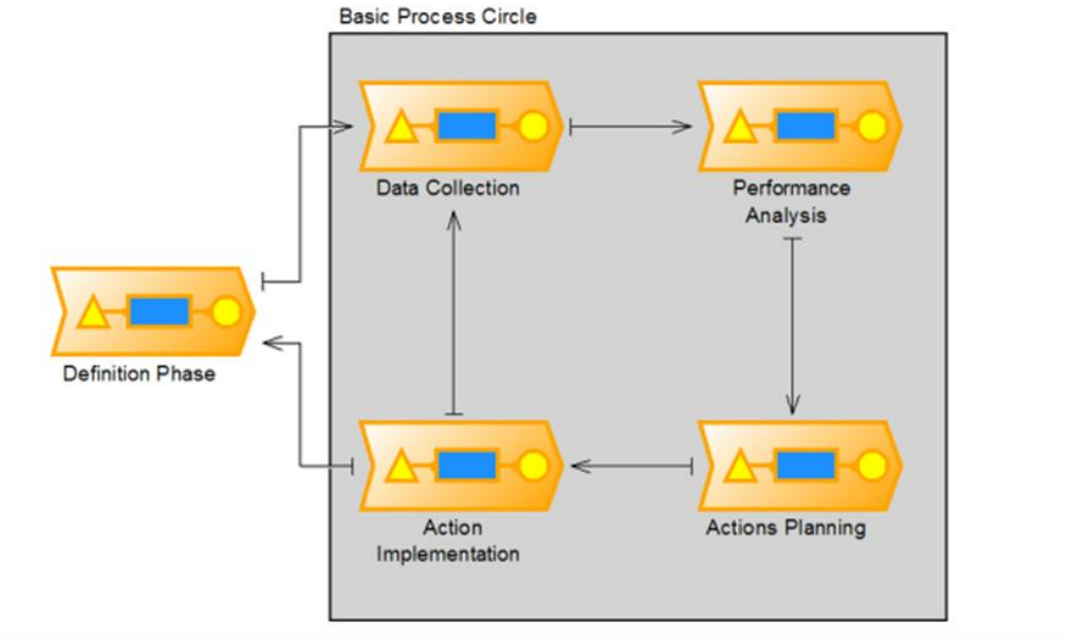


Chart 7: work flow for each part of the TPM-process

A non-exhaustive list of tasks and responsibilities of the TPM WG-members can be found below:

Tasks	Project Leader	Performance Coordinator	IM Performance Manager
Definition Phase			
Defining processes and standards for the TPM	R	X	X
Implementing processes for the TPM	R	X	X
Requesting development of IT tools based on requirements of TPM	R	X	X
Defining punctuality thresholds related to international products and traffics	R	X	X
Makes strategic decisions	R	X	X
Contact point for questions related to corridor issues at PM meetings	X		X
Checking processes and standards for the TPM		R	
Data Collection			
Updating train lists	X	R	X
Collection of data		X	R
Defining/implementing/checking the templates for reporting	X	R	X
Ensuring high data quality (raw data)		X	R
Distributing of defined performance reports	R	X	
Performance Analysis			
Combining national data into international performance data		R	X
Analysing the punctuality and delay causes in the reports		R	X
Analysing and ensuring high data quality, addressing problems to improve data completeness		X	R
Interpretation of graphs to define the problems	X	X	R
Addressing of weak points to the proper working group for taking actions	X	X	R
Receiving of feedbacks in terms of concrete actions and deadlines		X	R
Controlling of results of implemented measures		X	R
Combining national data into international performance data		R	X
Action Planning			
Organising TPM meetings for freight	R		X
Organising operational bilateral or multilateral meetings for freight and passenger	X	X	R
Analysing the reasons behind the problems		X	R
International escalation process	R	X	
Action Implementation			
Taking actions to eliminate the problems	X	R	X

Table 49: allocation of TPM tasks

R = responsible, X = involved in the process, (X) = facultative

During all tasks, Corridor and IM representatives may consult concerned RUs to execute these topics in the optimal way.

5.8.1.6 Documentation of results

The major tools for documenting results of TPM are explained below.

Reporting incl. catalogue of measures

Train Performance Management works with standardized templates which are used by all participating countries. This way comparability and aggregation is promoted. All monitored traffic will be evaluated and regularly reported. The reports will show the current development of important key figures. Some of these figures will be used ro calculate the KPI described in chapter 5.8.3 of this Implementation Plan. The identified weaknesses and the formulated measures to eliminate them are collected in a catalogue of measures. The reports must be clear and correct. An example of a report can be found in annex 4.

Modification

Modifications on the reports are possible on a yearly basis (timetable change). Minor and layout changes are possible throughout the year with agreement of all involved partners.

Changes must be addressed to the responsible Corridor Coordinator and agreed by all involved parties.

5.8.1.7 Escalation

Insufficient quality in the production process has to be addressed at the appropriate level and will be escalated where necessary. Primarily, the problem must be solved on the national level by the involved IMs and RUs according to national valid process. If the problem is not solvable by the IMs and RUs themselves, an escalation process can be started.
Different scenarios like:

- no progress possible concerning the collaboration with ministries
- problem in the cooperation amongst IMs
- problems in the cooperation between IMs and RUs

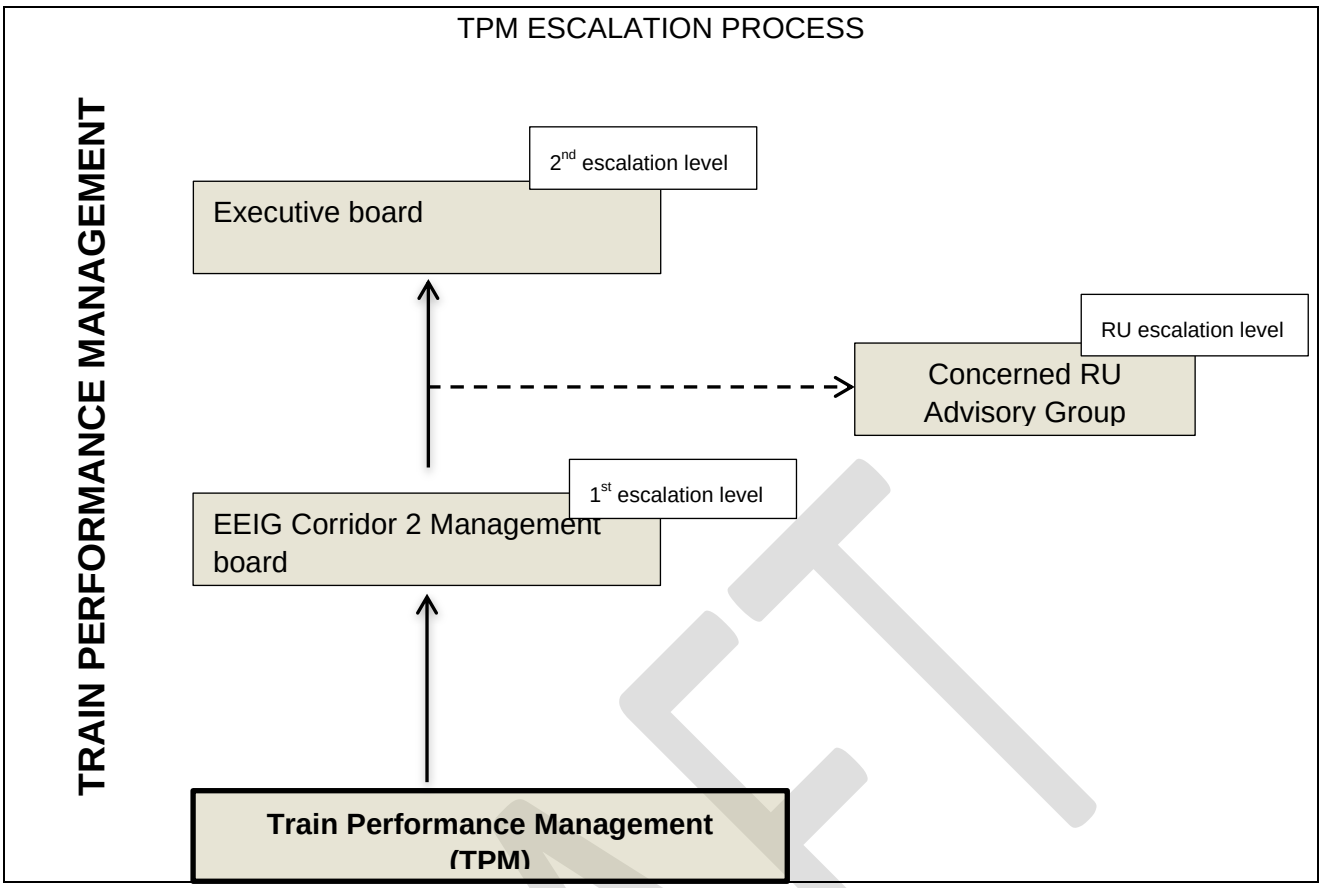


Chart 8: TPM escalation process

During all TPM WG meetings, reporting will be done concerning the past TPM bilateral meetings. Problems that occur during these meetings can be identified, and possible escalation can be discussed.

If the TPM WG agrees on the escalation of a given case, the TPM Project Leader will address this case to the EEIG RFC 2 Management board (MB).

The MB can decide to tackle this issue in the higher hierarchy of the concerned IM or to escalate further.
This further escalation can imply three decisions: the MB can decide if this case will be discussed in a RAG meeting (for problems concerning all RUs), in a bi- or multilateral meeting with the involved RU representatives to the RAG, or to escalate immediately to the Executive board of the Corridor.

5.8.1.8 Used tools

RNE Train Information System (TIS)

The Train Information System (TIS) supports international train management by delivering real-time train data concerning international passenger and freight trains. The tool allows following the complete train run of an international train across European borders. TIS serves as a source of information for international quality analysis, e.g. TPM.

The range of the tool will be continuously extended to other parts of the European railway network. TIS data is based on the standard UIC data exchange process. All RFC 2 routes are covered by TIS.

The IMs send data to TIS, where all the information from the different IMs is combined into one train run from departure or origin to final destination. In this manner, a train can be monitored from start to end across borders. All collected data for the train runs, is accessible in TIS and OBI SE 1.

Oracle Business Intelligence Standard Edition One (OBI SE 1)

Oracle Business Intelligence Standard Edition One is a comprehensive business intelligence platform that delivers a full range of analytic and reporting capabilities. It is used by RNE to process the raw TIS data and to deliver the necessary reports to the Corridors.

Projectplace

Projectplace is an online collaboration and communication tool that allows managing single or multiple projects in a simple and efficient way. The software can be used internet-based without any installation. It is used to publish all reports for the concerned partners to access.

Additional tools

In case of additional detailed analyses, IM and RU tools can be used, depending on the purpose and goal of the analysis.

5.8.1.9 Passenger traffic and primary lines

To ensure continuity of measures taken in the RNE C05 TPM project, and to improve the effectiveness of TPM on the Corridor, the RFC 2 TPM WG can decide to monitor passenger traffic on Corridor sections or other traffic on primary lines. These primary lines are high capacity lines outside of the corridor, connecting important nodes from departure to destination points, with an impact on Corridor traffic.

