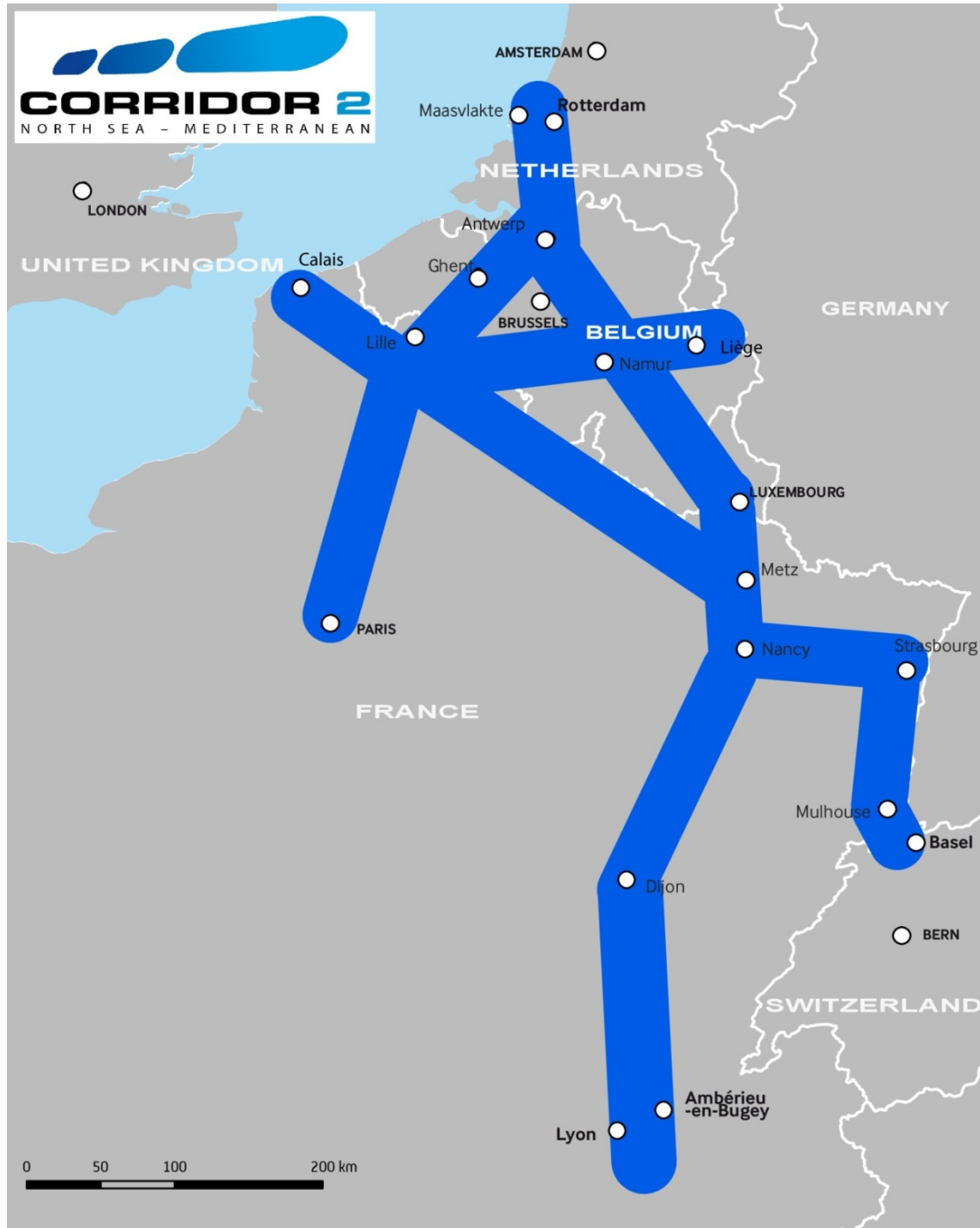


Rail Freight Corridor 2

Corridor Information Document

Book V – Implementation Plan

Timetable 2016



Co-financed by the European Union
Trans-European Transport Network (TEN-T)

Table of Contents

TABLE OF CONTENTS	2
INTRODUCTION	5
1. CHARACTERISTICS AND GOVERNANCE OF RFC 2	7
1.1 RFC 2 CHARACTERISTICS	7
1.1.1 RFC 2 routes	7
1.1.2 RFC 2 terminals	9
1.1.3 Number of tracks	13
1.1.4 Speed limits	14
1.1.5 Electrical systems	15
1.1.6 Signalling systems	16
1.1.7 Maximum axle load	16
1.1.8 Train Length	17
1.1.9 Loading Gauges	18
1.1.10 Gradients	20
1.2 TRAFFIC AND BOTTLENECKS	21
1.2.1 Traffic on RFC 2	21
1.2.2 Bottleneck description	22
1.2.2.1 Antwerp node	24
1.2.2.2 Lille node	24
1.2.2.3 Strasbourg node	25
1.2.2.4 Other bottlenecks	25
1.3 GOVERNANCE	26
1.3.1 Management board	26
1.3.1.1 Members and Partners	26
1.3.1.2 Legal structure	26
1.3.1.3 Permanent team	27
1.3.1.4 Working groups	28
1.3.1.5 Organisation Chart	32
1.3.1.6 Communication	33
1.3.1.7 Finance	34
1.3.2 Executive board	34
1.3.2.1 Members and other participants	35
1.3.2.2 Mission Statement	35
1.3.2.3 Framework for capacity allocation	35
1.3.3 Advisory groups	36
1.3.3.1 Railway undertaking Advisory Group	36
1.3.3.2 Terminal Advisory Group	38
2. ESSENTIAL ELEMENTS OF THE TRANSPORT MARKET STUDY	39
2.1 ANALYSIS OF THE CURRENT SITUATION	39
2.1.1 The geographic and socio-economic context	39
2.1.2 The transport market characteristics along the corridor	41
2.2 ASSESSMENT OF THE MARKET	42
2.2.1 Actual freight market estimation (per O/D)	42
2.2.2 Assessment of customer needs	46
2.3 MARKET PROJECTIONS	55
2.3.1 The forecasts on the geographical and socio economic context	55
2.3.2 Improvements in the rail transport system	56

2.3.3	SWOT analysis.....	57
2.3.4	Practices and operational models.....	58
2.4	MULTI CRITERIA ANALYSIS AND IMPACT ON THE STAKEHOLDERS	59
3.	OBJECTIVES OF THE FREIGHT CORRIDOR	64
3.1	TRAIN PERFORMANCE MANAGEMENT: A CORRIDOR ORIENTED PERFORMANCE SCHEME	64
3.1.1	RFC 2 and Train Performance Management.....	64
3.1.2	RFC 2 and European Performance Regime	64
3.2	PUNCTUALITY OBJECTIVES.....	67
3.3	CAPACITY OBJECTIVES	67
3.3.1	Trains running on the Corridor.....	67
3.3.2	Strategy for the number of Pre-arranged Paths	68
3.3.3	Status of previous and upcoming offers	68
3.3.4	Objectives short term.....	73
3.3.5	Objectives long term	73
3.4	AVERAGE JOURNEY TIME OBJECTIVES.....	74
3.5	ALLOCATION OBJECTIVES	75
4.	INVESTMENT PLAN	76
4.1	DESCRIPTION OF THE PLAN	76
4.1.1	Methodology.....	76
4.1.2	List of projects.....	76
4.1.3	Nature of the projects.....	92
4.1.4	Benefits of the projects	92
4.1.5	Breakdown per country.....	93
4.1.6	Breakdown per calendar year.....	95
4.2	DEPLOYMENT PLAN RELATING TO INTEROPERABLE SYSTEMS	95
4.2.1	ERTMS strategy along the corridor	95
4.2.2	Compulsory systems and deactivation of national legacy systems	96
4.2.3	ERTMS deployment plan	97
4.2.4	Cost Benefit Analysis.....	99
4.2.4.1	Costs	99
4.2.4.2	Benefits.....	99
4.3	CAPACITY MANAGEMENT PLAN	102
4.3.1	Bottlenecks removals	102
4.3.1.1	Investments to improve the access to the Port of Antwerp	102
4.3.1.2	Second track Fleurus-Auvelais	108
4.3.1.3	Bettembourg central signalling centre	108
4.3.1.4	Metz node.....	108
4.3.1.5	Metz-Nancy	109
4.3.1.6	Strasbourg node	109
4.3.1.7	Lille bypass.....	110
4.3.1.8	Lyon Railway Node (NFL)	110
4.3.1.9	Paris area	111
4.3.1.10	Other improvement projects	112
4.3.2	Train length increase.....	113
4.3.3	Loading gauge increase	113

5.	IMPLEMENTATION OF ARTICLE 12 TO 19 OF REGULATION (EU) 913/2010.....	114
5.1	COORDINATION OF WORKS.....	114
5.1.1	<i>Procedure for the publication of works.....</i>	<i>114</i>
5.1.2	<i>The Coordination Process.....</i>	<i>114</i>
5.1.3	<i>Criteria for Possessions to be published.....</i>	<i>117</i>
5.2	CORRIDOR-ONE STOP SHOP.....	120
5.2.1	<i>Consistency along Corridors.....</i>	<i>120</i>
5.2.2	<i>Tasks</i>	<i>120</i>
5.2.3	<i>Structure</i>	<i>121</i>
5.2.4	<i>Procedures/Timeline</i>	<i>121</i>
5.2.5	<i>Contact details</i>	<i>123</i>
5.3	CAPACITY ALLOCATION.....	124
5.3.1	<i>Framework.....</i>	<i>124</i>
5.3.2	<i>Priority Rule.....</i>	<i>124</i>
5.4	APPLICANTS	125
5.5	TRAFFIC MANAGEMENT	126
5.6	TRAFFIC MANAGEMENT IN THE EVENT OF DISTURBANCE	127
5.7	CORRIDOR INFORMATION DOCUMENT	128
5.7.1	<i>Specification.....</i>	<i>128</i>
5.7.2	<i>Corridor Information Document Main Structure and updating process</i>	<i>128</i>
5.7.3	<i>Corridor Information Document Language.....</i>	<i>128</i>
5.7.4	<i>The preparation process</i>	<i>129</i>
5.8	QUALITY OF SERVICE	129
5.8.1	<i>Train Performance Management.....</i>	<i>129</i>
5.8.1.1	<i>Introduction.....</i>	<i>129</i>
5.8.1.2	<i>History of the project.....</i>	<i>130</i>
5.8.1.3	<i>Objectives</i>	<i>130</i>
5.8.1.4	<i>General description of procedure.....</i>	<i>131</i>
5.8.1.5	<i>Tasks & roles of IM/RU members in Train Performance Management</i>	<i>133</i>
5.8.1.6	<i>Documentation of results</i>	<i>134</i>
5.8.1.7	<i>Escalation.....</i>	<i>135</i>
5.8.1.8	<i>Used tools</i>	<i>136</i>
5.8.1.9	<i>Passenger traffic and primary lines.....</i>	<i>137</i>
5.8.2	<i>National Performance Reviews.....</i>	<i>137</i>
5.8.3	<i>Performance Monitoring Report.....</i>	<i>138</i>
5.8.3.1	<i>Measurements.....</i>	<i>138</i>
5.8.3.2	<i>Key Performance Indicators.....</i>	<i>138</i>
5.8.3.3	<i>Other Measurements</i>	<i>140</i>
5.8.4	<i>Customer Satisfaction Survey.....</i>	<i>141</i>
	ANNEX 1 LIST OF RFC 2 LINES	142
	ANNEX 2: GLOSSARY.....	146
	ANNEX 3: FRAMEWORK FOR CAPACITY ALLOCATION	154
	ANNEX 4: EXAMPLE OF A TPM REPORT	154
	ANNEX 5: LENGTHS OF RFC 2 SECTIONS.....	162

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 Union¹ 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 route extended to Rotterdam and Lille, following the Rotterdam Declaration of 14 June 2010. Six of these nine initial corridors, including Corridor 2, are operational since 10 November 2013; the remaining three will be in 10 November 2015. This Regulation was modified by Regulation (EU) 1316/2013 establishing the Connecting Europe Facility on 11 December 2013,

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.

It also stipulates that 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 and its further developments is a complex project that involves a lot of parties. To manage these developments 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 the initial Implementation plan and submitted it for approval to the Executive board on 7 May 2013. The Executive board gave its final approval on 11 December 2014, at the same time as it gave its approval for the implementation plan of timetables 2015 and 2016. The RFC 2 Management board periodically updates the Implementation plan and has included it in a public document called the Corridor Information Document that was published for the first time in November 2013.

The RFC 2 Management board also consulted applicants on the current 2016 timetable CID.

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

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 Paris, Lyon and Basel as gateways to Southern Europe: Italy via Switzerland, Spain via the South of France.

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 the rail network. 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 5 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 (EU) 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 5 brands are no longer used and their businesses are fully transferred to RFC 2. With Regulation (EU) 1316/2013, the name of the corridor has changed to Rail Freight Corridor North Sea – Mediterranean.

1. Characteristics and governance of RFC 2

1.1 RFC 2 Characteristics

1.1.1 RFC 2 routes

RFC 2 is in the continuity of ERTMS Corridor C as all Corridor C lines are RFC 2 lines. Therefore ERTMS should be implemented along the corridor as provided by the deployment plan relating to the interoperable systems.

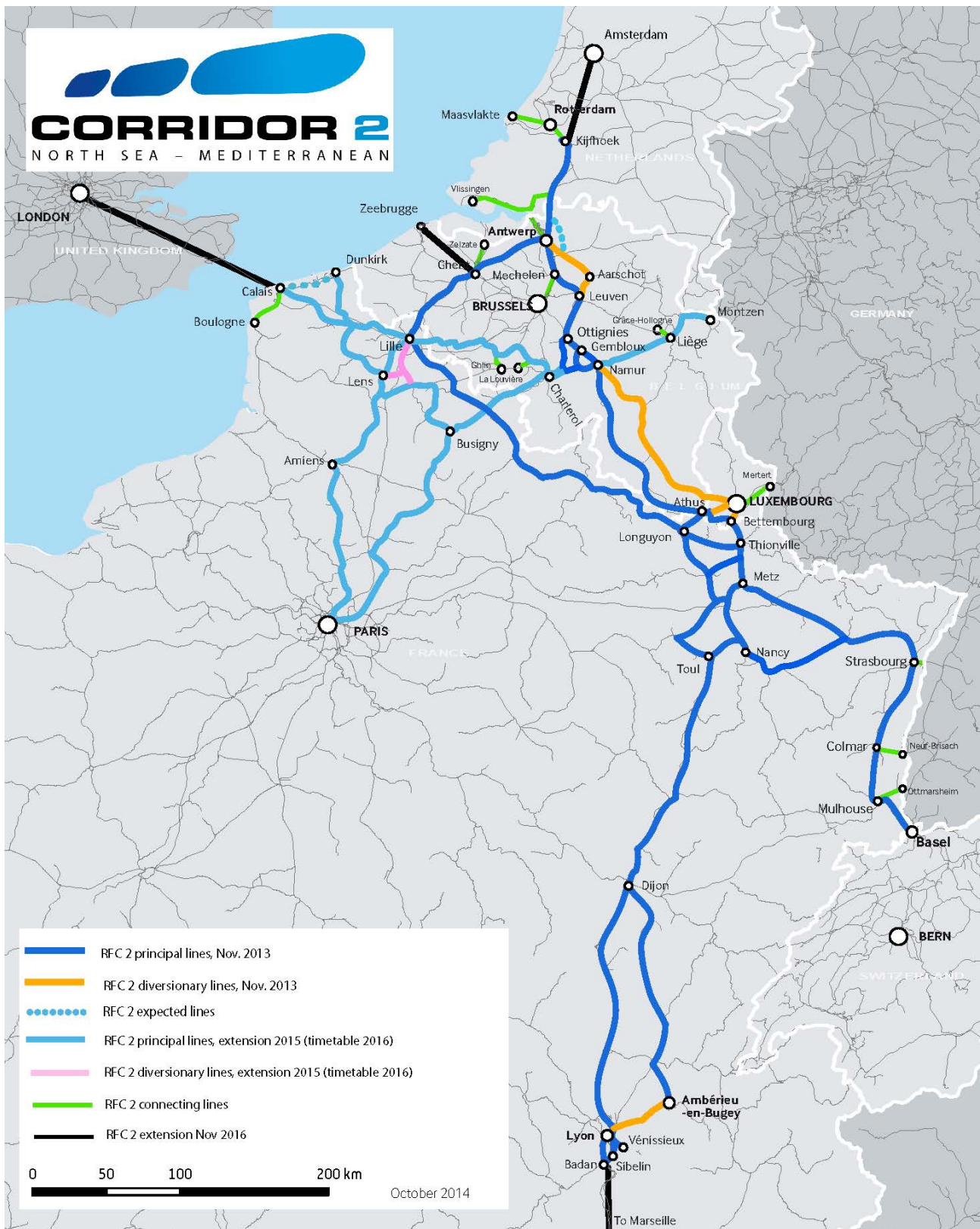
The designated RFC 2 lines can be split into four different categories:

- On **Principal lines**, Pre-arranged Paths (PaPs) are to be offered
- On **Diversions lines**, PaPs may be considered;
- **Expected lines** are lines which are either planned in the future or under construction but not yet completed;
- **Connecting lines** are lines connecting a terminal to a principal or a diversionary line and there is no obligation for PaPs supply.

On 11 December 2013, Regulation (EU) 1316/2013 establishing the Connecting Europe Facility modified the annex of Regulation (EU) 913/2010. RFC 2 becomes the “North Sea – Mediterranean” Corridor and is being extended in three phases:

- the first phase is the extension of the corridor in January 2015, at the date of the 2016 timetable pre-arranged paths publication. The corridor is extended to Dunkirk, Calais, Liège (Montzen) and Paris (see lines in pale blue on map 1);
- a second phase concerns the extension of the corridor in November 2016 towards London, Zeebrugge, Amsterdam and Marseille (see lines in black on map 1);
- a third phase concerns the extension of the corridor in November 2018 towards Glasgow, Edinburgh, Southampton and Felixstowe².

² The United Kingdom has challenged the validity of article 29 and annex 2 of Regulation (EU) 1316/2013, insofar as they extend beyond London what was Corridor 2 in the original Annex to Regulation (EU) 913/2010 (action brought on 12 March 2014, case C-121/14)



Map 1: Extensions of the corridor (2015 and 2016)

RFC 2 is connected to four other rail freight corridors:

- In Rotterdam, Antwerp, Ghent and Basel with Corridor Rhine Alpine (RFC 1);
- In Metz and Paris with Corridor Atlantic (RFC 4);
- In Lyon and Ambérieu with Corridor Mediterranean (RFC 6);

- In Rotterdam and Antwerp with Corridor North Sea Baltic (RFC 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.

The table below presents the breakdown of RFC 2 lines by country.

Country	Length of lines in November 2013 (in km)	Length of lines in January 2015 (in km)
Netherlands	180	180
Belgium	924	1243
France	1731	2844
Luxemburg	139	139
Switzerland	28	28
Whole corridor	3002	4433

Table 1: breakdown of RFC 2 lines by country³

1.1.2 RFC 2 terminals

In Regulation (EU) 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.

Table 2 below lists the terminals of RFC 2.

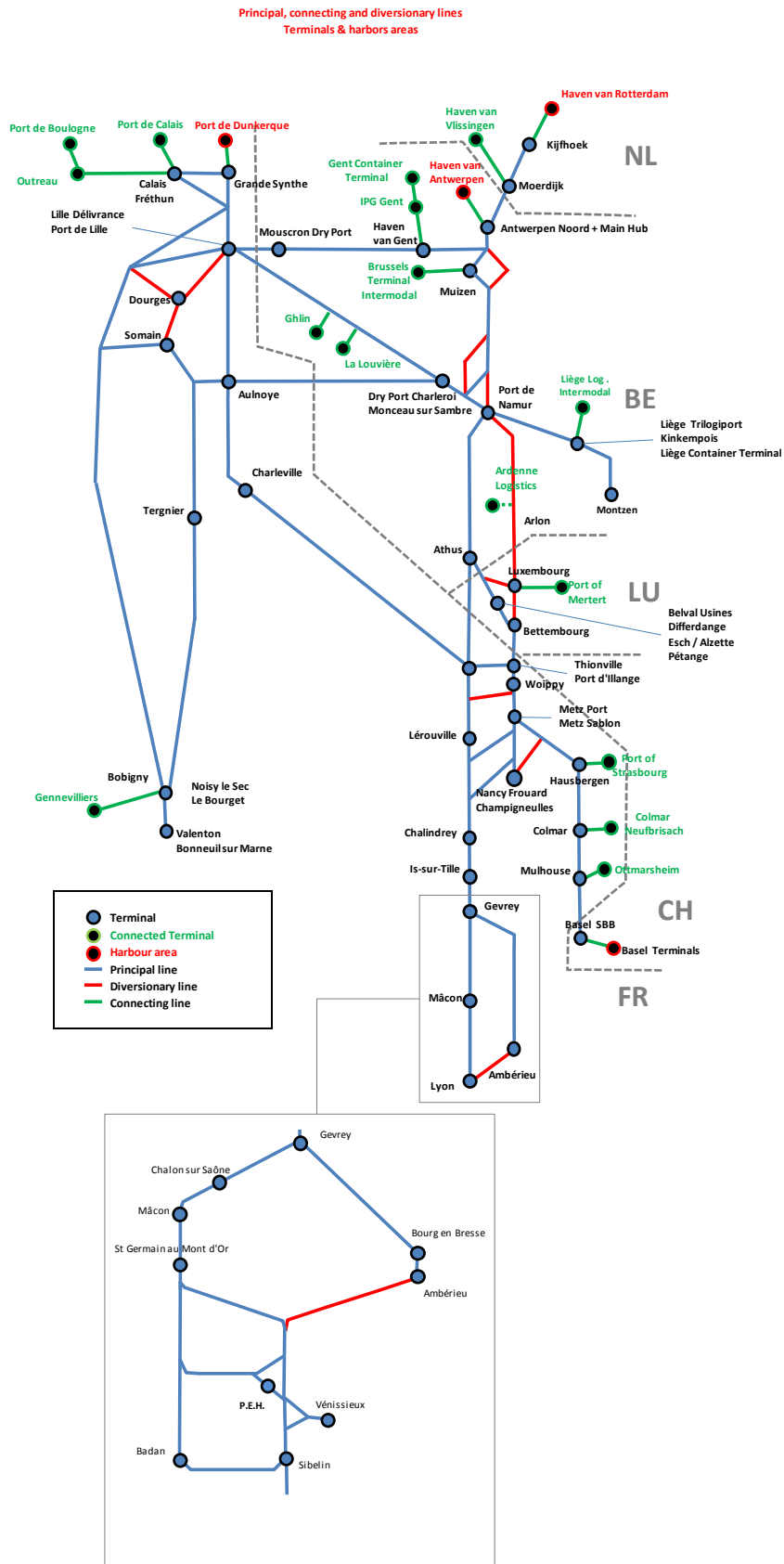
³ This table does not take into account the lines within the ports of Rotterdam, Antwerp and Basel

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		
Antwerpen-Schijnpoort	Antwerp	Belgium		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		
Ambrogio	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		
Lérrouville	Lérrouville	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		