5.8.2 National Performance Reviews

Apart from the tests performed to consider the relevance of integrating European Performance Regime modules into Train Performance Management, RFC 2 will trace possible inhomogeneity between performance regimes along the corridor. This will be done by an assessment of the existing national performance reviews, in practice. This task will be a responsibility of the TPM WG.

5.8.3 Performance Monitoring Report

RFC 2 will publish an annual performance report on its website, and present this during a TAG and RAG meeting, to its customers. This publication is foreseen for the first quarter of every year, starting from 2015 onwards.

5.8.3.1 Measurements

RFC 2 will monitor its performance by using a number of Key Performance Indicators and other measurements. These where chosen on the basis of the following parameters:

- Measurability: performance should be measurable with the tools and resources available for the corridor
- Clarity: KPI should be understandable for all public it is designed for
- Comparability: KPI should be comparable across time and region
- Relevance and empowerment: KPI should provide information on which project decisions can be based

The difference between general measurements and KPIs lays in the fact that we link concrete objectives to the KPIs, while this is not the case for general measurements.

The list will be updated regularly, depending on management needs and availability of data. They will form the basis, together with the results from the customer satisfaction survey, for the annual performance report.

For the KPIs or other measurements, only Rail Freight RFC 2 trains are taken into account. A Rail Freight “Corridor train” is an international train which crosses at least one RFC 2 border, and runs at least 70 continuous kilometres on this Corridor. For KPIs 5, 6 and 9, performance is based on the TPM train list.

5.8.3.2 Key Performance Indicators

General Corridor Performance:

KPI 1 : Total Corridor Traffic

Measures the amount of corridor trains that have circulated on RFC 2. Trains that pass two RFC 2 border points will not be counted twice. This KPI is updated on a monthly basis.

KPI 2 : Ton KMs

Measures the amount of tons that are transported over RFC 2 per kilometre. This KPI is updated on a monthly basis.

KPI 3: Corridor Punctuality

Measures the average punctuality of a selection of corridor trains, in 26 Corridor passage points. This KPI is updated on a monthly basis.

KPI 4: Theoretical Running Time

Makes the comparison between the average yearly timetable running time and the average prearranged path running time for predefined RFC 2 routes. The average speed will also be calculated, to be able to compare along the Corridor. This KPI is updated yearly after the publication of the Corridor PaPs Catalogue at X-11.

Monitoring of the allocation process:

KPI 5: Pre-arranged paths per section

Number of offered pre-arranged train paths at X-11 per section. This KPI will be updated on a yearly basis.

KPI 6: Requests for pre-arranged paths

The number of requests for pre-arranged train paths in the period X-11 till X-8 and X-8 (-1 day) till X-2 (without feeder/outflow sections). This KPI will be updated twice a year after the given timeframe.

KPI 7: Allocated pre-arranged paths

The number of pre-arranged train paths which are allocated by the C-OSS, in the period X-11 till X-8 and X-8 (-1 day) till X-2. This KPI will be updated twice a year after the given timeframe.

KPI 8: Reserve Capacity

The number of pre-arranged paths offered as reserve capacity, to be allocated by the C-OSS from X-2 and during the running timetable. This KPI will be updated on a yearly basis.

KPI 9: Allocated Reserve Capacity

The number of pre-arranged paths allocated by the C-OSS during the reserve capacity phase. This KPI will be updated on a yearly basis.

5.8.3.3 Other Measurements

General Corridor Performance:

OM 1: Cross Border Traffic

Measures all corridor trains per RFC 2 border point. This KPI is updated on a monthly basis.

OM 2: Delay Reason

Shows the share of each delay reason in the total amount of delays on a selection of corridor trains. The IM, RU or third parties responsibility is also indicated. This KPI is updated biannually.

OM 3: Top Corridor Flows

Gives an overview on the main origins, destinations and routes of corridor trains. This KPI is updated yearly.

OM 4: Users

Shows the share of each RU in the total number of corridor trains. This KPI is updated biannually.

OM 5: Lost Minutes

Measures the amount of lost minutes on a selection of corridor trains, in 8 Corridor points. This KPI is updated on a monthly basis.

Monitoring of the allocation process:

OM 6: Allocated pre-arranged paths in active timetable

The number of C-OSS allocated pre-arranged train paths which reached active timetable phase. This KPI will be updated on a yearly basis.

OM 7: Double Bookings

The number of conflicting applications for pre-arranged paths at X-8. This KPI will be updated on a yearly basis.

OM 8: Allocated pre-arranged paths for reserve capacity in active timetable

The number of C-OSS allocated pre-arranged paths during the reserve capacity phase, which reached active timetable phase. This KPI will be updated on a yearly basis.

5.8.4 Customer Satisfaction Survey

Each year, the Management board of RFC 2, or RNE on its behalf, will send a questionnaire to all RUs and AAs which have requested paths. The results of this survey will be presented as an annex to the RFC 2 yearly Performance Report, presented in the Advisory group meetings and published on the Corridor website.

To ensure consistency along the different Corridors, RFC 2 joined the development of a common annual satisfaction survey by RNE. A RNE working group, in which RFC 2 participates has been set up mid 2013 to deliver the common survey on time by the second half of 2014.

Annex 1 List of RFC 2 lines

Country	Line number	From	To	Length	Type of line
NL Keyrail	-	Europoort	Maasvlakte West	14,0	connecting
NL Keyrail	-	Europoort	Maasvlakte Oost	14,0	connecting
NL Keyrail	-	Pernis	Europoort	15,3	connecting
NL Keyrail	-	Waalhaven Zuid	Pernis	4,6	connecting
NL Keyrail	-	Kijfhoek Noord	Waalhaven Zuid	11,4	connecting
NL Keyrail	-	Kijfhoek Zuid	Kijfhoek Noord	1,4	connecting
NL Keyrail	-	Kijfhoek aansluiting Zuid	Kijfhoek Zuid	2,1	principal
NL ProRail	-	Vlissingen Sloehaven	Roosendaal	66,9	connecting
NL ProRail	-	Lage Zwaluwe	Kijfhoek aansluiting Zuid	17,8	principal
NL ProRail	-	Lage Zwaluwe	Moerdijk	1,3	principal
NL ProRail	-	Roosendaal	Lage Zwaluwe	22,8	principal
NL ProRail	-	Roosendaal Grens	Roosendaal	8,4	principal
Belgium	10	Y.Zwijndrecht-Fort	Y.Hazop	9,5	connecting
Belgium	11	Y.Schijn	Antwerpen-BASF	17,2	connecting
Belgium	12	Antwerpen Noord	Y Sint-Mariaburg	3,3	principal
Belgium	12	Y Sint-Mariaburg	Essen	20,1	principal
Belgium	15	Y.O. Berchem	Lier	12,5	diversionary
Belgium	16	Lier	Aarschot	22,7	diversionary
Belgium	27	Schaarbeek	Y.Etterbeek	22,4	connecting
Belgium	35	Aarschot	Leuven	15,3	diversionary
Belgium	53	Y. Hever	Leuven	17,4	principal
Belgium	55	Wondelgem	Zelzate	15,5	connecting
Belgium	58	Gent Dampoort	Wondelgem	5,2	connecting
Belgium	58	Gent Dampoort	Y. Noord Ledeberg	3,2	principal
Belgium	59	Antwerpen Berchem	Gent Dampoort	56,0	principal
Belgium	75	Gent Sint Pieters	Mouscron Frontière	57	principal
Belgium	130	Auvelais	Jemeppe-S-S	2,0	principal
Belgium	130	Jemeppe-S-S	Ronet -F	13,6	principal
Belgium	130	Moustier	Ronet -F	12,2	principal
Belgium	140	Ottignies	Fleurus	24,0	principal
Belgium	144	Gembloux	Moustier	16,0	principal
Belgium	147	Fleurus	Auvelais	9,5	principal
Belgium	154	Namur	Yvoir	20,0	principal
Belgium	154	Yvoir	Dinant	7,4	principal
Belgium	161	Mont St Guilbert	Gembloux	9,8	principal
Belgium	161	Ottignies	Mont st Guilbert	5,4	principal
Belgium	162	Assesse	Ciney	10,8	diversionary
Belgium	162	Ciney	Marloie	21,5	diversionary
Belgium	162	Libramont	Marbehan	19,5	diversionary
Belgium	162	Marbehan	Arlon	20,9	diversionary
Belgium	162	Marloie	Libramont	39,9	diversionary
Belgium	162	Arlon	Sterpenich-Frontière	9,7	diversionary
Belgium	162	Namur	Assesse	18,5	diversionary
Belgium	165	Bertrix	Virton	45,0	principal
Belgium	165	Virton	Y.Aubange	16,5	principal
Belgium	166	Dinant	Bertrix	72,9	principal
Belgium	167	Arlon	Y.Aubange	18,4	diversionary
Belgium	204	Y.Boma	Gent Noord	12,3	connecting
Belgium	208	Y.Ketenis-Zuid	Verb.Hercules	7,0	connecting
Belgium	209	Antwerpen-W.H.-B.Kallo	Zwijndrecht Industriezone	6,2	connecting
Belgium	211	Y.Steenland	Antwerpen-W.H.-B.Krommenhoek	11,2	connecting
Belgium	220	Antwerpen-D.S.-Far West	Y.Noorderlaan	3,2	connecting
Belgium	221	Y.Ford	Verb.Atofina	6,6	connecting
Belgium	222	Y.Oorderen	Antwerpen-D.S.-Oorderen	1,5	connecting
Belgium	223	Antwerpen Noord Blok G9-H9	Antwerpen-D.S.-BASF	16,2	connecting
Belgium	224	Antwerpen Noord Blok G9-H9	Y.Oost Driehoek Lillo	3,2	connecting
Belgium	226	Y.Berliwal	Y.Berendrecht	4,7	connecting
Belgium	10/1	Y.Melsele	Y.Kattestraat	1,4	connecting
Belgium	10/2	Y.Koestraat	Y.Kruipin	1,0	connecting