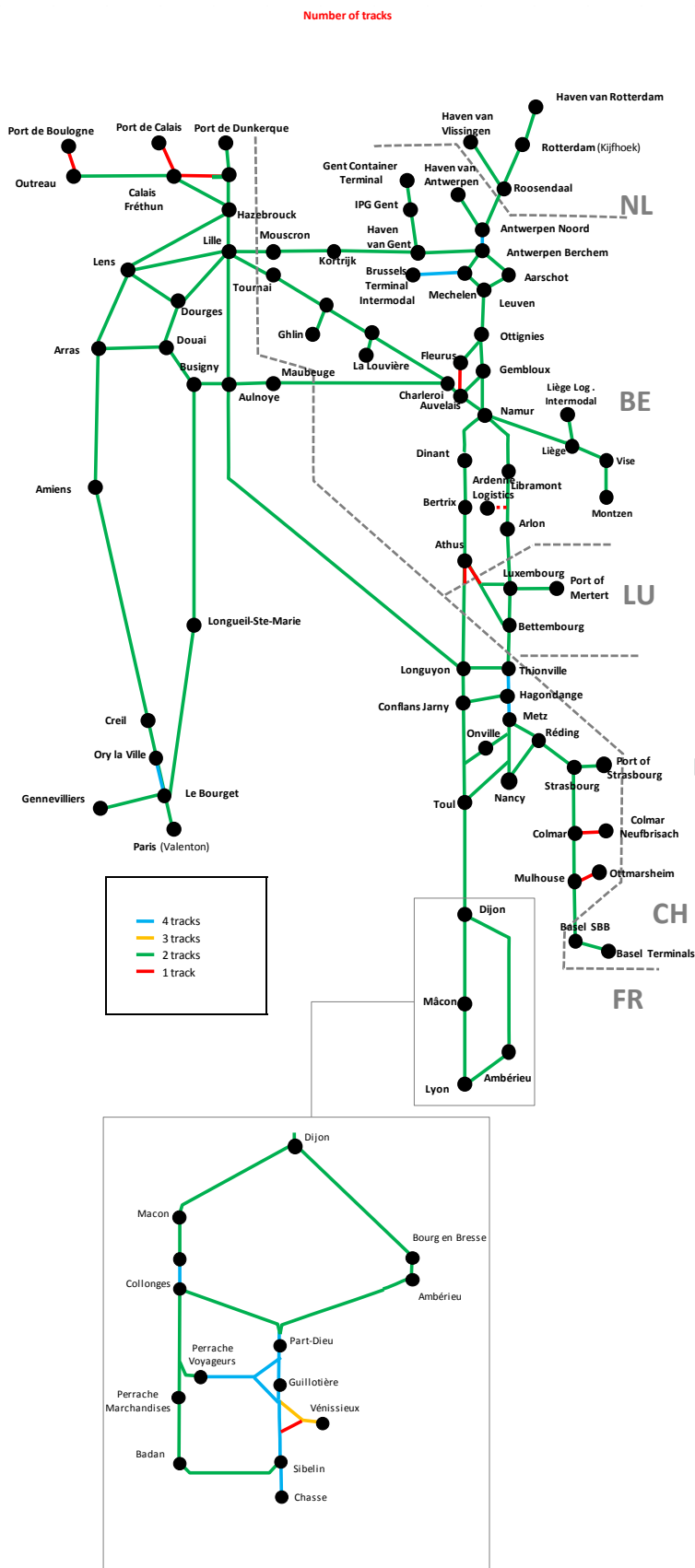
Table 2: RFC 2 terminals

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



Map 2: RFC 2 terminals

1.1.3 Number of tracks



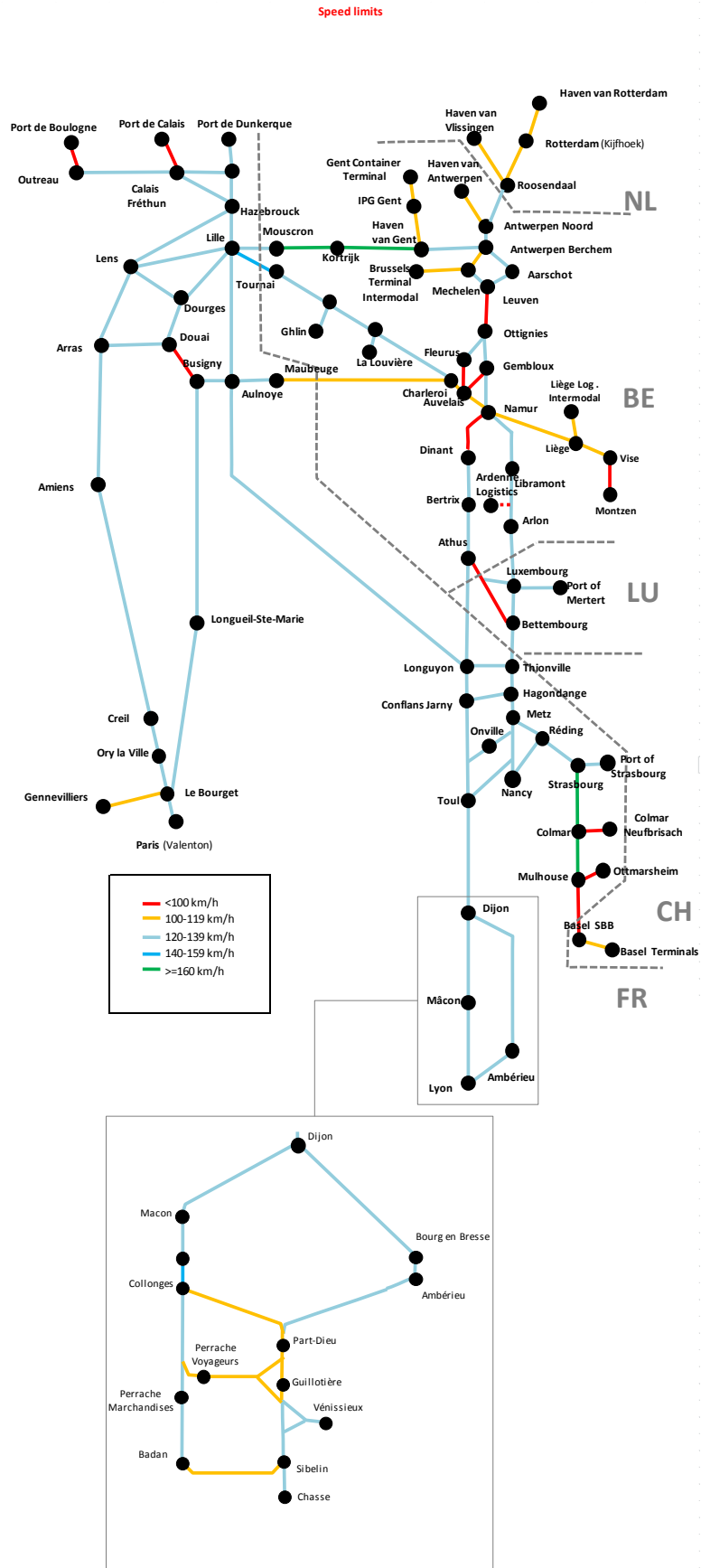
Map 3: number of tracks

All corridor sections have 2 or 4 tracks, except 10 kilometres in Belgium, three short lines 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 one section between Fleurus and Auvélais and one South of Aubange with single track. France has one single track short line in the Lyon node, two single track connecting lines in Alsace and some single track lines in the vicinity of the ports of Calais and Boulogne. Luxembourg has a small section between Aubange and Pétange with one track.

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

1.1.4 Speed limits

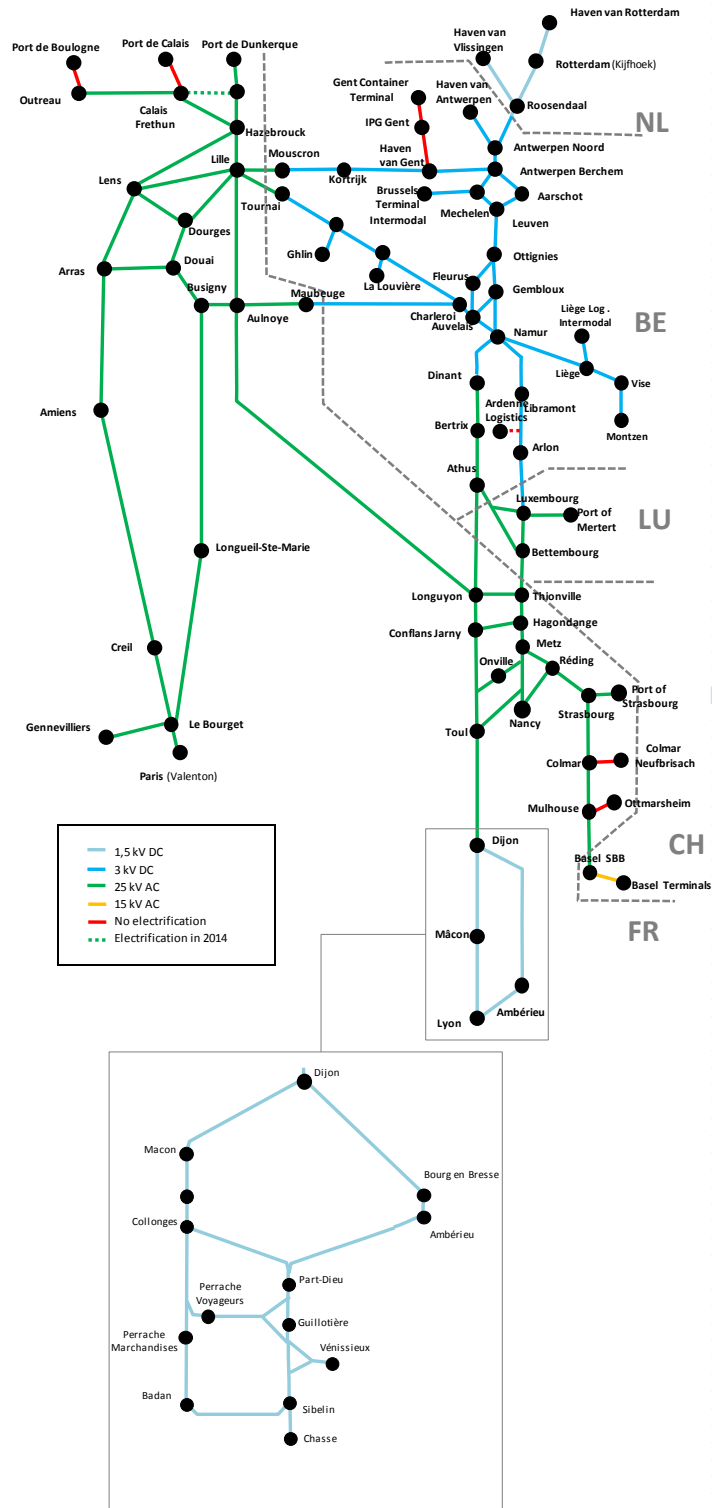


Map 4: speed limits

1.1.5 Electrical systems

All principal and diversionary lines of the corridor are electrified. They comply with the 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.

Electrical Systems



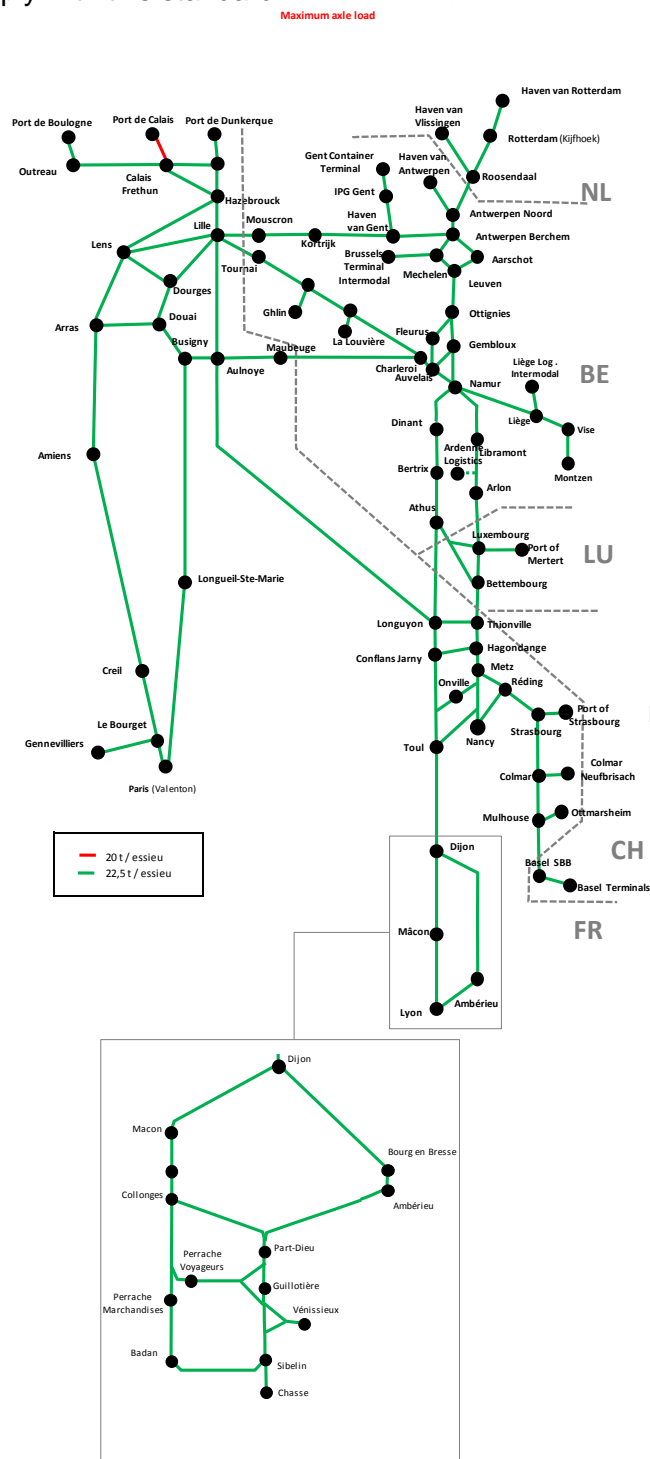
Map 5: electrical systems

1.1.6 Signalling systems

The signalling systems of RFC 2 progressively migrate from legacy national systems to ERTMS. Section 4.2.3 about the interoperable system presents in detail the planning of the ETCS deployment on the corridor lines.

1.1.7 Maximum axle load

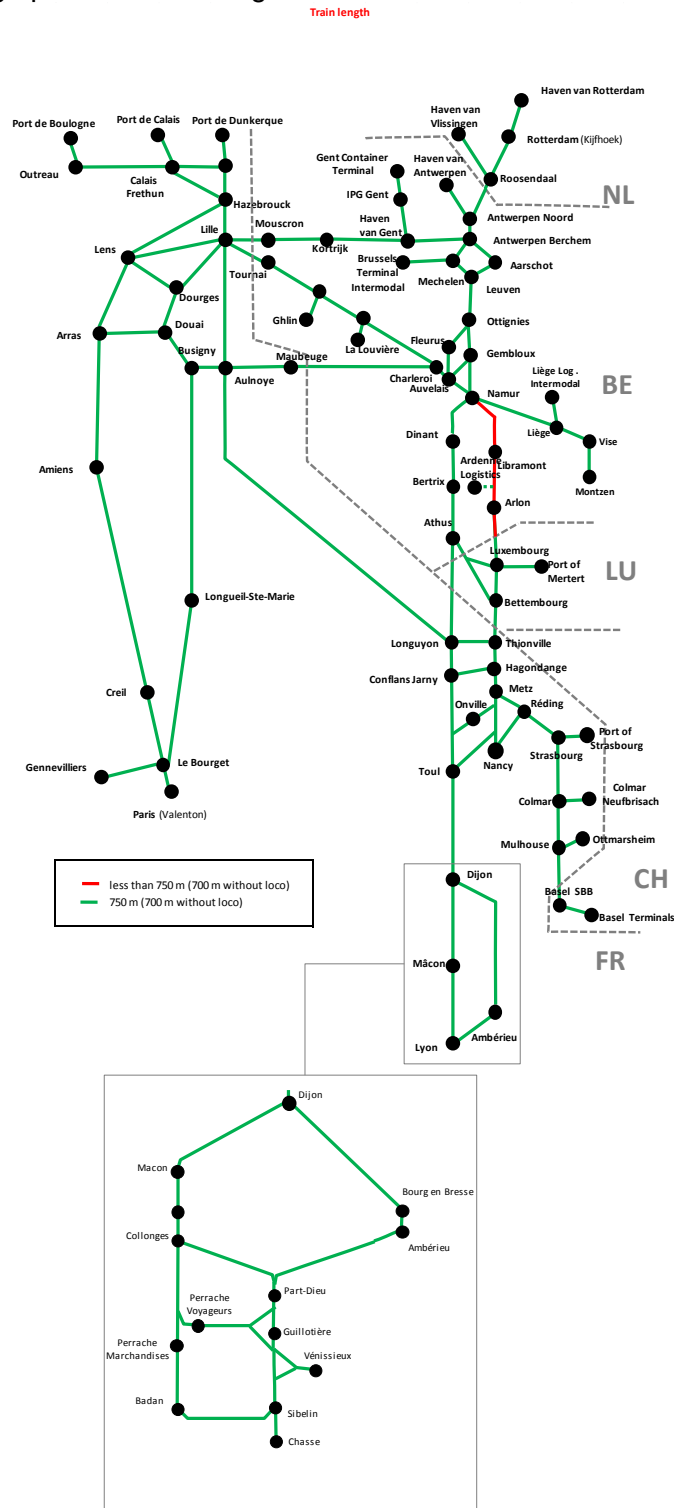
According to the TEN-T standards, the axle load on the core network will not exceed 22.5 tons per axle. All RFC 2 lines comply with this standard.



Map 6: 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. Netherlands, Luxembourg, Switzerland and France fully meet the 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 7: 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.