Country	Line number	From	To	Length	Type of line
Belgium	10L/1	Y.Koestraat	Y.Hazop	2,0	connecting
Belgium	11/1	Y.Berliwal	Y.Walenhoek	0,8	connecting
Belgium	11/1(1)	Antwerpen-Noord-Blok 10	Y.Walenhoek	1,1	connecting
Belgium	11A	Y.Stabroek	Antwerpen-D.S.-Zandvliet	2,4	connecting
Belgium	11L/1	Antwerpen-Noord-Toegang A1	Antwerpen-Noord-Toegang A2	3,6	connecting
Belgium	11L/2	Antwerpen-D.S.-Inrit Zandvliet	Antwerpen-D.S.-Stabroek	0,3	connecting
Belgium	12/1	Y.Driehoekstraat	Y.Sint-Mariaburg	0,9	connecting
Belgium	12L/1	Y.Antwerpen-Schijnpoort	Y.Holland	1,4	connecting
Belgium	12L/2	Luchtbal-Blok 8	Luchtbal-Wijkbundel	1,0	connecting
Belgium	130B	Ronet-F	Namur	1,7	principal
Belgium	165/1	Aubange-Frontière-CFL	Y. Aubange	0,8	principal
Belgium	165/2	Aubange-Frontière-SNCF	Y. Aubange	2,3	principal
Belgium	204/1	Gent-Zeehaven	Y.Farmanstraat	1,0	connecting
Belgium	204L/1	Gent-Zeehaven-Sifferdok	Gent-Zeehaven-Sifferdok L.O.	0,3	connecting
Belgium	204L/2	Gent-Zeehaven-Sifferdok	Gent-Zeehaven-Sifferdok R.O.	0,7	connecting
Belgium	208/1	Y.Farnese-West	Y.Ketenis-Oost	0,1	connecting
Belgium	208/2	Antwerpen-W.H.-B.Liefkenshoek	Y.Geslecht-Oost	0,9	connecting
Belgium	208/3	Y.Geslecht-West	Y.Kalishoek-Oost	0,2	connecting
Belgium	211(1)	Y.Farnese-Zuid	Antwerpen-W.H.-B.Liefkenshoek	2,0	connecting
Belgium	211(2)	Y.Arenberg	Y.Hazop	6,2	connecting
Belgium	211A	Y.Den Beer	Y.Farnese-Oost	1,5	connecting
Belgium	211C	Antwerpen-W.H.-B.Krommenhoek	Y.Arenberg	3,0	connecting
Belgium	211L/1	Antwerpen-W.H.-W.H.-A.E.T.	Y.Antwerp Euro Terminal	0,9	connecting
Belgium	211L/2	Antwerpen-W.H.-B.Verrebroek	Y.Verrebroek	0,7	connecting
Belgium	220/1	Y.Leopold	Y.Ford	0,4	connecting
Belgium	221(1)	Y.Meestof	Y.Lillobrug	2,9	connecting
Belgium	221/1	Y.Bayer	Y.Wittemolen	0,7	connecting
Belgium	221A	Y.Noorderlaan	Y.Oosterweel	1,3	connecting
Belgium	221B	Y.Amerika	Y.Kastel	0,5	connecting
Belgium	221D	Verb.Total	Y.Meestof	2,1	connecting
Belgium	221E	Y.Polderdijk	Antwerpen-D.S.-Petrol	1,4	connecting
Belgium	221L/1	Y.Oosterweel	Antwerpen-D.S.-Groenland	1,6	connecting
Belgium	221L/2	Y.Oosterweel	Antwerpen-D.S.-West-Siberië	1,4	connecting
Belgium	221L/3	Antwerpen-D.S.-West-Siberië	Antwerpen-D.S.-Alaska	2,4	connecting
Belgium	221L/4	Antwerpen-D.S.-Groenland	Y.Amerika	1,6	connecting
Belgium	221L/5	Antwerpen-D.S.-Groenland	Antwerpen-D.S.-West-Siberië	2,3	connecting
Belgium	221L/6	Antwerpen-D.S.-Amerika-Zuid	Antwerpen-D.S.-Ijsland	1,8	connecting
Belgium	222/1	Antwerpen-D.S.-Oorderen	Antwerpen-D.S.-Lillo	1,7	connecting
Belgium	223(1)	Antwerpen Noord Blok 10	Y.Lillobrug	3,0	connecting
Belgium	223A	Y.Oudendijk	Y.Frederik	2,0	connecting
Belgium	224/1	Y.West Driehoek Lillo	Y.Noord Driehoek Lillo	0,3	connecting
Belgium	226(1)	Y.Oost Driehoek Lillo	Antwerpen-D.S.-Berendrecht	3,3	connecting
Belgium	27A	Antwerpen Noord	Antwerpen-D.S.-Rhodesië	5,1	connecting
Belgium	27A	Antwerpen Noord	Y Schijn	0,9	principal
Belgium	27A	Antw-Oost	Y.O. Berchem	1,1	principal
Belgium	27A	Antw-Schpt-Q	Antw-Oost	1,8	principal
Belgium	27A	Kontich	Muizen	13,9	principal
Belgium	27A	Schijn	Antw-Schpt-Q	9,8	principal
Belgium	27A	Y.O. Berchem	Kontich	9,1	principal
Belgium	27A(1)	Antwerpen Noord	Antwerpen Noord Blok 10	5,2	connecting
Belgium	27A(2)	Antwerpen Noord Blok 10	Y.Schijn	4,6	connecting
Belgium	27A(3)	Antwerpen Noord Uitrit B3	Antwerpen Noord Inrit C1	0,9	connecting
Belgium	27A(4)	Antwerpen Noord Blok 10	Antwerpen Noord Blok M9-N9	1,3	connecting
Belgium	27A/1	Antwerpen Noord Inrit C1	Y.Muisbroek	1,4	connecting
Belgium	27A/2	Y.Muisbroek	Antwerpen Noord Blok G9-H9	1,2	connecting
Belgium	27L/53	Muizen	Y. Hever	3,0	principal
Belgium	50.E	Y. West Ledeberg	Gent Sint Pieters	2,7	principal
Belgium	53/36/139	Leuven	Ottignes	28,0	principal
Belgium	58.1	Y. Noord Ledeberg	Y. West Ledeberg	0,7	principal
Belgium	165	Y. Aubange	Athus	1,6	diversionary

Country	Line number	From	To	Length	Type of line
France	32000	Chaudenay	Toul	114,1	principal
France	1000	Culmont-Chalindrey	Chaudenay	3,4	principal
France	70000	Lérouville	Strasbourg Ville	223,3	principal
France	89000	Metz Ville	Lérouville	64,9	principal
France	90000	Frouard	Novéant	34,2	principal
France	115000	Strasbourg - Ville	Saint-Louis	141,3	principal
France	140000	Réding	Metz-Ville	87,8	principal
France	180000	Metz Ville	Zoufftgen	22,5	principal
France	202000	Longuyon	Mont Saint Martin	21,2	principal
France	204000	Mohon	Thionville	135,5	principal
France	204000	Mohon	Mohon	1,0	principal
France	205000	Mohon	Rac. Charleville Mezière	1,4	principal
France	205316	Rac. Charleville Mezière	Rac. Charleville Mezière	0,5	principal
France	223000	Tournes	Rac. Charleville-Mézières	55,2	principal
France	212000/222000	Hirson	Tournes	51,0	principal
France	267000	Hirson	Fives	120,5	principal
France	278000	Fives	Mouscron	14,6	principal
France	85000	Conflant-Jargny	Hagondange	27,9	principal
France	95000	Longuyon	Onville (ligne jusqu'à Pagny)	65,2	principal
France	830000	Rac de Lyon (Dijon/Perrigny)	Rac de Chasse sur Rhone	212,5	principal
France	906000	Traversée du Rhone (Givors)	Traversée du Rhone (Givors)	0,8	principal
France	750316	Rac de Badan à Chasse	Rac de Badan à Chasse	0,7	principal
France	750000	Badan	Lyon Perrache	18,6	principal
France	893000	Collonge Fontaine	Lyon Guillotière (Port HE)	11,8	principal
France	905606	Lyon Guillotière (Port HE)	Vénissieux	4,2	principal
France	843000	Is sur Tille	Culmont Chalindrey	43,8	principal
France	849000	Dijon/ Rac de Perrigny	Is sur Tille	28,6	principal
France	861300	Rac de Lyon (Dijon/Perrigny)	Rac de Lyon (Dijon/Perrigny)	1,4	principal
France	861301	Rac évite-Perrigny	Rac évite-Perrigny	0,8	principal
France	860000	Rac évite-Perrigny	Saint-Amour	106,9	principal
France	880000	Saint-Amour	Bourg-en-Bresse	32,2	principal
France	883000	Bourg-en-Bresse	Ambérieu	30,8	principal
France	890000	Ambérieu	Lyon	42,9	diversionary
France	138000	Graffenstaden (Ostwald)	Hausbergen	6,9	principal
France	124000	Mulhouse	(Chalampé) Ottmarcheim	16,3	connecting
France	120000	Colmar	Neuf-Brisach	21,0	connecting
France	142000	Strasbourg	Strasbourg-Port du Rhin	7,7	connecting
France	143000	Voie du Port de Strasbourg	Voie du Port de Strasbourg	5,0	connecting
France	141000	Graffenstaden (Ostwald)	Strasbourg Neudorf	5,1	connecting
France	141306	Strasbourg Neudorf	Strasbourg-Koenig Schoffen	1,8	connecting
Luxemburg	6	Bettembourg	Zoufftgen	12,0	principal
Luxemburg	5	Kleinbettingen-Frontière	Luxembourg	18,8	diversionary
Luxemburg	7	Pétange	Luxembourg	20,4	diversionary
Luxemburg	6	Luxembourg	Bettembourg	14,1	diversionary
Luxemburg	4/3	Luxembourg	Mertert	35,0	connecting
Luxemburg	6a	Esch/Alzette	Bettembourg	14,0	principal
Luxemburg	6f	Rodange	Esch/Alzette	10,0	principal
Luxemburg	6g	Y. Aubange	Rodange	5,0	principal
Switzerland	-	Basel	Basel RB (Muttenz)	3,5	principal
Switzerland	-	St Louis Haut Rhin	Basel	4,4	principal
Switzerland	-	Basel SBB RB	Kleinhünigen Hafen	9,4	connecting
Switzerland	-	Basel SBB RB	Birsfelden Hafen	3,5	connecting
Switzerland	-	Basel SBB RB	Frenkendorf-F	7,4	connecting

Annex 2: Glossary

This glossary is an excerpt of an RNE glossary.

Glossary/abbreviation	Definition
Ad hoc capacity allocation	Allocation of capacity by an Infrastructure Manager or Allocation Body outside the time scale it normally uses.
Ad hoc request	An Applicant's request for an individual train path (available as spare capacity) in the running timetable.
Allocation	Means the allocation of railway infrastructure capacity by an Infrastructure Manager or Allocation Body. When the Corridor OSS takes the allocation decision as specified in Art. 13(3) of 913/2010, the allocation itself is done by the Corridor OSS on behalf of the concerned IMs, which conclude individual national contracts for the use of infrastructure based on national network access conditions
Applicant/Applicants	All entities allowed to request capacity. See definition of “authorised applicants” for more details.
Allocation Body (AB)	An Allocation Body is an independent organisation responsible for train path allocation to Railway Undertakings; this includes the designation of individual paths and the assessment of their availability. In most cases, the AB is the same organisation as the Infrastructure Manager. But if the rail operator is not independent from the Infrastructure Manager, then path allocation must be carried out, according to the relevant guidelines of the first EU Railway Package, by an independent Allocation Body.
Allocation Process	The process by which capacity is granted to an Applicant by the Infrastructure Manager or relevant capacity Allocation Body; this capacity is available for the duration of the working timetable period only.
Authorised Applicant	“Notwithstanding Article 16(1) of Directive 2001/14/EC, applicants other than railway undertakings or the international groupings that they make up, such as shippers, freight forwarders and combined transport operators, may request international pre-arranged train paths and reserve capacity. In order to use such a train path for freight transport on the freight corridor these applicants shall appoint a railway undertaking to conclude an agreement with the infrastructure manager in accordance with Article 10(5) of Directive 91/440/EEC”. (Article 15 of Regulation EU/913/2010).
Border Point	The location at which an international border is formally crossed. For the UK, this will involve customs and nationalisation personnel.
Capacity	The totality of potential train paths that can be accommodated on a railway line or a network.
Capacity Allocation	The process by which capacity is granted to a Railway Undertaking or to any other Applicant by the relevant capacity Allocation Body; this capacity will later be used as actual train paths.
Catalogue of International Train Paths	A document listing international train paths that have been pre-constructed and harmonised by the IMs and/or Corridors.
Catalogue Path	Catalogue Paths are concrete, published path offers to the customers, both for external (RU/applicant) and internal (IM/AB) use. They are pre-constructed paths offered either on whole corridors or corridor