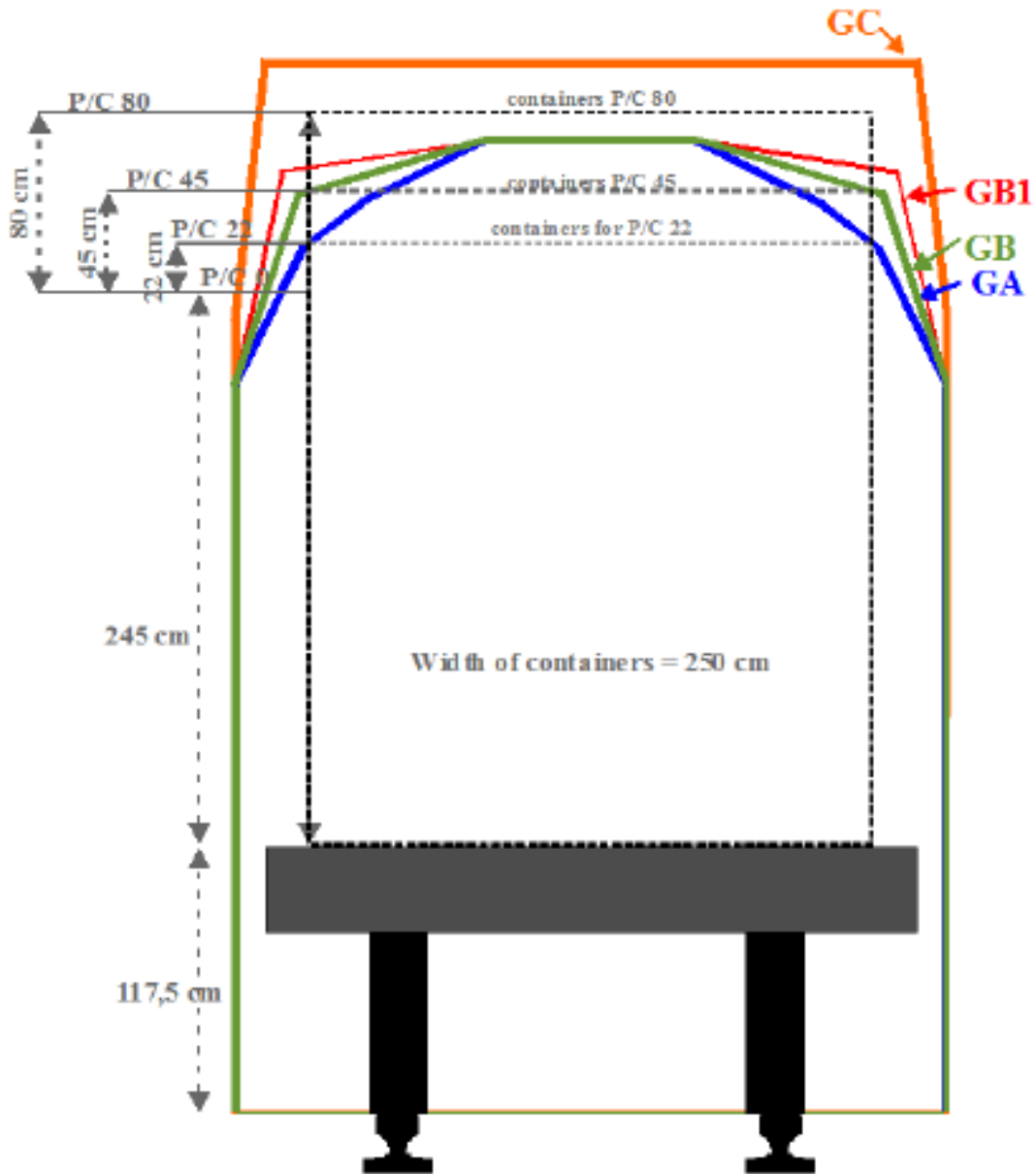
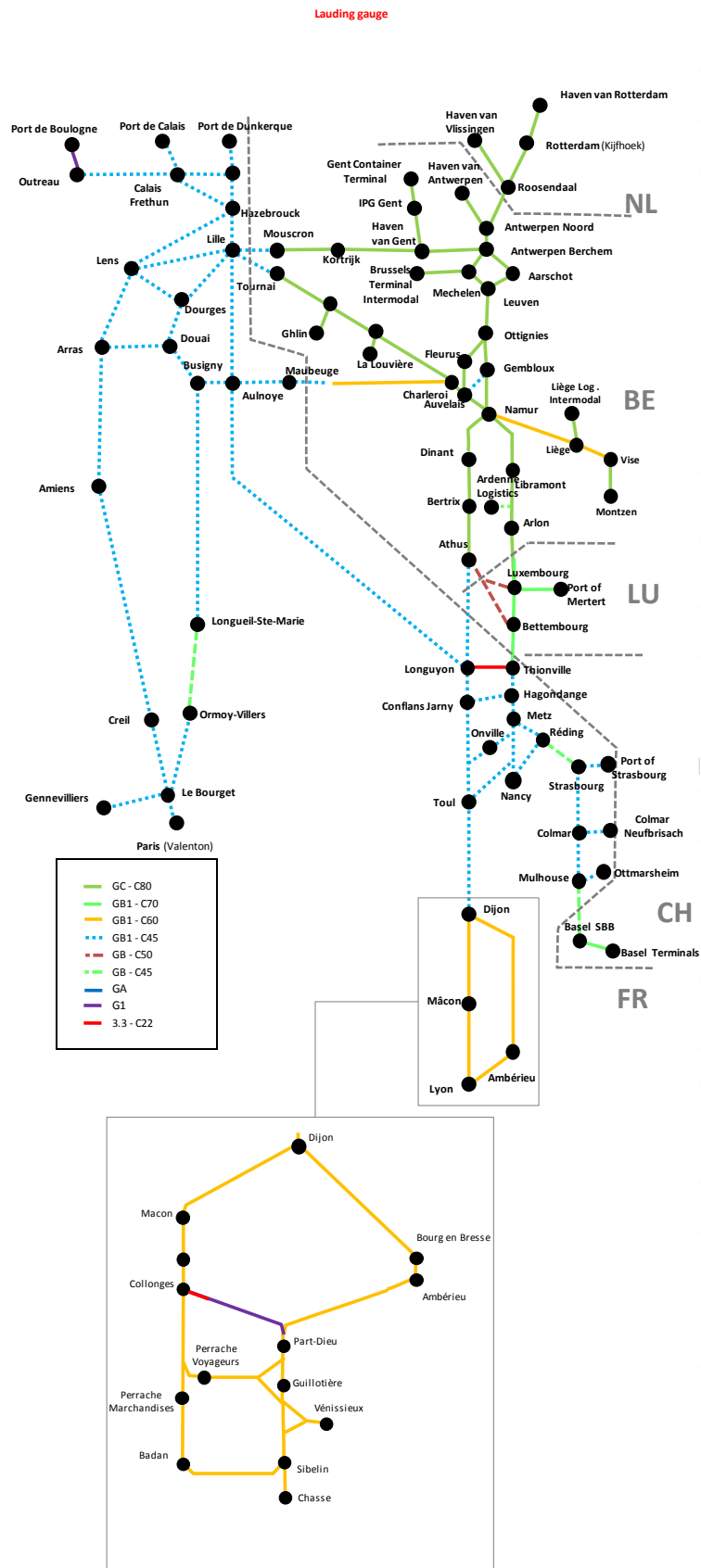
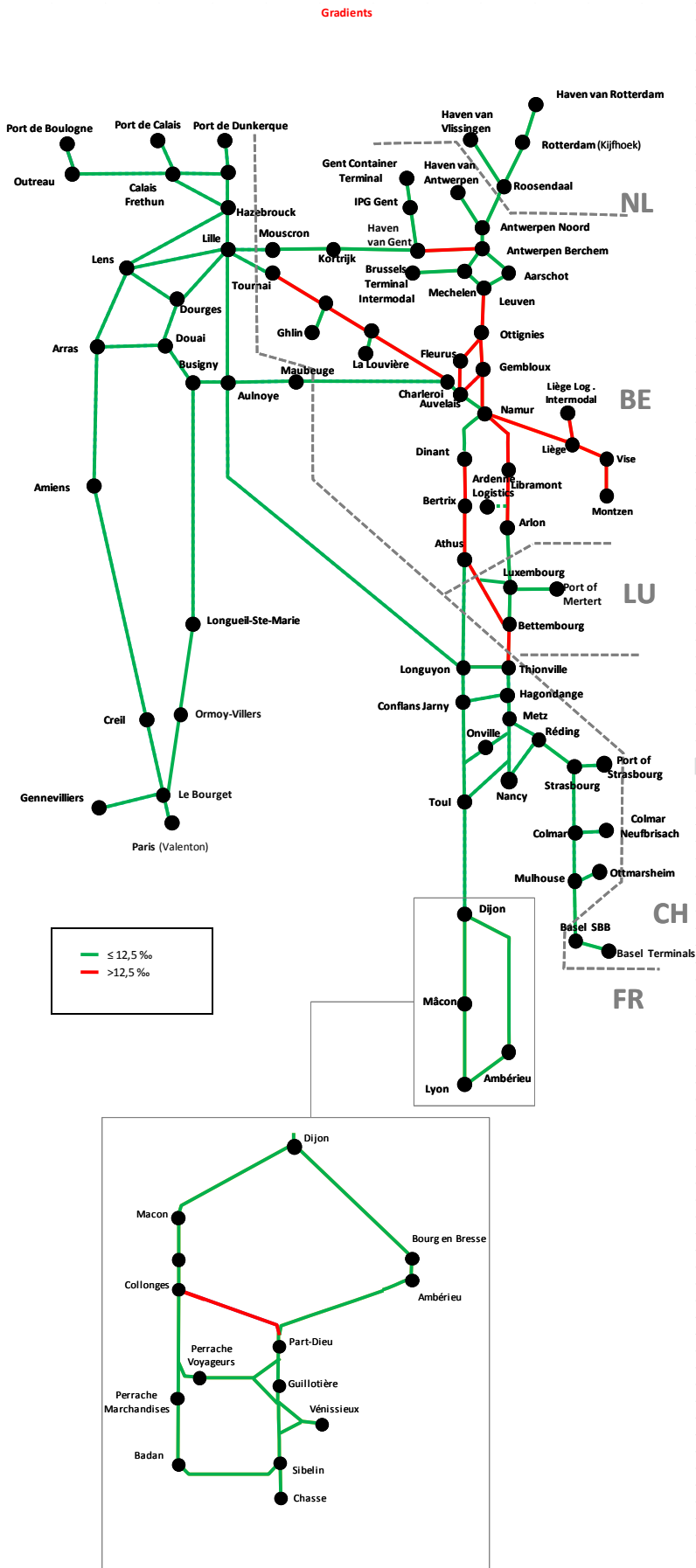


Chart 1: loading gauges description



Map 8: loading gauge

1.1.10 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	-	-	-	-	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

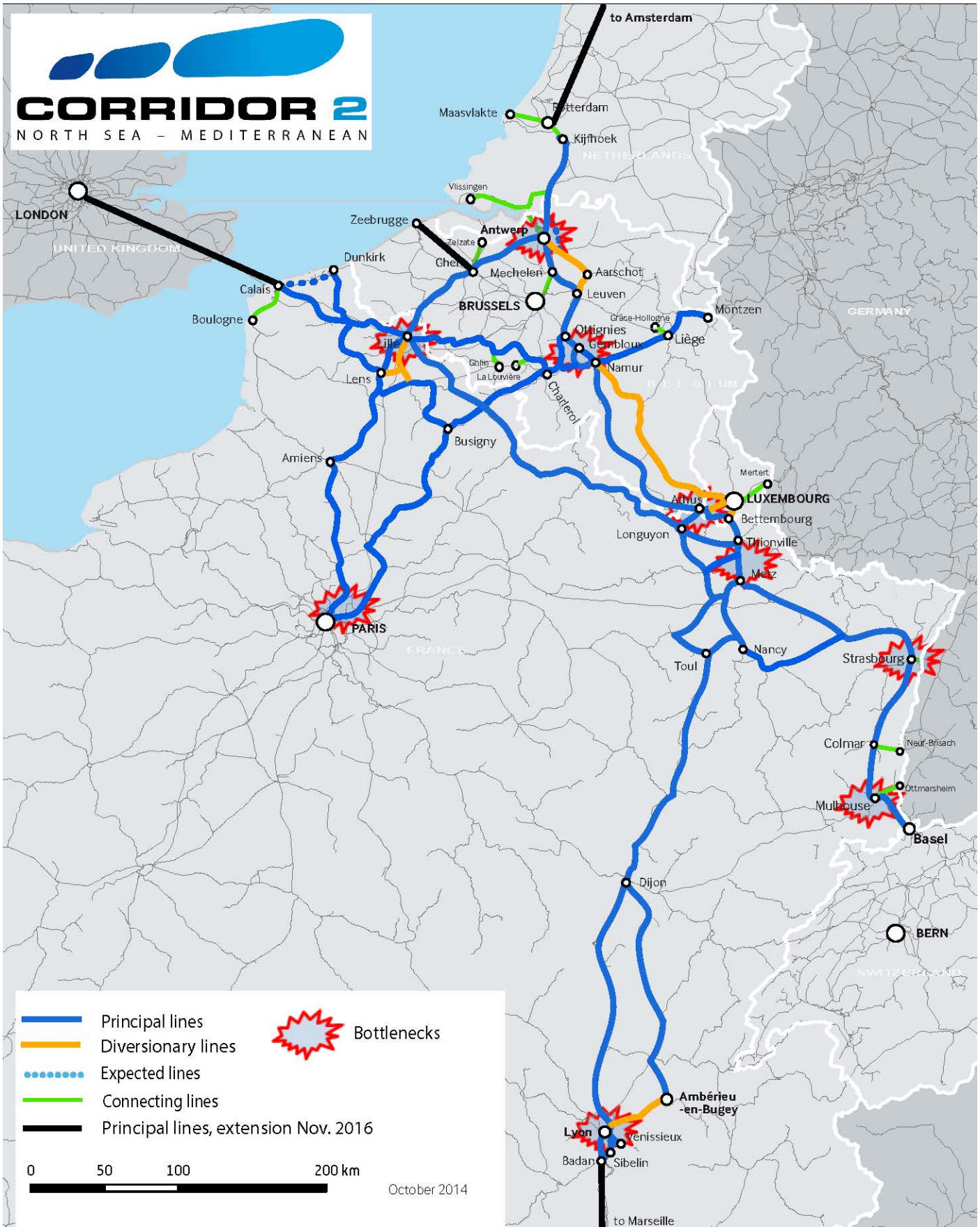
Table 4: number of international trains on RFC 2 (ext. 2015) sections in 2010

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 the bottlenecks which are highlighted on the map below.



Map 10: 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 has been constructed, a faster and more efficient connection is possible. The Liefkenshoek Rail Link provides 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 RCF 2 as below was 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 GEIE RFC 2.

1.3.1.1 *Members and Partners*

As stipulated in article 8 of Regulation (EU) 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
- Network Rail (IM) for United Kingdom⁵
- Infrabel (IM) for Belgium
- Eurotunnel (IM) for France and United Kingdom⁵
- 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*

GEIE 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 GEIE RFC 2) and the scope has been extended to include all tasks entrusted to the Management board as described by Regulation (EU) 913/2010.

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

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

⁵ Will be made official by new bylaws beginning of 2015, following the extension which will take place in November 2016 (point 1.1.1)

On March 21st, 2013, the members which were at that time four (ProRail, Infrabel, CFL and RFF) 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 within the limit defined by the Assembly.

More details about GEIE 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. Since 10 November 2013, he is 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. Eleven 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.

Most of 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 evolved but they 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 and updating of the EEIG by-laws, the partnership agreements, the contracts for consultancy services, the funding agreement and the cooperation agreement which describes 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 (EU) 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 steered the Transport Market Study which was 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. This committee will also steer the updates of the study foreseen by the Regulation.

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 publishes the works planned for the two following years on the RFC 2 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 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 (EU) 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.

Communication working group

The main task of this group, launched in 2013, was the creation of the new website, which went live on 8 November 2013. The Communication working group is also involved in the relations of the corridor with the press (press conference, press releases) and other topics related to communication issues.

Geographical Information System working group

This group was launched in June 2014 to work on the creation of a Geographical Information System (GIS), which will enable geo-referenced information, such as the technical characteristics of the corridor routes, to be described on a map.

The GIS will enable all stakeholders to view the necessary information along the entire corridor in an efficient way.

1.3.1.5 Organisation Chart

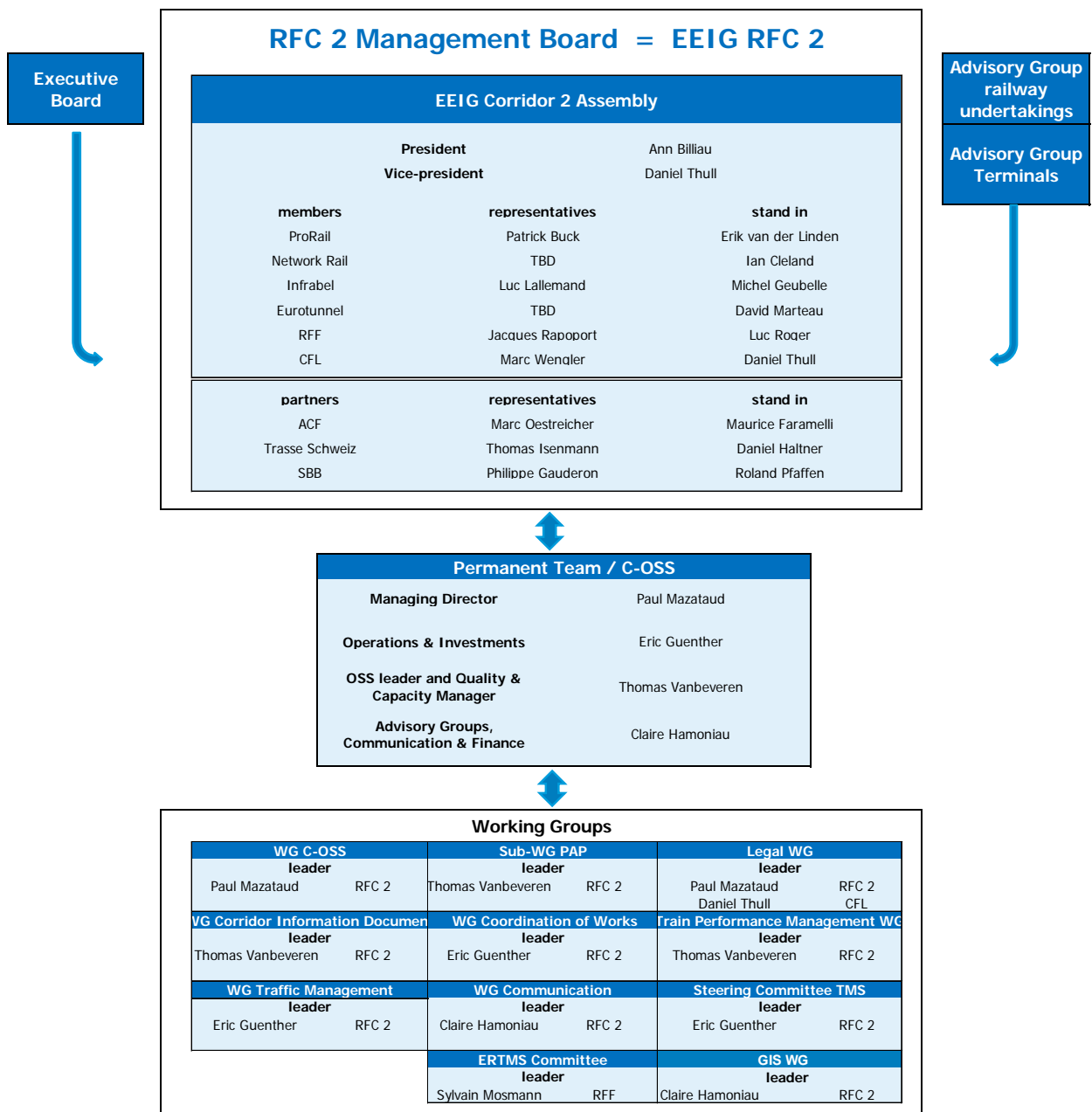


Chart 2: RFC 2 organisation chart

1.3.1.6 Communication

Whether through its website⁶ or its publications (brochures), 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 new website, adapted to the context of a rail freight corridor and focuses on the open cooperation we intend to promote with the railway undertaking and terminal advisory groups;
- the presentation of our activities in events, such as the one organised on 20 March 2014 with RFC 1 in Ghent for the inauguration of these two corridors, and professional conferences like the annual RNE conference or business fairs;
- press conference such as the one that was organised in Luxembourg on 21 March 2013 for the formal creation of the RFC 2 Management board;
- the publication of brochure, annual reports, articles and other communication supports designed to present the activities of RFC 2 to its stakeholders and the media;
- press releases, like the ones issued after the creation of the governance of GEIE RFC 2 and the operational launch of RFC 2.



Photo 2: inauguration event in Ghent

⁶ The RFC 2 website address is www.rfc-northsea-med.eu

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 concerned and Switzerland. They make their decisions on 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.

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	Joannes Peeters (Chairman), representative
BE	SPF Mobilité et Transports	Julie Buy, stand-in
UK	Department for Transport	Robin Groth, representative
UK	Department for Transport	Deborah Phelan, stand-in
FR	Ministère du Développement durable	Guillaume Brodard, representative
FR	Ministère du Développement durable	Brigitte Jacquemont, stand-in
LU	Ministère du Développement Durable et des Infrastructures (MDDI)	Jeannot Poeker, representative
LU	Ministère du Développement Durable et des Infrastructures (MDDI)	André Bissen, stand-in
NL	Ministry of Infrastructure and Environment	Paul Van Gorp, stand-in
NL	Ministry of Infrastructure and Environment	Rob Morsink, representative
CH	Office Fédéral des Transports	Pierre-André Meyrat, representative
CH	Office Fédéral des Transports	Rolf Zimmermann, stand-in
CH	Office Fédéral des Transports	Arnold Berndt, stand-in

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

On top of the members, the European Commission, the European coordinators for TEN-T, INEA, the EEIG members and partners, the EEIG permanent team and one representative of the six involved regulatory bodies are also invited to the Executive board meetings.

National Safety Authorities as well as the Chairman of the Railway Advisory Group are invited to Executive board meetings on an ad hoc basis.

1.3.2.2 Mission Statement

On 27 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 (EU) 913/2010.

This agreement was replaced by an agreement signed on 8 October 2014 in the margins of the Transport Council in Luxembourg. This agreement clarifies the responsibilities and tasks of the Executive Board and states that United Kingdom is represented on the Executive board.

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, which was then published in the Official Journal of the European Union on March 6, 2013.

This Framework for capacity allocation on the corridor concerns the allocation linked to the pre-arranged train paths and 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 (EU) 913/2010, namely

where the allocation of capacity by the C-OSS is mandatory, according to Article 13 of the same Regulation.

A new version of this framework concerning the 2016 timetable, was adopted on 11 December 2014 by all representatives of the concerned ministers of transport of Rail Freight Corridor North Sea Mediterranean. It can be downloaded at the following address: http://www.rfc2.eu/sites/rfc2.eu/files/rff/141211_decision_fca_nsm_corridor_en.pdf . At about the same time, three other Executive boards of Rail Freight Corridors have signed a similar framework.

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 (EU) 913/2010.

1.3.3.1 Railway undertaking Advisory Group

Railway Undertakings potentially interested by RFC 2

RFC 2 invites all railway undertakings interested in the use of the corridor as well as – since a decision taken in the RAG of 1 October 2014 - all active applicants 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 and all active applicants are welcome to attend these meetings.

Concerning railway undertakings, 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 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 Multimodal	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	GB Railfreight	Freightliner	Colas Rail

Table 6: railway undertakings potentially interested by RFC 2

⁷ Sibelit is a grouping of several railway undertakings

Concerning active applicants which are not railway undertakings, RFC 2 will send invitations to the ones which have already requested pre-arranged paths on the corridor.

Four railway sector organisations are also invited: CER (Community of European Railway and Infrastructure Companies), ERFA (European Rail Freight Association), RFG (Rail Freight Group) and KNV (Royal Dutch transport federation)

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



Photo 3: 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.

The RAG has launched four working groups in 2013 on the following topics:

- railway undertaking costs;
- infrastructure upgrade;
- cross border interoperability;
- coordination of works.

For example, discussions in RAG meetings recently addressed the following topics:

- capacity allocation: 2015 and 2016 timetable paths, the tool PCS, evolution of priority rules;
- ERTMS deployment;
- the extensions of the corridor to United Kingdom;
- the results of the working groups including the results of the comparison of technical characteristics between RFC 1 and RFC 2;
- communication of the corridor.

1.3.3.2 Terminal Advisory Group

RFC 2 invites 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 4: TAG meeting on 26 June 2014 in Antwerp

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

- studies on rail operations in ports;
- information on terminals for railway undertakings;
- pre-arranged paths linked to terminals;
- the North Sea - Mediterranean Core Network Corridor.

2. Essential elements of the Transport Market Study

In application of Article 9 of Regulation (EU) 913/2010, the RFC 2 Management board has mandated a consortium of consultant firms to carry out a Transport Market Study. This study was carried out in 2012 and 2013. 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 (in 2015) are connected to RFC 2 in Rotterdam, Antwerp, Ghent, Metz, Paris (in 2015), Basel Ambérieu 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.

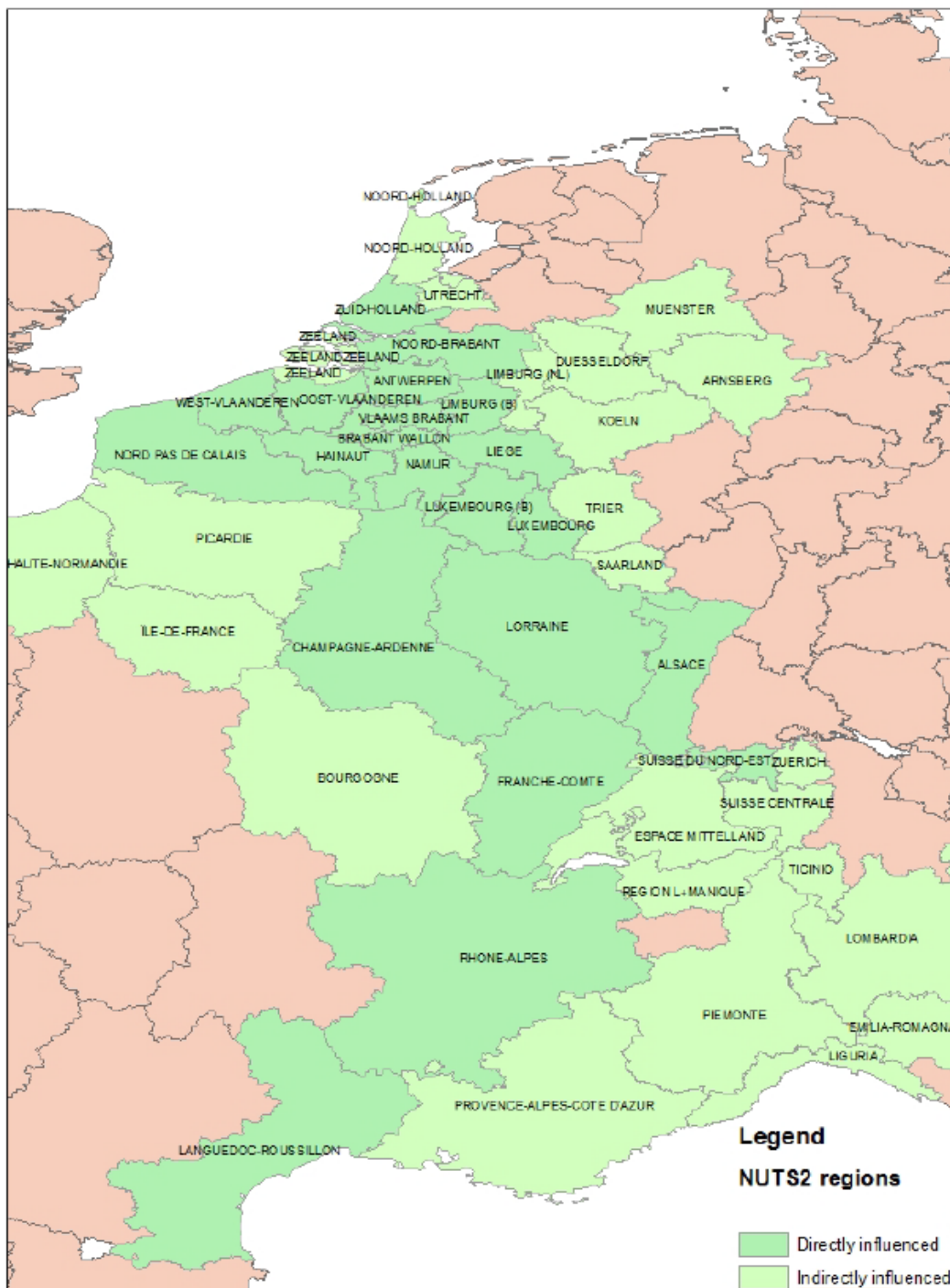
The analysis of the socio-economic variables focussed on those variables with a direct link to traffic demand such as yearly GDP per capita growth, population, fuel prices, industries, etc.