	sections, or on lines not covered by a corridor but involving a border point. Catalogue paths may be used for the annual timetable as well as for late request, ad-hoc requests and instant capacity. They have a significant advantage compared to non-catalogue paths: immediate availability of the path characteristics. This is made possible by advance coordinated scheduling by the countries involved. Pre-arranged Paths (see definition) are a form of Catalogue Paths.
Combined Transport	General definition: the use of road and rail or water for the movement of goods in a single journey.
Confidentiality	Confidentiality has been defined by the International Organization for Standardization (ISO) in ISO-17799 as 'ensuring that information is accessible only to those authorized to have access' and is one of the cornerstones of information security.
Conflicting applications / customer requests for train paths	The situation where several applicants are applying for the same/adjacent path sections in more or less the same time period.
Congested lines / congested infrastructure	Section of infrastructure for which the demand for capacity cannot be fully satisfied during certain periods, even after coordination of all the requests for capacity.
Connecting point	A point in the network where two or more corridors share the same infrastructure and it is possible to shift the services applied for from one corridor to the other.
Corridor Coordinator	Person who ensures the overall coordination of Performance Managers along a corridor and acting as a consultation partner for the Corridor in the questions of performance analyses (cf. Train Performance Management).
Corridor OSS / C-OSS	A joint body designated or set up by the RFC organisations for Applicants to request and to receive answers, in a single place and in a single operation, regarding infrastructure capacity for freight trains crossing at least one border along the freight Corridor (EU Regulation No 913/2010, Art. 13).
Corridor Information Document	Under EU Regulation 913/2010: a document drawn up, regularly updated and published by the Corridor Management board. This document comprises all the information contained in the network statement of national networks regarding the freight corridor in accordance with Article 3 of Directive 2012/34/EC; the list and characteristics of terminals, in particular information concerning the conditions and methods of accessing the terminals; information concerning the procedures of application for capacity, capacity allocation to freight trains, traffic management coordination, and traffic management in the event of disturbance.
Corridor Train	A train that crosses at least one Corridor border, and runs at least 70 continuous kilometres on Corridor lines.
Delay	Time during which some action is awaited but does not take place. Train delays: mostly used when a train circulates or/and arrives later than planned in the timetable. A 'primary delay' is a delay that directly affects the train; a 'secondary delay' (or knock-on delay or cascading delay) is a delay caused by a primary delayed train. The definitions of delay thresholds (as well as the measurement of delay) vary widely around the world (for example, in Japan only trains with less than one minute's delay are defined as 'on time'). In 2008, the UIC

	recommended to set the threshold value at 5 minutes.
Disturbance	When some disorder on the rail network leads to disruption of the services provided by IMs to RUs, and consequently to train services provided by RUs to their customers.
EPR	European Performance Regime is a joint project by RNE and UIC that was achieved in 2012. For the purposes of EPR a specific tool was developed that enable to do quality checks on TIS data.
ERTMS (European Railway Traffic Management System)	ERTMS is a major industrial project being implemented by the European Union, which will serve to make rail transport safer and more competitive. It is made up of all the train-borne, trackside and line side equipment necessary for supervising and controlling, in real-time, train operation according to the traffic conditions based on the appropriate Level of Application.
ETCS (European Train Control System)	This component of ERTMS guarantees a common standard that enables trains to cross national borders and enhances safety. It is a signalling and control system designed to replace the several incompatible safety systems currently used by European railways. As a subset of ERTMS, it provides a level of protection against over speed and overrun depending upon the capability of the line side infrastructure.
Executive board (ExB)	Ministry of Transport representatives on the corridor. The ExB defines the strategy and the objectives of the corridor.
Feeder and Outflow path	Branching path off a main transport link as a RFC. The feeder and/or Outflow path may also cross a border section which is not a part of a defined RFC.
Flexible approach	When an Applicant requests adjustments to a pre-arranged path, e.g. different station to change drivers or for shunting that is not indicated in the path publication. Also if the Applicant requests feeder and/or outflow paths connected to the pre-arranged path, these requests will be handled with a flexible approach
Gauge / Loading Gauge	The maximum dimensions of trains that a specific route can allow. Gauge: maximum height and width (size) of rail vehicles allowed on a specific route. Loading gauge: maximum physical dimensions (height and width) to which an open rail wagon can be loaded.
Handover Point	Point where the responsibility changes from one IM to another.
Infrastructure Manager (IM)	Any body or undertaking responsible for establishing and maintaining railway infrastructure. This may also include the management of infrastructure control and safety systems. The functions of the Infrastructure Manager on a network may be assigned to different bodies or undertakings.
International Traffic	The movement across borders of railway vehicles on railway lines over the territory of at least two States.
Interoperability	A property referring to the ability of diverse systems and organizations to work together (inter-operate). The term is often used in a technical systems engineering sense, or alternatively in a broad sense, taking into account social, political, and organizational factors that impact system-to-system performance.
Investment	Any use of resources intended to increase future production output or income; laying out money or capital in an enterprise with the expectation of profit; the spending of money on stocks and other securities, or on assets such as plant and machinery.

	Investment in rail infrastructure: for example, modernising signalling, building new lines, electrifying existing lines, improving railway station facilities, etc.
IM Performance Manager	Person in charge who is responsible for the definition phase and the performance analyses process in Train Performance Management. This is also the responsible person for the IM who takes care of needed measures in his area to improve the punctuality.
Key Performance Indicators (KPI)	Performance factor with which the progress regarding important objectives can be measured within an organization.
Line	EC Decision of 15 September 2011 on the common specifications of the register of railway infrastructure: a sequence of one or more sections, which may consist of several tracks.
Line Section	EC Decision of 15 September 2011 on the common specifications of the register of railway infrastructure): 'section of line' means the part of line between adjacent operational points and may consist of several tracks.
Management board (MB)	Representatives of the IMs and ABs on the corridor.
Marshalling Yard	Railway facility equipped with tracks with special layout and technical facilities, where sorting, formation and splitting-up of trains takes place; wagons are sorted for a variety of destinations, using a number of rail tracks. There are 3 types of marshalling yards: flat-shunted yards, hump yards and gravity yards. From a shunting point of view, both flat shunting and hump shunting may be in use; from the track position point of view, track can be parallel, continuous or mixed; from the point of view of technology: it can be automated (central switching, time and target braking), power operated (partial central switching, use of rail brake, drag shoes), or manually operated (local switching). This can refer either to freight or passenger trains and there are two types of train formation locations: marshalling yards and other station yards. Marshalling yards have the following four features: - lead track - automated switching - hump with entry and/or exit group - direction tracks.
Network / Rail Network	DIRECTIVE 2008/57/EC, Art. 2: ''the lines, stations, terminals, and all kinds of fixed equipment needed to ensure safe and continuous operation of the rail system'. World Bank definition: total length of railway route open for public passenger and freight services (excl. dedicated private resource railways). OTIF definition: 'the lines, stations, terminals, and all kinds of fixed equipment needed to ensure safe and continuous operation of the rail system'. UK definition: any railway line, or combination of two or more railway lines, and any installations associated with any of the track comprised in the line(s), together constituting a system which is used for, and in connection with, the support, guidance and operation of trains.
Network Statement (NS)	EC DIRECTIVE 2012/34 definition: the statement which sets out in detail the general rules, deadlines, procedures and criteria concerning

	the charging and capacity allocation schemes. It shall also contain such other information as is required to enable application for infrastructure capacity. In the UK, 'The Network Statement aims to provide all current and potential train operators wishing to operate train services on Network Rail's infrastructure with a single source of relevant information on a fair and non-discriminatory basis.'
NUTS	The Nomenclature of Territorial Units for Statistics or Nomenclature of Units for Territorial Statistics (NUTS for French Nomenclature des unités territoriales statistiques) is a geocode standard for referencing the subdivisions of countries for statistical purposes. The standard is developed and regulated by the European Union, and thus only covers the member states of the EU in detail. The Nomenclature of Territorial Units for Statistics is instrumental in the European Union's Structural Fund delivery mechanisms.
Path	Infrastructure capacity needed to run a train between two places over a given time-period (route defined in time and space).
Path Allocation Process	Process that involves assigning specific train paths to railway operators.
Path Application / Request	Application for the allocation of a train path submitted by Applicant/RU to IM or to Allocation Body, if this is different from IM.
PCS – Path Coordination System (formerly called Pathfinder)	PCS is a web application provided by RNE to Infrastructure Managers, Allocation Bodies and Path Applicants which handles the communication and co-ordination processes for international path requests and path offers. Furthermore PCS assists Railway Undertakings and Applicants in their pre-co-ordination tasks related to train path studies and international train path requests.
Performance	The accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. In a contract performance is deemed to be the fulfilment of an obligation in a manner that releases the performer from all liabilities under the contract. Performance in TPM is related to punctuality.
Performance Regime	In the railway sector, this is a system aimed at improving the quality and punctuality of international/national rail services. This system may include penalties and/or compensation for actions which disrupt the operation of the network and/or bonuses.
Permanent Team (PT)	Managing Director and programme managers, seconded from the partnering IMs/ABs to the RFC 2 organisation, running the business.
Pre-arranged path (PaP)	A pre-constructed path on a Rail Freight Corridor according to the Regulation 913/2010. A PaP may be offered either on a whole RFC or on sections of the RFC
Pre-constructed path products	Any Kind of pre-constructed path, i.e. a path constructed in advance of any path request and offered by IMs; applicants can then select a product and submit a path request Pre-constructed path products are either: Pre-arranged paths (PaP) on Rail Freight Corridors or Catalogue paths (CP) for all other purposes
Possession (or	Non-availability of part of the rail network for full use by trains during a

restriction of use)	period reserved for the carrying out of works. This can be due to the disconnection or restriction of use of signalling equipment to enable work to be carried out on the equipment. Possession is an operational arrangement that prohibits scheduled train movements, marshalling or shunting activities on the track. Possession can be planned or unplanned.
Publishing	Preparing and issuing printed material for public distribution or for sale. Publishing may also mean to bring something to the public attention or to announce something.
Punctuality	Strict adherence of a timetable and threshold for rail transport.
Quality	Indicating the effectiveness of a product complying with the existing requirements.
Railway Undertaking Advisory Group (RAG)	Group of RU representatives which should be contacted by the Corridor in order to get feedbacks concerning corridor tasks. This feedback and RU proposals must be taken into consideration. This advisory group has to be set up by the Corridor to be in line with the EU Regulation 913/2010.
Regulatory Body (RB)	Under European Union legislation, each Regulatory Body (RB) has the task to oversee the application of Community rules and act as an appeal body in case of disputes. Applicants have the right to appeal to the RB if they believe that they have been unfairly treated, discriminated against or are in any other way aggrieved. In particular, they may appeal against decisions adopted by the IM (or where appropriate the Railway Undertaking) concerning: a) the network statement; b) criteria contained within it; c) the allocation process and its outcome; d) the charging scheme; e) level or structure of infrastructure fees which it is, or may be, required to pay; f) arrangements for access.
Reserve Capacity	Pre-arranged paths kept available during the running timetable period for ad-hoc market needs (Art 14(5) Regulation 913/2010)
Renewal / Track Renewal	DIRECTIVE 2008/57/EC, Art. 2: 'any major substitution work on a subsystem or part subsystem which does not change the overall performance of the subsystem'.
Rail Freight Corridor (RFC)	Rail Freight Corridor. A corridor organised and set up in line with the EU Regulation 913/2010
RailNetEurope (RNE)	RailNetEurope is an association set up by a majority of European Rail Infrastructure Managers and Allocation Bodies to enable fast and easy access to European rail, as well as to increase the quality and efficiency of international rail traffic. Together, the current 37 members of RailNetEurope are harmonizing conditions and procedures in the field of international rail infrastructure management for the benefit of the entire rail industry.
Railway Undertaking (RU)	Any public or private undertaking licensed according to applicable Community legislation, the principal business of which is to provide services for the transport of goods and/or passengers by rail. There is a requirement that the undertaking must ensure traction, and this also includes undertakings which provide traction only.
Running Time	The scheduled time which a train is expected to take between two given locations. From the passenger point of view, this is called the 'journey time'.
Shipper	The contracting party (person or company) entitled to give orders and

	instructions about its shipment to the accepting (issuing) carrier, simultaneously assuming full responsibility for any charges arising, until the moment the consignee has signed for receipt.
Shunting	The movement of rail vehicles, usually within a shunting yard or similar, to rearrange them for whatever reason. For example, freight trains that consist of single wagon loads must be made into trains and divided according to their destinations. Thus the cars must be shunted several times along their route (in contrast to a block train, which carries, for example, automobiles from the plant to a port, or coal from a mine to the power plant). This shunting is done partly at the start and end destinations and partly (for long-distance-hauling) in marshalling yards. According to EU legislation, shunting is an 'additional service' to be supplied to the Railway Undertaking. Where an Infrastructure Manager offers this service, it shall supply it upon request.
Signalling System	Railway signalling is a system used to control railway traffic safely, essentially to prevent trains from colliding. The main purpose of signalling is to maintain a safe distance at all times between all trains on the running lines. The secondary aim - particularly today - is to make the best use possible of the railway infrastructure, so that the total throughput of trains meets business requirements. There are 'fixed block signalling systems' and the more modern 'moving block signalling systems', which increases line capacity.
Single-Track, Single Line	A single-track railway is one where traffic in both directions shares the same track.
TAF TSI	TAF TSI is the Technical Specification for Interoperability relating to Telematic Applications for Freight.
Tailor-Made Path	A path created specifically to meet a customers' specific needs.
Terminal	The installation provided along the freight corridor which has been specially arranged to allow either the loading and/or the unloading of goods onto/from freight trains, and the integration of rail freight services with road, maritime, river and air services, and either the forming or modification of the composition of freight trains; and, where necessary, performing border procedures at borders with European third countries. The Management board [of the freight corridor] shall draw up, regularly update and publish a document containing ... the list and characteristics of terminals, in particular information concerning the conditions and methods of accessing the terminals'. Under EU legislation, Railway Undertakings shall be entitled to have access to terminals. Supply of services shall be provided in a non-discriminative manner, and requests by Railway Undertakings may only be rejected if viable alternative under market conditions exist.
Terminal Advisory Group (TAG)	Group of terminal representatives which should be contacted by the Corridor in order to get feedbacks concerning corridor tasks. This feedback and Terminal proposals must be taken into consideration. This advisory group has to be set up by the Corridor to be in line with the EU Regulation 913/2010.
Timetable	A schedule listing the times at which certain events, such as arrivals

	and departures at a transport station, are expected to take place. The timetable defines all planned train and rolling-stock movements which will take place on the relevant infrastructure during the period for which it is in force.
Train	One or more railway vehicles capable of being moved. It may consist of a locomotive (sometimes more than one) to provide power with various unpowered vehicles attached to it. It may consist of a multiple unit, i.e. several vehicles formed into a fixed formation or set, which carry their own power and do not require a locomotive. A train may be only a locomotive running light (deadheading) to a point elsewhere on the railway. A train may carry passengers, freight or, rarely nowadays, both. UNISIG definition for ERTMS: a traction unit (vehicle from where a train is operated) with or without coupled railway vehicles or a train set of vehicles with train data available.
Train Information System (TIS)	Is a web-based application that supports international train management by delivering real-time train data concerning international passenger and freight trains. The relevant data is processed directly from the Infrastructure Managers' systems. TIS is the data provider system for TPM.
TMS	Transport Market Study
Train Performance Management (TPM)	Organisation that defines processes for regular monitoring and analysing of international train runs.
X-8 (months)	Deadline for requesting of paths for the annual timetable (Annex III(2), Directive 2012/34/EC)
X-11 (months)	Deadline for publication of pre-arranged paths (Annex III(4), Directive 2012/34/EC)

Annex 3: Framework for Capacity Allocation

www.eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:065:0004:0012:EN:PDF

Annex 4: Example of a TPM report

Rail Freight Corridor 2	2013
Antwerpen / Rotterdam - Lille - Bettembourg - Basel - Lyon (Agreed among IPMs)	Month X

Punctuality Development

Namur - Basel

Source: RNE TIS / OBI SE 1

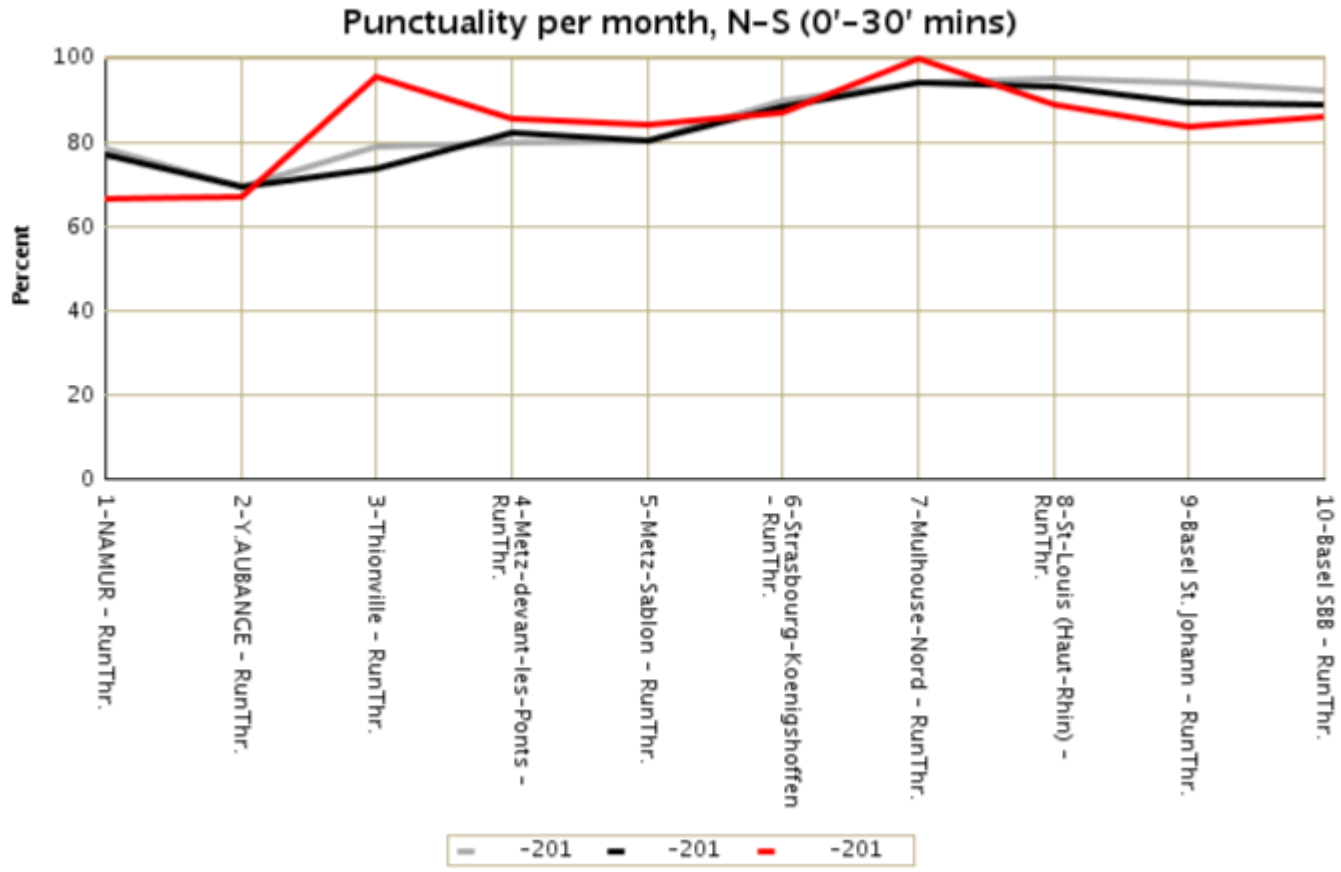
Punctuality: Monday - Sunday	Punctuality target: Objective, 0' - 30' = 80%

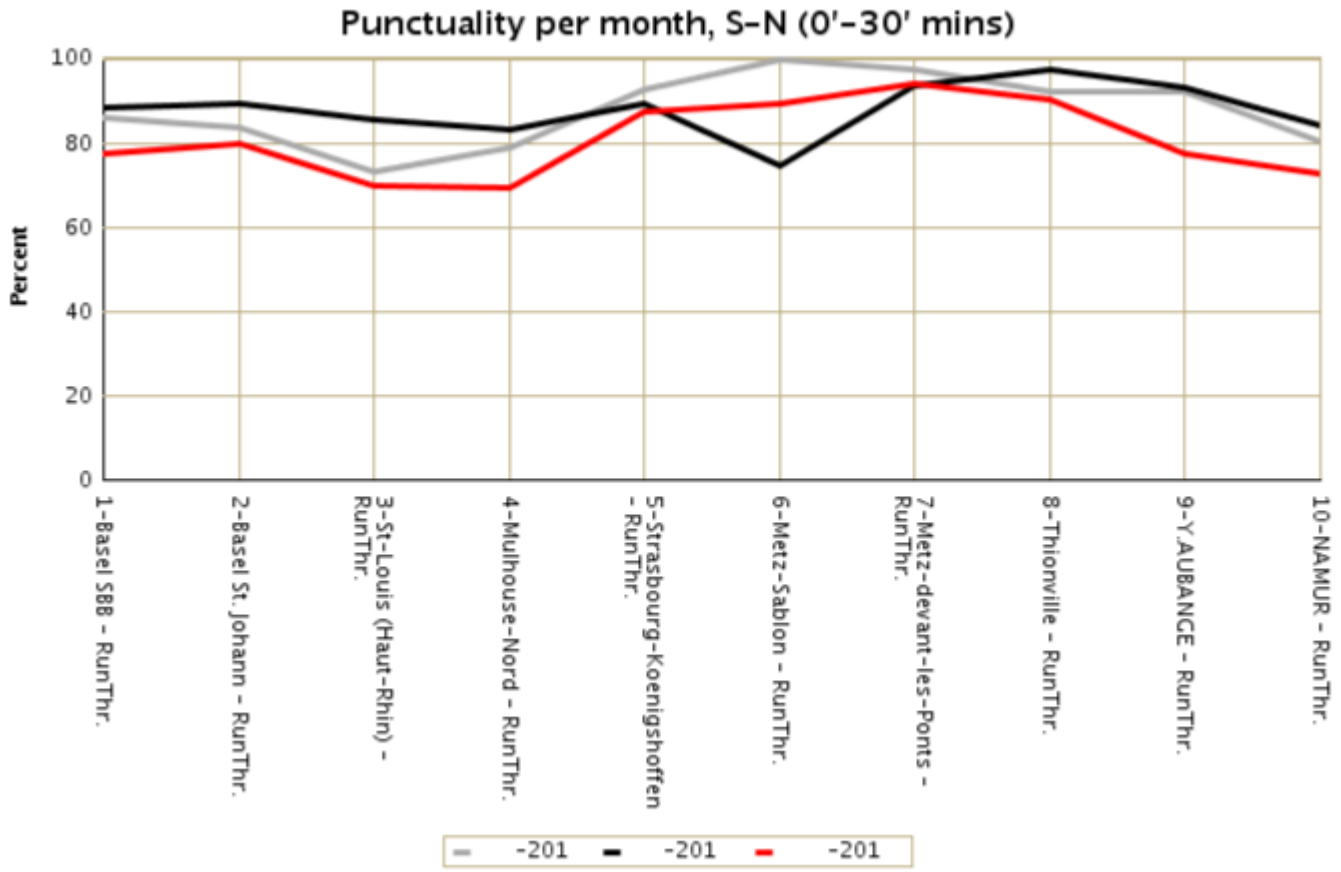
Train runs measured:

Considered trains:

N - S: 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 42906; 4XXXX; 4XXXX; 4XXXX; 4XXXX

S - N: 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX; 4XXXX


Punctuality per month, N-S (0'-30' mins)
Percent
100
80
60
40
20
0
1-NAMUR - RunThr.
2-Y.AUBANGE - RunThr.
3-Thionville - RunThr.
4-Metz-devant-les-Ponts - RunThr.
5-Metz-Sablon - RunThr.
6-Strasbourg-Koenigshoffen - RunThr.
7-Mulhouse-Nord - RunThr.
8-St-Louis (Haut-Rhin) - RunThr.
9-Basel St.Johann - RunThr.
10-Basel SBB - RunThr.
-201
-201
-201


Punctuality per month, S-N (0'-30' mins)
Percent
100
80
60
40
20
0
1-Basel SBB - RunThr.
2-Basel St.Johann - RunThr.
3-St-Louis (Haut-Rhin) - RunThr.
4-Mulhouse-Nord - RunThr.
5-Strasbourg-Koenigshoffen - RunThr.
6-Metz-Sablon - RunThr.
7-Metz-devant-les-Ponts - RunThr.
8-Thionville - RunThr.
9-Y.AUBANGE - RunThr.
10-NAMUR - RunThr.
-201
-201
-201

Comments / Major events

Action fields / Measures

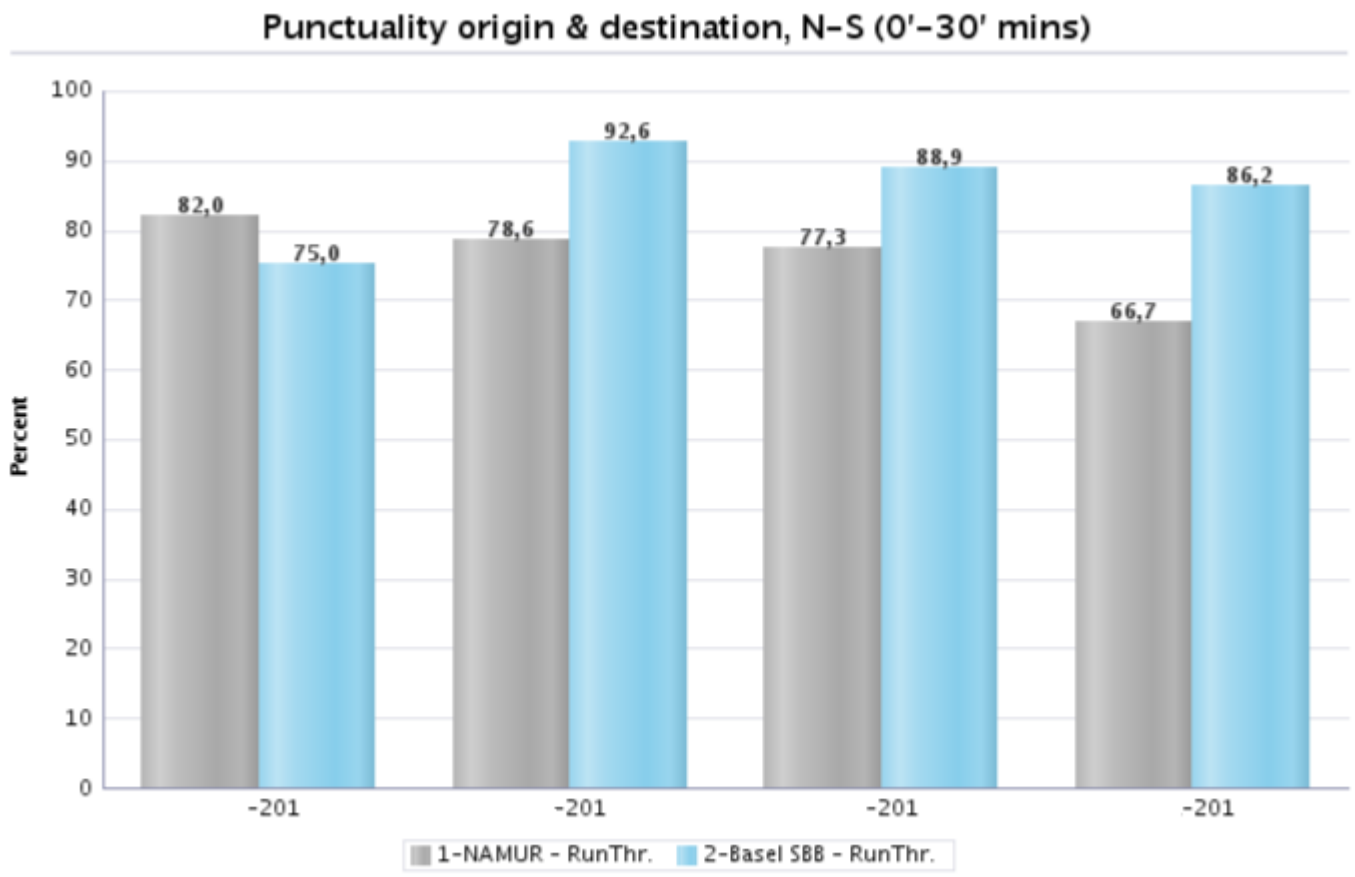
No.	Weak point	Consequence	Measure	Responsibility / Deadline	Status
1					
					Treated by: ...
2					
					Treated by: ...
7					
					Treated by: ...
8					
					Treated by: ...
9					
					Treated by: ...
10					
					Treated by: ...
11					
					Treated by: ...
12					
					Treated by: ...
13					
					Treated by: ...
14					
					Treated by: ...