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/EU also indicates the Technical Specification for Interoperability (TSI) of the rail system for new and upgraded railway lines.

The 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: 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 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.

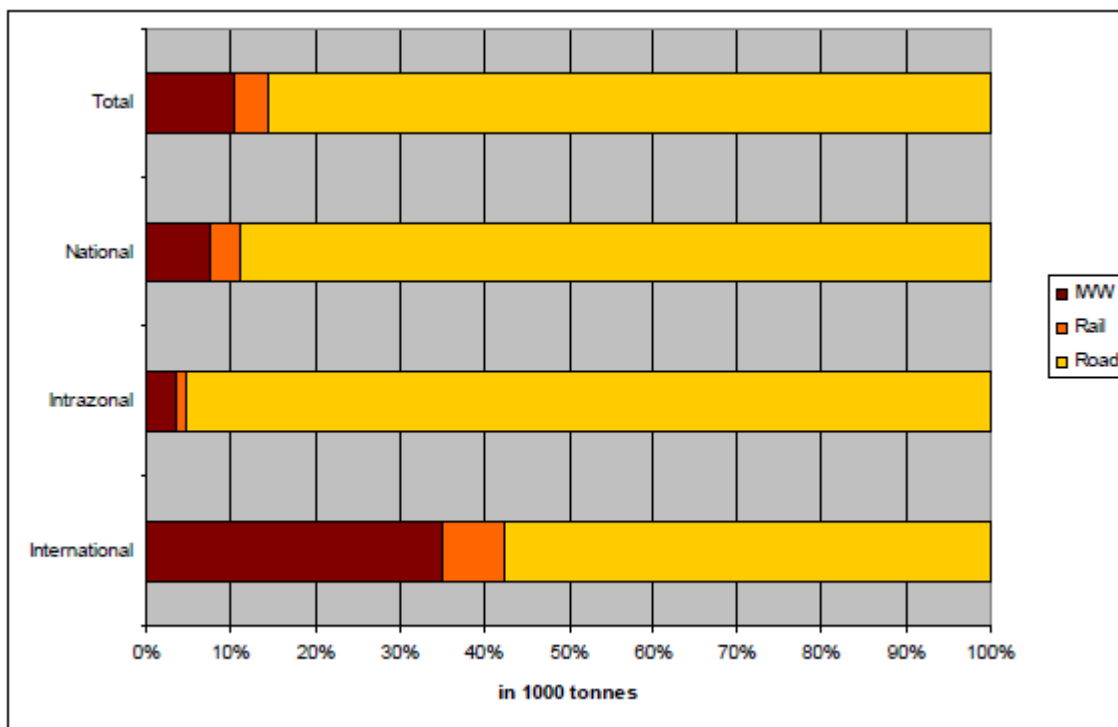


Table 13: Modal split per traffic type for 2010

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 country⁸

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 transshipment 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 Gotthard 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.

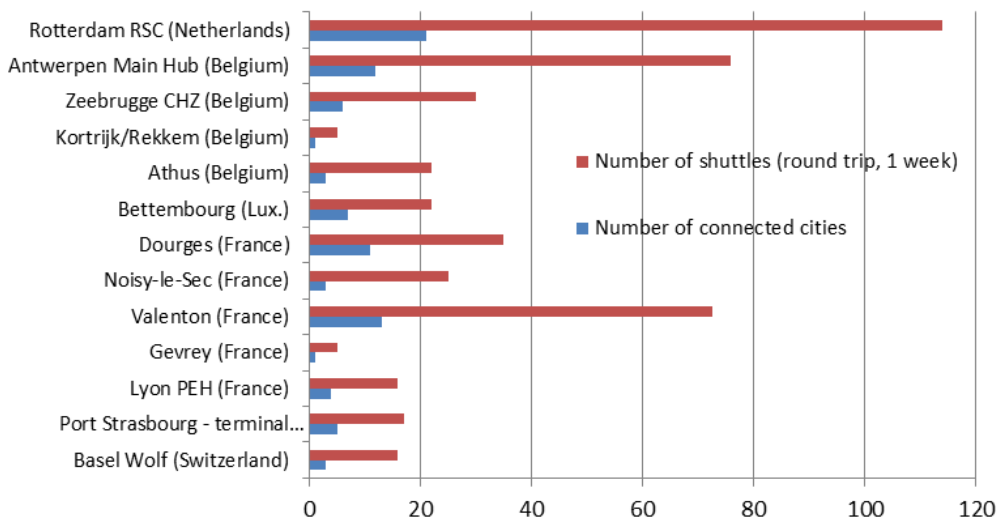


Table 20: weekly number of shuttles (round trip) and number of connected cities

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 transshipment 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: <ul style="list-style-type: none"> - Information services - Pricing & marketing - Legislation - Technical barriers
Develop action and implementation plans for working groups	IM	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Favour implementation of rail capacity projects - Support technical studies aiming at increasing railway capacity beyond already planned projects
Improvement of paths coordination at borders		<ul style="list-style-type: none"> - Improve national paths' coordination at borders (i.e take into account time for administrative and management procedures)
Develop a monitoring procedure	IM	<ul style="list-style-type: none"> - Monitor progress of the defined Actions
Liberalisation	- Ministry - IM	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Consider extension of the Corridor
Client orientation		
Action	Stakeholder	Description
License/safety certificate	Ministries/ NSA	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Introduce cross-acceptance of authorisation procedures of locs and freight wagons along the corridor.
Approval of loc drivers	NSA	<ul style="list-style-type: none"> - 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)	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Investigate possibilities to upgrade the Arzwiller tunnel gauge.
Prioritise bottlenecks and plan removal	IM	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 undertaking Advisory Group (RAG), 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 interoperability;
- 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 is 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 continues 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 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 meets approximately twice a year with RU representatives. In these meetings, the WG 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 performance monitoring report (see also chapter 5.8.3).

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 has chosen, 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. However, these tests would prove to have little added value to TPM. In continuation of this test, a project group, governed by RNE, has been started to invest more time and resources in the improvement of TIS data, used by RFC 2 in the TPM project. RFC 2 will continue to support this WG.

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.

Current relation EPR – Train Performance Management

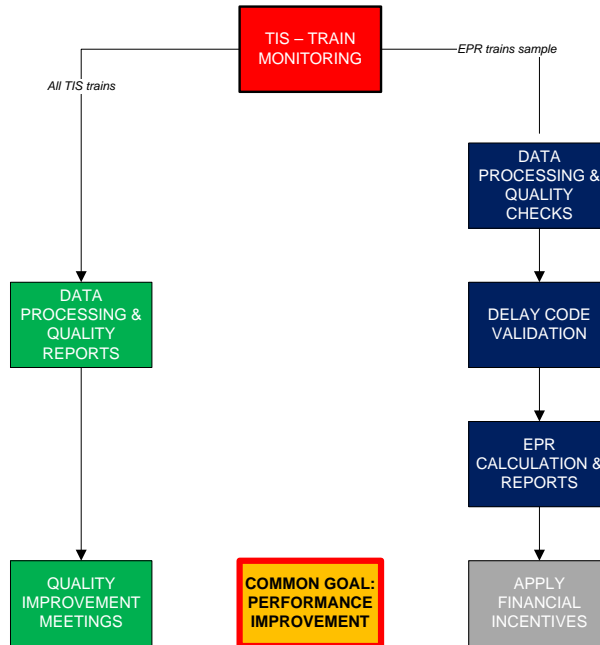


Chart 3: EPR and TPM today

RFC 2 First step

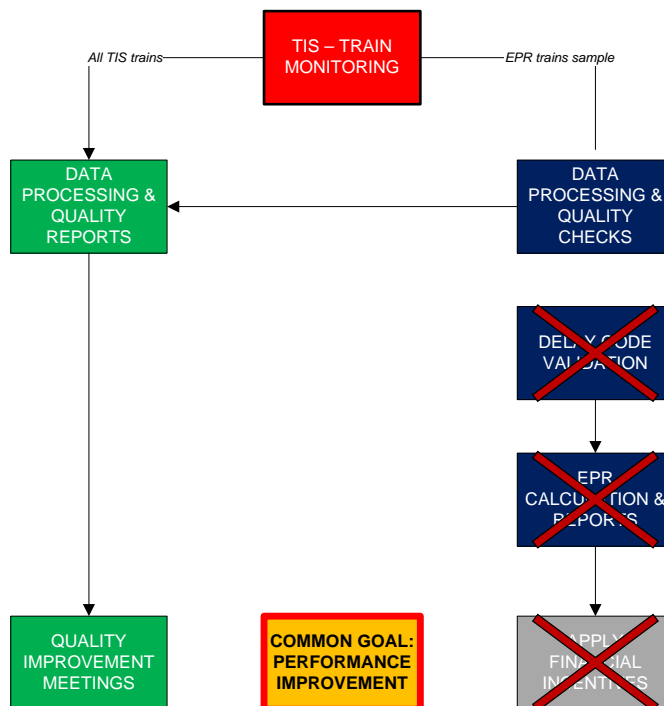


Chart 4: RFC 2 performance management system (first step)

RFC 2 Possible second step

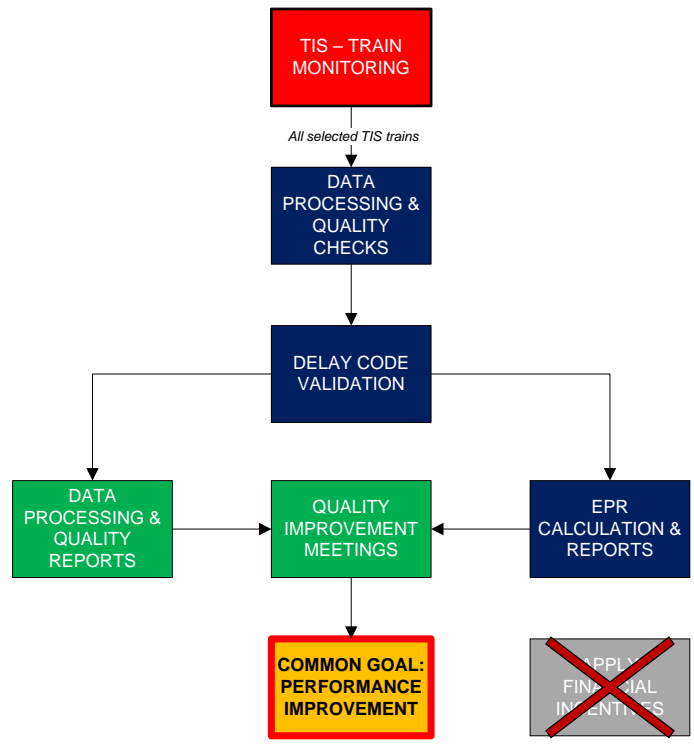


Chart 5: RFC 2 performance management system (possible second step)

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	2013	Objective 2014 - 2016
82%	82%	79%	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

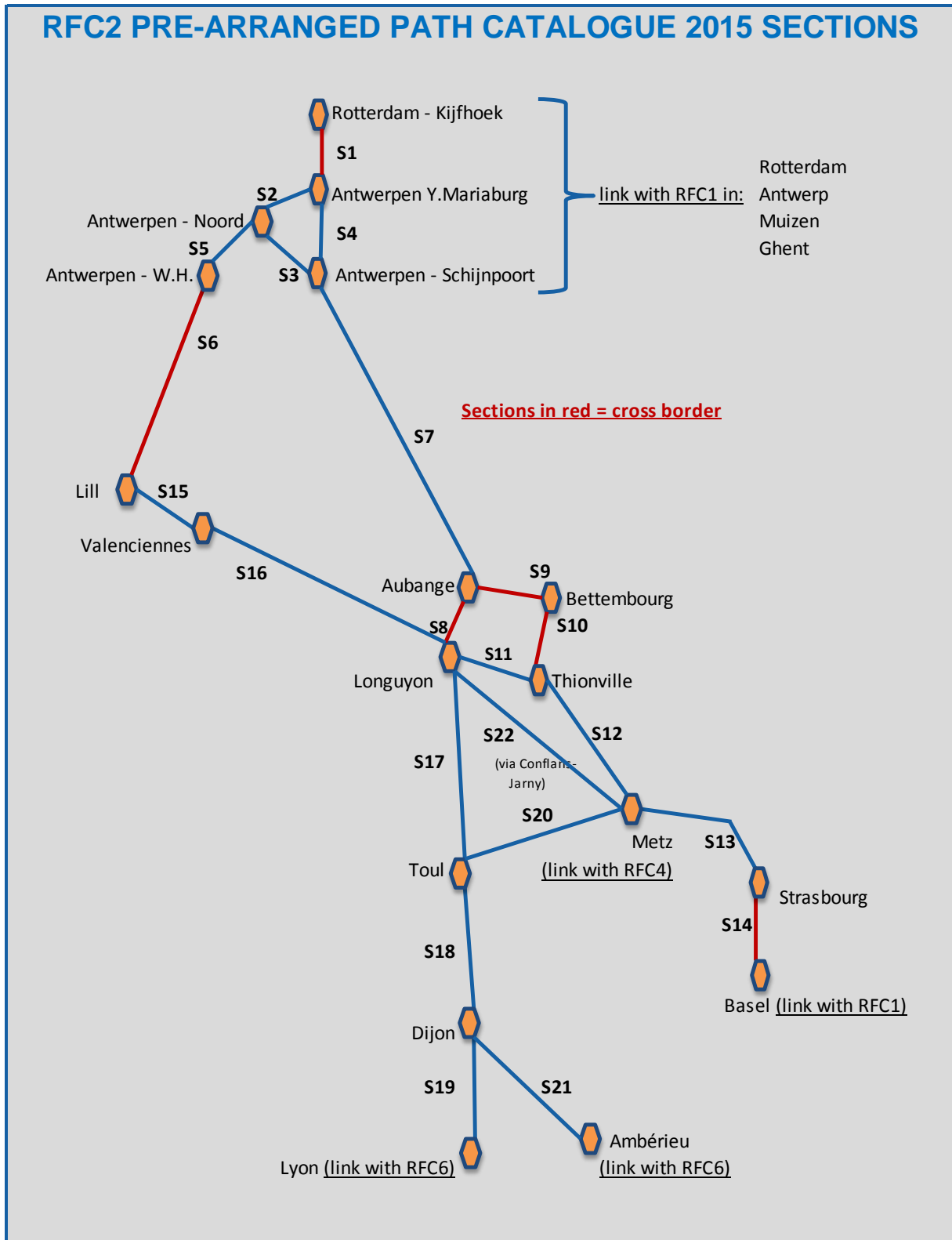
2014 timetable

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, published in January 2014, the Corridor has offered the following number of PaPs on the following corridor sections ([KPI 5](#)):