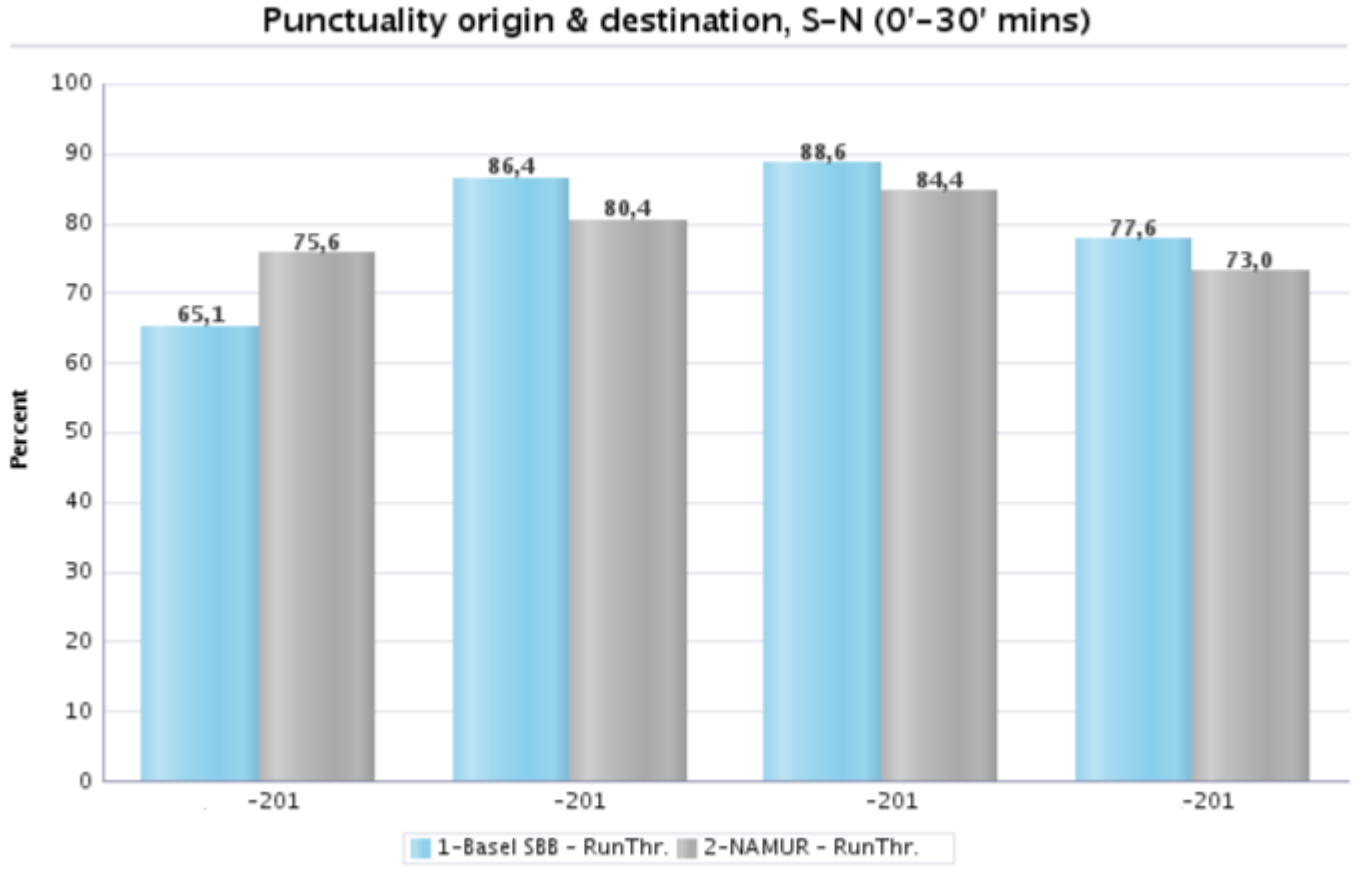
OK Applied and successful

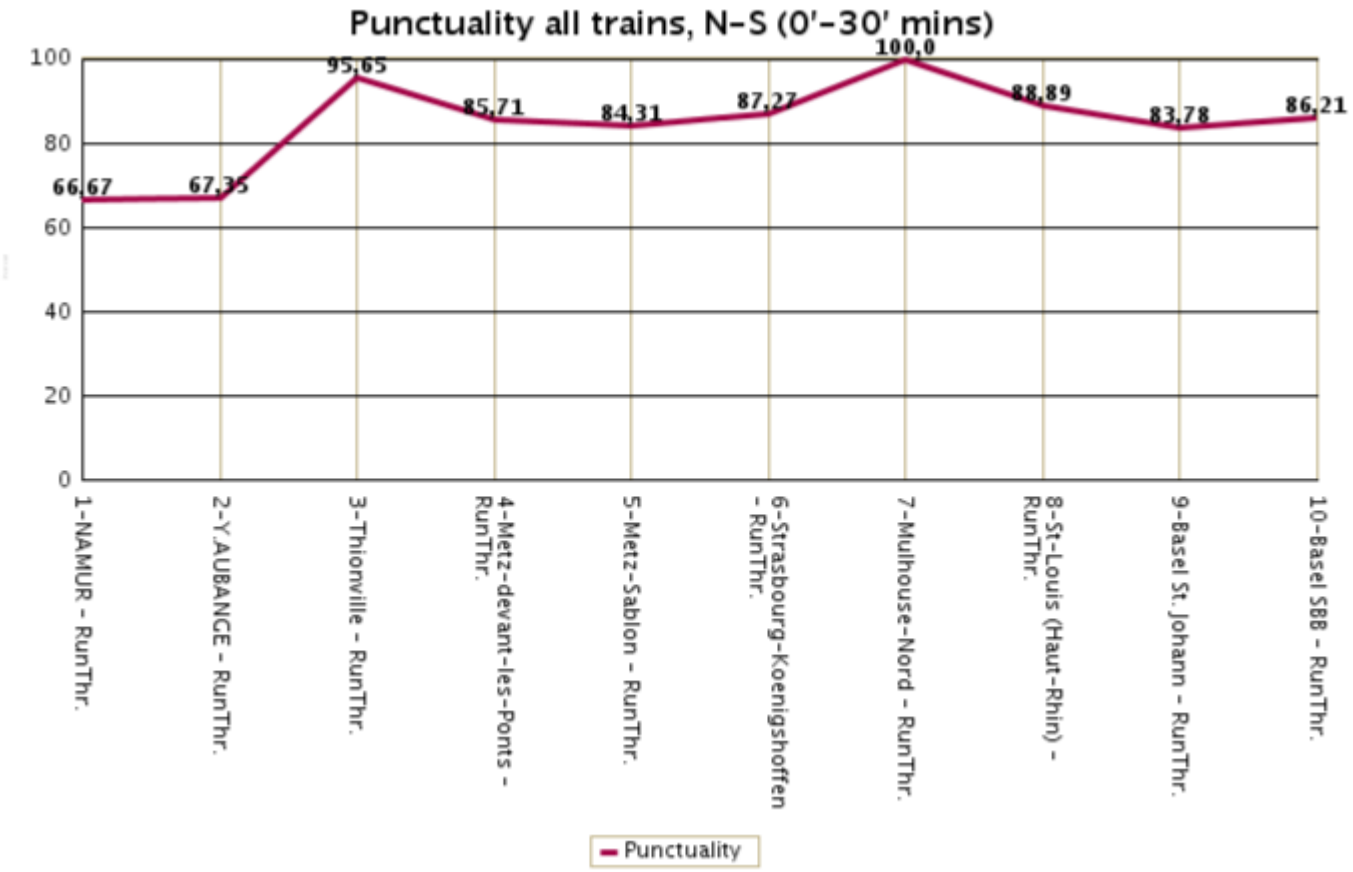
OK Under evaluation

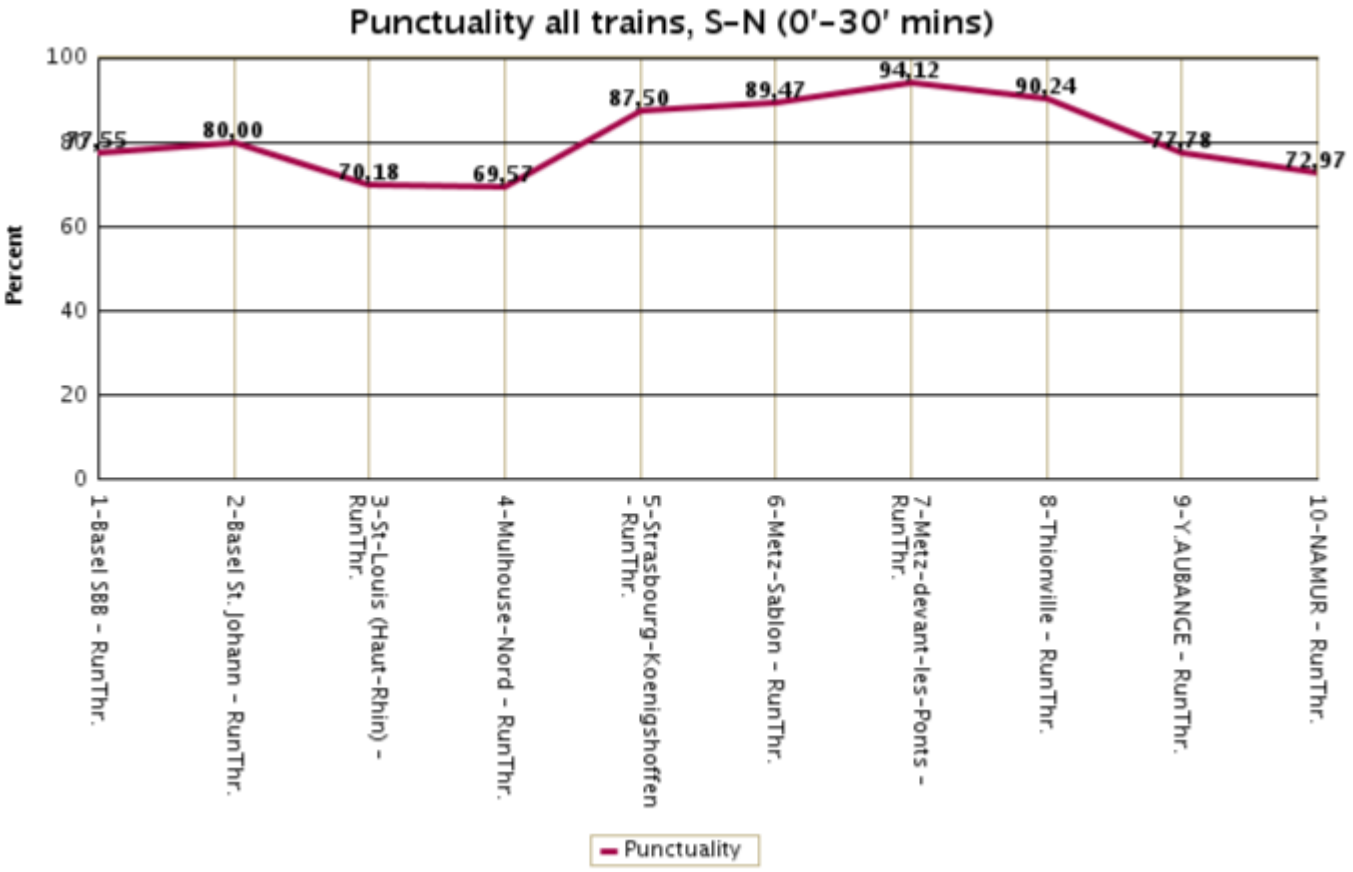
Unsolved problem (new action / measure needed)

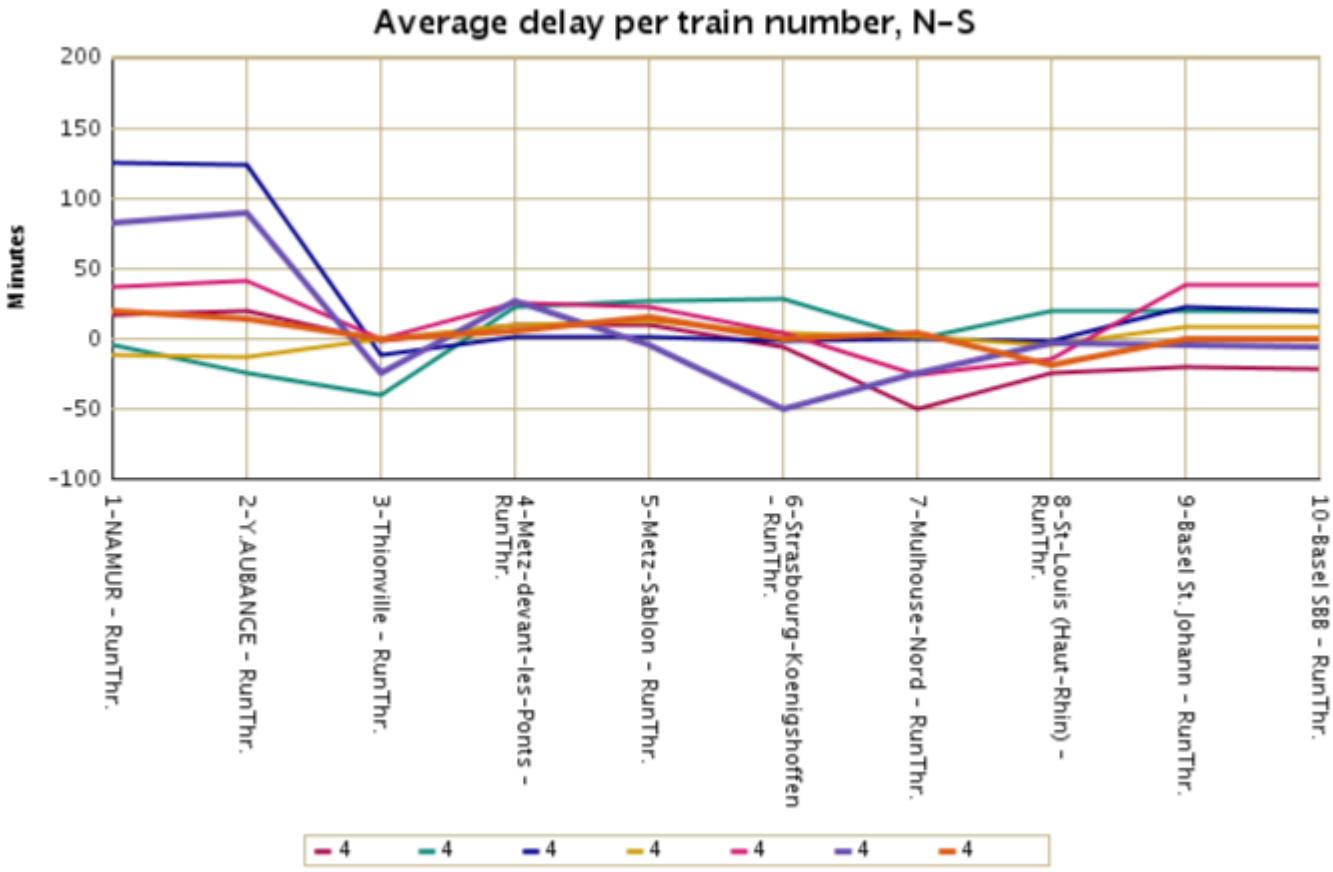
Agenda item for next meeting

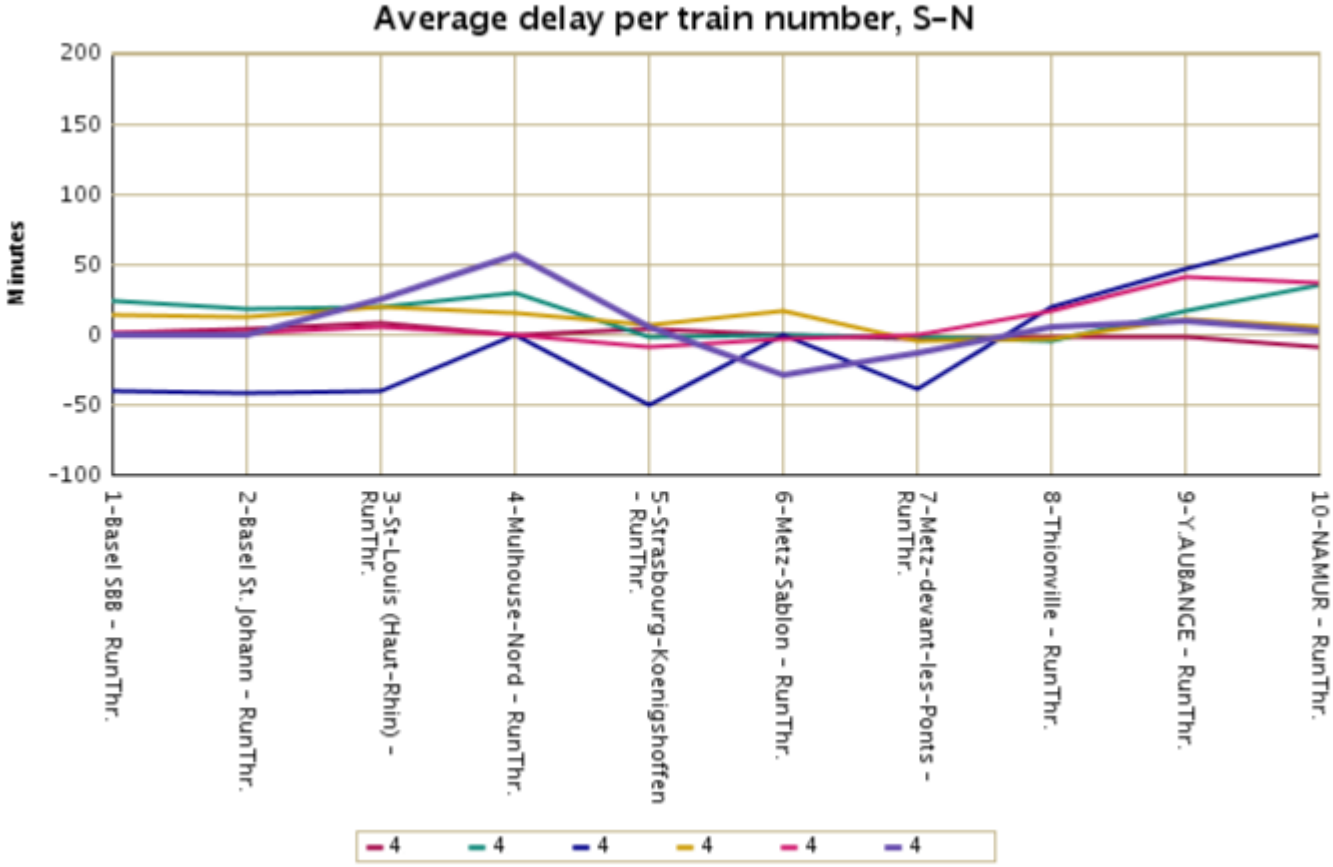

Punctuality origin & destination, N-S (0'-30' mins)
Percent
100
90
80
70
60
50
40
30
20
10
0
82,0
75,0
78,6
92,6
77,3
88,9
66,7
86,2
-201
-201
-201
-201
1-NAMUR - RunThr.
2-Basel SBB - RunThr.


Punctuality origin & destination, S-N (0'-30' mins)
Percent
100
90
80
70
60
50
40
30
20
10
0
65,1
75,6
86,4
80,4
88,6
84,4
77,6
73,0
-201
-201
-201
-201
1-Basel SBB - RunThr.
2-NAMUR - RunThr.


Punctuality all trains, N-S (0'-30' mins)
100
80
60
40
20
0
66,67
67,35
95,65
85,71
84,31
87,27
100,0
88,89
83,78
86,21
1-NAMUR - RunThr.
2-Y.AUBANGE - RunThr.
3-Thionville - RunThr.
4-Metz-devant-les-Ponts - RunThr.
5-Metz-Sablon - RunThr.
6-Strasbourg-Koenigshoffen - RunThr.
7-Mulhouse-Nord - RunThr.
8-St-Louis (Haut-Rhin) - RunThr.
9-Basel St. Johann - RunThr.
10-Basel SBB - RunThr.
Punctuality


Punctuality all trains, S-N (0'-30' mins)
Percent
100
80
60
40
20
0
77,55
80,00
70,18
69,57
87,50
89,47
94,12
90,24
77,78
72,97
1-Basel SBB - RunThr.
2-Basel St. Johann - RunThr.
3-St-Louis (Haut-Rhin) - RunThr.
4-Mulhouse-Nord - RunThr.
5-Strasbourg-Koenigshoffen - RunThr.
6-Metz-Sablon - RunThr.
7-Metz-devant-les-Ponts - RunThr.
8-Thionville - RunThr.
9-Y.AUBANGE - RunThr.
10-NAMUR - RunThr.
Punctuality


Average delay per train number, N-S
Minutes
200
150
100
50
0
-50
-100
1-NAMUR - RunThr.
2-Y.AUBANGE - RunThr.
3-Thionville - RunThr.
4-Metz-devant-les-Ponts - RunThr.
5-Metz-Sablon - RunThr.
6-Strasbourg-Koenigshoffen - RunThr.
7-Mulhouse-Nord - RunThr.
8-St-Louis (Haut-Rhin) - RunThr.
9-Basel St.Johann - RunThr.
10-Basel SBB - RunThr.
4
4
4
4
4
4
4


Average delay per train number, S-N
Minutes
200
150
100
50
0
-50
-100
1-Basel SBB - RunThr.
2-Basel St.Johann - RunThr.
3-St-Louis (Haut-Rhin) - RunThr.
4-Mulhouse-Nord - RunThr.
5-Strasbourg-Koenigshoffen - RunThr.
6-Metz-Sablon - RunThr.
7-Metz-devant-les-Ponts - RunThr.
8-Thionville - RunThr.
9-Y.AUBANGE - RunThr.
10-NAMUR - RunThr.
4
4
4
4
4
4

Weighted data quality, completeness of data per point (%):

Direction North - South

Order	Point name	PT status	Data Quality
1	NAMUR	5	xx,xx%
2	Y.AUBANGE	5	xx,xx%
3	Thionville	5	xx,xx%
4	Metz-devant-les-Ponts	5	xx,xx%
5	Metz-Sablon	5	xx,xx%
6	Strasbourg-Koenigshoffen	5	xx,xx%
7	Mulhouse-Nord	5	xx,xx%
8	St-Louis (Haut-Rhin)	5	xx,xx%
9	Basel St. Johann	5	xx,xx%
10	Basel SBB	5	xx,xx%

Direction South - North

Order	Point name	PT status	Data Quality
1	Basel SBB	5	xx,xx%
2	Basel St. Johann	5	xx,xx%
3	St-Louis (Haut-Rhin)	5	xx,xx%
4	Mulhouse-Nord	5	xx,xx%
5	Strasbourg-Koenigshoffen	5	xx,xx%
6	Metz-Sablon	5	xx,xx%
7	Metz-devant-les-Ponts	5	xx,xx%
8	Thionville	5	xx,xx%
9	Y.AUBANGE	5	xx,xx%
10	NAMUR	5	xx,xx%

PT-status

1 = Arrival at destination

2 = Departure at origin

3 = Arrival

4 = Departure

5 = Run-through

Amount & distribution of responsibilities for delays reasons, N-S (Top 10)

Sort Order	Delay Code (UIC)	Delay Code Name	Delay Responsible	Responsible IM at the point of occurence	Sum of Delay Minutes	Number of Delay Msgs	Percent Delay SUM
1	22	Telecommunication installations	IM	IM X	XXXX	XX	XX
2	92	Track occupation caused by the lateness of another train	OTHER	IM Y	XXX	XXX	XX
3	59	Other causes	RU	IM Z	XXX	XX	X
4	29	Other causes	IM	IM Y	XXX	X	X
5	92	Track occupation caused by the lateness of another train	OTHER	IM X	XXX	XXX	X
6	61	Formation of trains by Railway Undertaking	RU	IM Y	XXX	XX	X
7	61	Formation of trains by Railway Undertaking	RU	IM X	XXX	XX	X
8	95	Further investigation needed	OTHER	IM Y	XXX	XX	X
9	69	Other causes	RU	IM X	XXX	XX	X
10	91	Track occupation caused by the lateness of the same train	OTHER	IM Y	XX	XX	X

Amount & distribution of responsibilities for delays reasons, S-N (Top 10)

Sort Order	Delay Code (UIC)	Delay Code Name	Delay Responsible	Responsible IM at the point of occurence	Sum of Delay Minutes	Number of Delay Msgs	Percent Delay SUM
1	59	Other causes	RU	IM X	XXXX	XX	XX

Sort Order	Delay Code (UIC)	Delay Code Name	Delay Responsible	Responsible IM at the point of occurence	Sum of Delay Minutes	Number of Delay Msgs	Percent Delay SUM
2	61	Formation of trains by Railway Undertaking	RU	IM Y	XXX	XXX	XX
3	92	Track occupation caused by the lateness of another train	OTHER	IM Z	XXX	XX	X
4	22	Telecommunication installations	IM	IM Y	XXX	X	X
5	95	Further investigation needed	OTHER	IM X	XXX	XXX	X
6	92	Track occupation caused by the lateness of another train	OTHER	IM Y	XXX	XX	X
7	83	Effects of weather and natural causes	OTHER	IM X	XXX	XX	X
8	41	Delay caused by previous IM	IM	IM Y	XXX	XX	X
9	83	Effects of weather and natural causes	OTHER	IM X	XXX	XX	X
10	60	Roster planning/re-rostering	RU	IM Y	XX	XX	X

Note: Delay causes for incidents can be corrected according to the deadlines of each country. Therefore discrepancies might arise. Delay codes according to UIC leaflet 450-2.

Annex 5: Length of RFC 2 Sections for Timetable 2015

Corridor 2 Section Table - Lengths		
#	Corridor Section	KM
1	Rotterdam - Antwerpen Mariabrug	71,4
2	Antwerpen Mariaburg - Antwerpen Noord	2,9
3	Antwerpen Noord - Antwerpen Schijnpoort	11,2
4	Antwerpen Mariaburg - Antwerpen Schijnpoort	8,9
5	Antwerpen Schijnpoort - Aubange	297,2
6	Antwerpen Noord - Lille	142,2
7	Lille - Longuyon	277,5
8	Aubange - Longuyon (via MsM)	23
9	Aubange - Bettembourg	32
10	Bettembourg -Thionville/Hagondange	18,4
11	Longuyon - Thionville/Hagondange	49,7
12	Thionville/Hagondange - Metz	30,7
13	Metz - Strasbourg	158
14	Strasbourg - Basel	148
15	Longuyon - Toul	124
16	Metz - Toul	71,5
17	Toul - Dijon	194
18	Dijon - Lyon	201,6
19	Dijon - Ambérieu	173,6