Map 13: Path section numbering for PaP catalogue 2015

PaPs Offered per Corridor Section TT 2015

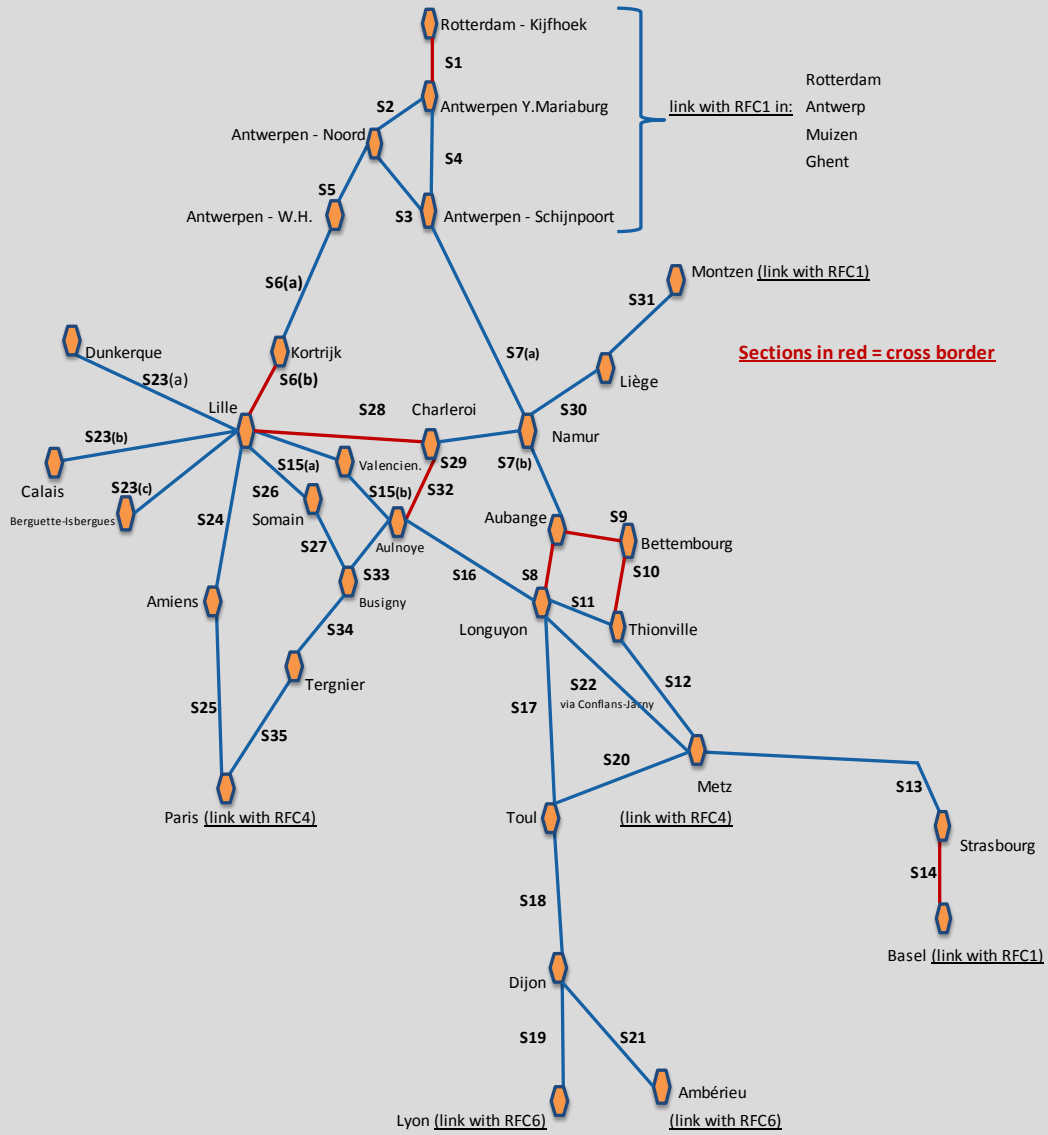
Path Section Number	Corridor Section	TOTAL	
		NS	SN
S1	Rotterdam-Antwerpen Mariaburg	18	18
S2	Antwerpen Mariaburg-Antwerpen Noord	18	18
S3	Antwerpen Noord-Antwerpen Schijnpoort	14	17
S4	Antwerpen Mariaburg-Antwerpen Schijnpoort	18	18
S5	Antwerpen Noord-Antwerpen W.H.	25	25
S6	Antwerpen W.H.-Lille	7	7
S7	Antwerpen Schijnpoort-Aubange	14	17
S8	Aubange-Longuyon	10	13
S9	Aubange-Bettembourg	6	6
S10	Bettembourg-Thionville	2	2
S11	Longuyon-Thionville	10	12
S12	Thionville-Metz	14	15
S13	Metz-Strasbourg	12	15
S14	Strasbourg-Basel	10	12
S15	Lille-Valenciennes	2	2
S16	Valenciennes-Longuyon	1	1
S17	Longuyon-Toul	0	0
S18	Toul-Dijon	3	3
S19	Dijon-Lyon	3	3
S20	Metz-Toul	3	3
S21	Dijon-Ambérieu	1	1
S22	Metz-Longuyon (via Conflans-Jarny)	1	2

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

Timetable 2016

For the second PaP catalogue of RFC 2, for the 2016 timetable, published in January 2015, the Corridor has fixed the following number of PaPs to be published on the following corridor sections:

RFC2 PRE-ARRANGED PATH CATALOGUE 2016 SECTIONS



Map 14: Path section numbering for PaP catalogue 2016

Objective per Corridor Section TT 2016

Path Section Number	Corridor Section	TOTAL	
		NS	SN
S1	Rotterdam-Antwerpen Mariaburg	18	18
S2	Antwerpen Mariaburg-Antwerpen Noord	18	18
S3	Antwerpen Noord-Antwerpen Schijnpoot	18	18
S4	Antwerpen Mariaburg-Antwerpen Schijnpoot	9	9
S5	Antwerpen Noord-Antwerpen W.H.	17	17
S6(a)	Antwerpen W.H.-Kortrijk	16-17	16-17
S6(b)	Kortrijk-Lille	16-17	16-17
S7(a)	Antwerpen Schijnpoot-Namur	13-18	13-18
S7(b)	Namur-Aubange	14-18	14-18
S8	Aubange-Longuyon	9-11	10-11
S9	Aubange-Bettembourg	6-8	6-8
S10	Bettembourg-Thionville	2-4	1-4
S11	Longuyon-Thionville	11-14	12-14
S12	Thionville-Metz	15-18	15-18
S13	Metz-Strasbourg	13-16	13-16
S14	Strasbourg-Basel	11-14	11-14
S15(a)	Lille-Valenciennes	4	4
S15(b)	Valenciennes-Aulnoye	3	3
S16	Aulnoye-Longuyon	3	3
S17	Longuyon-Toul	1	1
S18	Toul-Dijon	4-6	4-6
S19	Dijon-Lyon	3-6	3-6
S20	Metz-Toul	3	3
S21	Dijon-Ambérieu	2	2
S23(a)	Lille-Dunkerque	2	2
S23(b)	Lille-Calais	4	4
S23(c)	Lille-Berguette Isbergues	1	1
S24	Lille-Amiens	1	1
S25	Amiens-Paris	1	1
S26	Lille-Somain	13	13
S27	Somain-Busigny	3	3
S28	Charleroi-Lille	4	4
S29	Namur-Charleroi	3	3
S30	Liège-Namur	2	2
S31	Montzen-Liège	2	2
S32	Charleroi-Aulnoye	1	1
S33	Aulnoye-Busigny	1	1
S34	Busigny-Tergnier	5	5
S35	Tergnier-Paris	1	1

Table 25: number of PaPs per corridor section offered for the PaP catalogue 2016

3.3.4 Objectives short term

Since the 2014 timetable catalogue consisted of paths according to market demand, it was the goal of RFC 2 to extend this offer for the following catalogues with a number of 'additional paths'. These paths are 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 are 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 in December 2014, which connects the two main areas of the Port of Antwerp, creates a significant amount of extra capacity.

This tunnel, which runs under the river Scheldt was 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 from the end of 2014, trains are 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 TT 2013	Catalogue TT 2014	Catalogue TT 2015	Objective catalogue TT 2016 to 2018	Objective catalogue TT 2020
Antwerp - Bettembourg	343,7	NS	61,7	59,4	61,0	60*	62*
		SN	59,8	60,0	62,1	60*	62*
Antwerp - Basel	737,6	NS	55,5	57,8	54,0	54*	58
		SN	56,9	53,8	54,8	54*	58
Antwerp - Lille	152,8	NS	50,9	57,7	67,9	60*	65*
		SN	49,0	47,8	64,6	60*	65*
Rotterdam - Antwerp	74,3	NS	55,7	60,2	71,9	65*	70*
		SN	51,2	57,2	70,8	65*	70*
Aubange - Basel	425,9	NS	54,8	41,3	48,4	48*	58
		SN	48,3	48,6	48,6	48*	58
Thionville - Lyon	497,16	NS	N/A	N/A	57,4	58**	60**
		SN	N/A	N/A	60,4	58**	60**
Dunkerque - Liège	311,1	NS	N/A	N/A	N/A	54**	58**
		SN	N/A	N/A	N/A	54**	58**
Paris - Somain	275,5	NS	N/A	N/A	N/A	54**	58**
		SN	N/A	N/A	N/A	54**	58**

* Objective increased compared to last year
** New objective

Table 25: objective of average journey time on the main 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 is 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:
 - o X-11 till X-8: 30 % of PaPs offered (in km per year). The length of the Corridor sections can be found in annex 5.
 - o X-8 (-1 day) till X-2: 10% of the PaPs offered at X-7.5 (in km per year).
- For the rest of the Corridor:
 - o X-11 till X-8: 15 % of PaPs offered (in kms per year).
 - o X-8 (-1 day) till X-2: 5% of the capacity offered at X-7.5 (in km per year).

KPI 7: Allocated pre-arranged paths

The number of pre-arranged paths which are allocated by the C-OSS is 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 wants to provide Reserve Capacity of at least 10% of the capacity provided in the yearly timetable PaP Catalogue (in kms). To be able to calculate this, the lengths of the Corridor sections have been fixed, and can be found in annex 5.

KPI 9: Allocated Reserve Capacity

RFC 2 objective = 75% of the requests for Reserve Capacity.

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.

This investment plan has been drawn from four categories:

- The deployment of ERTMS to encourage interoperability and to avoid as quick as possible the multiple on board control command systems for operators.
- The improvement of the loading gauge to support the growth of the market share of combined transport with the carriage of P400 semi-trailers.
- The bottlenecks relief to facilitate the traffic in railway nodes experiencing capacity problems.
- Increase train length up to 700m (without loco) to standardise this technical characteristic on all the sections of the corridor.

4.1.2 List of projects

In total, RFC 2 identified 74 projects or programs which may go live in a 10 year time horizon for a total cost of approximately 6.5 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. This matter falls within the remit of the Member States, in accordance with the principle of subsidiarity. 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 - border BE	ERTMS Deployment	Interoperability	2016		Technical study		ERTMS deployment - Starting date is indicative

INDICATIVE LIST OF RFC 2 PROJECTS IN BELGIUM (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
ANTW - AUB - BETT	ICAT-MAX (catenary enhancement)	Others	Capacity improvement	2013	2015	Works phase	3,60	
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	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	Railway sections from Antw to Lux border	ERTMS Deployment	Interoperability	2014	2020	Works phase	383.3	RFC2 principal lines + extensions 2015 (timetable 2016) without the common sections with RFC1
ANTW - AUB - BETT	Antwerp - 2nd railway access	Creation of new structure (line, tunnel, bridge, leapfrog)	Capacity improvement			Preliminary study		
ANTW - AUB - BETT	Port d'Anvers: Rive droite	Creation of siding, passing tracks, extra tracks	Capacity improvement	2020	2023	Technical study	14,80	35,7 for time period 2005-2023

INDICATIVE LIST OF RFC 2 PROJECTS IN BELGIUM (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
ANTW - AUB- BETT	Port d'Anvers: Rive gauche	Creation of siding, passing tracks, extra tracks	Capacity improvement	2017	2025	Technical study	36,20	146,4 for time period 2005 - 2025
ANTW - AUB- BETT	EuroCapRail: modernisation de l'axe Bruxelles - Luxembourg (Axe 3 Modernisation + Axe 3 Electrification 25kV)	Track enhancement	Capacity improvement	2005	2021	Technical study	640.9	Total cost of the project (since 2005)
ANTW - LIL	Port de Gand: extensions diverses	Creation of siding, passing tracks, extra tracks	Capacity improvement	2019	2025	Technical study	1,50	14,9 for time period 2005-2025
ANTW - LIL	Railway sections from Antw to Mouscron border point	ERTMS Deployment	Interoperability	2014	2020	Preliminary study		RFC2 principal lines + extensions 2015 (timetable 2016) without the common sections with RFC1 Total amount for all belgian sections of RFC2 383.3M€
DK - LIEGE	L130 – Namur-Charleroi – Augmentation de vitesse	Track enhancement	Capacity improvement	2008	2015	Works Phase	53,30	Total cost of the project (since 2008)
DK - LIEGE	Extensions TT2016 - Erquelinnes - Auvelais + Namur - Montzen + Charleroi - Baissieux (L94 -96/2 - 96 - 96/1 - 117 124A)	ERTMS Deployment	Interoperability		2022			RFC2 principal lines + extensions 2015 (timetable 2016) without the common sections with RFC1 Total amount for all belgian sections of RFC2 383.3M€
ROTT - ANTW	L12: Antwerpen - Essen	ERTMS Deployment	Interoperability	2017	2018	Preliminary study		Starting dates are indicative - RFC2 principal lines + extensions 2015 (timetable 2016) without the common sections with RFC1 Total amount for all belgian sections of RFC2 383.3M€

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
ANTW - LIL	Tourcoing	Renew al of tunnel, bridge, etc.	Maintenance of performance	2015	2015	Approved and financed (but works have not started yet)	7,70	Rail bridge Industrial Estate of the Union in Tourcoing. Total closure of the tracks (2 months)
ANTW - LIL	Railw ay sections from Lille to Tourcoing border point	Renew al of signalling system	Maintenance of performance		<2020	Preliminary study	12,00	Signalling system: national renew al program
ANTW - LIL	Railw ay sections from Lille to Tourcoing border point	Renew al of tracks	Capacity improvement	2013	2017	Approved and financed (but works have not started yet)	20,00	
DK - LIEGE	Hazebrouck Station	Renew al of tracks	Maintenance of performance	2016	2016	Approved and financed (but works have not started yet)	4,10	
DK - LIEGE	Calais	Track enhancement	Capacity improvement	2015	2020	Technical study	53,00	Rail access to the port of Calais
LIL - LONG	Béthune Station	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2017	<2020	Technical study	5,00	
LIL - LONG	Hazebrouck Station	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2016	<2020	Technical study	20,00	
LIL - LONG	Railw ay sections from Lille to Longuyon	Renew al of signalling system	Maintenance of performance	2011	<2025	preliminary study	20,00	Signalling system: national renew al program
LIL - LONG	NIFT	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2013	2015	Works phase	100,00	
LIL - LONG	Armentières Lestrem and Somain Louches Cambrai	Signalling enhancement	Capacity improvement	2012	2016	Technical study	100,00	Terminal access enhancement and TCC enhancement
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	Tourcoing - Lille - Longuyon	ERTMS Deployment	Interoperability			Preliminary study	100,00	ERTMS deployment

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
LIL - LONG	Railway sections from Lille to Longuyon	Renewal of tracks	Capacity improvement	2013	2017	Approved and financed (but works have not started yet)	140,92	
LIL - LONG	Lille Valenciennes	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2015	2025	Preliminary study	200,00	Studies 2015-2020 - Works 2020-2025 (between 100 and 300M€)
LIL - LONG	Calais-Rémilly	Adjustment of gauge	Capacity improvement	2013	2015	Preliminary study		Study on gauge enhancement to allow P400 gauge trains
LIL - LONG	Corridor Lines in North Region	Adjustment of gauge	Capacity improvement	2016	<2020	Preliminary study		
LIL - LONG	Lens Station	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2016	<2020	Technical study		
LIL - PARIS	Cambrai - Tergnier	Track enhancement	Capacity improvement	2016	2016	Approved and financed (but works have not started yet)	7,50	Renewal of switches and both sides running tracks installations
LIL - PARIS	Etudes GPMR réseau structurant IdF	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2015	2020	Preliminary study	10,00	Bottleneck relief in the stations of Paris (except Gare de Lyon) and in their yards
LIL - PARIS	Lille - Lens	Renewal of signalling system	Maintenance of performance	2015	2015	Approved and financed (but works have not started yet)	16,70	Renewal of the signal box of Haubourdin station
LIL - PARIS	Creil - Orry la Ville - St Denis	Renewal of tracks	Maintenance of performance	2016	2016	Approved and financed (but works have not started yet)	20,90	Renewal of switches in these 3 stations
LIL - PARIS	Lille - Lens and Phalempin - Fives	Renewal of tracks	Maintenance of performance	2016	2016	Approved and financed (but works have not started yet)	30,30	
LIL - PARIS	Chantilly - Gannes and Jaux - Ribécourt	Renewal of tracks	Maintenance of performance	2015	2015	Approved and financed (but works have not started yet)	67,10	Total closure and timetable changes
LIL - PARIS	Roissy-Picardie	Creation of new structure (line, tunnel, bridge, leapfrog)	Capacity improvement	2015	2020	Technical study	300,00	New high speed line between CDG Airport and Creil - would free capacity between Creil and Paris Nord

INDICATIVE LIST OF RFC 2 PROJECTS IN FRANCE(3)

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
LIL - PARIS	Gare de Lyon	Creation of siding, passing tracks, extra tracks	Bottleneck relief	2015	2020	Preliminary study		Between 100M€ and 500M€ according to the identified facilities
LIL - PARIS	Lille (Dourges) - Paris	Track enhancement	Capacity improvement	2015	2020	Technical study	63,00	Network improvements for rolling motorways
LUX - LYON	Baudrecourt-Rémilly	Creation of siding, passing tracks, extra tracks	Capacity improvement		<2020	Preliminary study	10,00	Both sides running tracks
LUX - LYON	Pagny - Novéant	Creation of siding, passing tracks, extra tracks	Capacity improvement	2020	2025	preliminary study	40,00	Both sides running tracks
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	2025	Preliminary study	150,00	Both sides running tracks
LUX - LYON	Railway sections from Luxemburgian border to Lyon	ERTMS Deployment	Interoperability	2013	2023	Technical study	250,00	ERTMS deployment - including technical study
LUX - LYON	Railway sections from Luxemburgian border to Lyon	Renewal of signalling system	Maintenance of performance	2011	<2025	preliminary study	500,00	Signalling system: national renewal program
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)	642,96	
LUX - LYON	Longuyon-Thionville and Metz	Electrical systems	Capacity improvement		<2020	Technical study	35,00	Study about the electrical capacity of the network in Lorraine region started in 2013
LUX - LYON	Lyon Node	Others	Bottleneck relief	2013	2020	Technical study	600,00	First treatment of the Lyon Node
LUX - LYON	Metz node	Track enhancement	Capacity improvement		<2020	Technical study	145,00	Metz node upgrade

INDICATIVE LIST OF RFC 2 PROJECTS IN FRANCE(4)

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	Colmar	Creation of siding, passing tracks, extra tracks	Capacity improvement	>2020		Preliminary study	35,00	Creation of a new track in Colmar Station
METZ - BASEL	Railway sections from Metz to Basel	Renewal of signalling system	Maintenance of performance	2011	<2025	preliminary study	50,00	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)	113,88	
METZ - BASEL	Railway sections from Metz to Mulhouse	ERTMS Deployment	Interoperability	2015	2018	Technical study	181,00	ERTMS deployment - including technical study
METZ - BASEL	Strasbourg node including Vendenheim 4th track	Creation of siding, passing tracks, extra tracks	Capacity improvement		<2020	Technical study	120,00	Creation of a 4th track between Strasbourg and Vendenheim
METZ - BASEL	Railway sections from Metz to Mulhouse	Signalling enhancement	Capacity improvement	2020	2022	Preliminary study	200,00	Capacity improvement in Mulhouse, Kibitzenau and Colmar
METZ - BASEL	Réding - Saverne	Adjustment of gauge	Capacity improvement	2013	2015	Preliminary study		Study on gauge enhancement to allow P400 gauge trains
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	Strasbourg	Electrical systems	Capacity improvement		<2020	Preliminary study	30,00	A study on the electrical capacity of the network in Alsace region started in 2012
METZ - BASEL	Strasbourg node	Track enhancement	Capacity improvement	>2020		Preliminary study		2nd phase of the Strasbourg node upgrade
METZ - BASEL	Metz Mulhouse	Others	Capacity improvement			Preliminary study		Feasibility study of a freight route from Metz to Mulhouse without going through Strasbourg

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 and Luxembourg - Bettembourg	Renewal of tracks	Maintenance of performance	2012	2016	Works phase	15,00	Differdange - Belval Usines + Berchem - Bettembourg frontière
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	2015	2020	Technical study	51,00	Modernisation and layout improvement of Differdange station
ANTW - AUB - BETT	Whole network	Others	Interoperability	2010	2016	Works phase	51,10	GSM-R deployment
ANTW - AUB - BETT	Luxembourg - Kleinbettingen	Electrical systems	Interoperability	2014	2017	Works phase	60,80	Re-electrification Luxembourg - Kleinbettingen in 25kV 50Hz
ANTW - AUB - BETT	Luxembourg - Bettembourg	Creation of new structure (line, tunnel, bridge, leapfrog)	Capacity improvement	2015	2020	Technical study	212,80	New line between Luxembourg and Bettembourg
ANTW - AUB - BETT	Luxembourg - Kleinbettingen	Track enhancement	Higher speed			Preliminary study	328,50	Track renewal and upgrade to 160km/h
ANTW - AUB - BETT	Kleinbettingen - Bettembourg	Creation of siding, passing tracks, extra tracks	Capacity improvement	2013	2023	Works phase	416,50	Layout improvement in Luxembourg station Incl signal boxes
ANTW - AUB - BETT	Rodange/Kleinbettingen - Bettembourg	Creation of siding, passing tracks, extra tracks	Capacity improvement	2013	2022	Works phase	507,40	Modernisation and layout improvement of Bettembourg station Incl signal boxes
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	St Louis - Basel	ERTMS Deployment	Interoperability	2015	2015	Works phase	2	2nd half of the ERTMS deployment

Table 26: indicative list of RFC 2 projects

In total, RFC 2 also identified 10 projects or programs which achieved since 2013 for a total cost of approximately 540 million euros. The table below provide the complete list of these projects. For ERTMS projects, please refer to the ERTMS deployment plan map (§ 4.2.3)

INDICATIVE LIST OF RFC 2 PROJECTS ACHIEVED SINCE 2013								
Route	Railway section	Nature of Projects	Benefits for Corridor 2	Start date of the works	End date of the works	Put on operation	Cost estimation in M€2012	Comments
ANTW - AUB - BETT	Antwerp - Liefkenshoek Rail Link (excluding PPP financing)	Creation of new structure (line, tunnel, bridge, leapfrog)	Bottleneck relief	2005	2014	TT2015	170,5	Liefkenshoek Rail Link operational 14/12/2014
ANTW - AUB - BETT	Antwerp - Luxembourg	ERTMS Deployment	Interoperability	2010	2014	TT2015		Athus-Meuse route and other routes equipped see ETCS deployment plan
METZ - BASEL	St Louis - Basel	ERTMS Deployment	Interoperability	2014	2014	TT2016	2	1st half of the ERTMS deployment - operational foreseen for TT2016
ALL	All French sections	Renewal of signalling system	Maintenance of performance	2012	2014	2014	50	46 projects achieved by the end of 2014 on signalling system: national renewal program security systems
LIL - LONG	1 program of 2 Level crossings	Level crossings	Safety / Security	2013	2014	2014	2	Level crossings in Beuvry and Raismes
LUX - LYON	1 program of 6 Level crossings	Level crossings	Safety / Security	2013	2014	2014	25	Level crossings in Bourg en Bresse, Tossiat, Brétigny-Norges, Ruffey les Echirey, Neufchâteau, Villegusien
METZ - BASEL	1 program of 3 Level crossings	Level crossings	Safety / Security		2013	2013	25	Level crossing in Laneuville, Blesmes and Fain
ALL	All French sections	Renewal of tracks	Maintenance of performance	2012	2013	TT2014	122,24	Part of the renewal program of tracks that has been achieved for TT2014 - 22 projects achieved
METZ - BASEL	Vendenheim node	Others	Bottleneck relief	2012	2013	2014	100	Modification of tracks (3rd track), TCC renewal
ANTW - AUB - BETT	Luxembourg - Kleinbettingen	ERTMS Deployment	Interoperability	2012	2014	TT2015	43,5	New CCS incl. Signal boxes and ETCS (1,5 M€ for ETCS and 42 M€ for the rest of the investments)
							540,24	

We also identified 8 corridor routes to present these investments projects.

	Total number of works sites / programs	Total costs per axis
Antwerpen - Athus - Bettembourg	20	1939
Antwerpen - Lille	5	41
Athus/Bettembourg - Lyon	10	2433
Lille - Longuyon	12	786
Metz - Basel	12	732
Rotterdam - Antwerpen	2	No costs estimation
Dunkerque - Liège	4	110
Lille - Paris	9	516
TOTAL	74	6557

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

Further details are given for the following routes.

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 works sites / programs
ALL	All French regions - renewal of safety systems (Signalling) - 23 national programs		1
Costs	50	50	

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	ERTMS deployment	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 signalling system	ERTMS deployment	Total costs per axis	Total number of works sites / programs
ANTW - LIL	1 program in FR	1 program in FR	1 program in BE		3
Costs	20	12	No cost estimation	32	

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 signalling system	Electrification	Creation of siding, passing tracks, extra tracks	ERTMS deployment	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	1 program in FR	1 program in FR		9
Costs	720	500		260	250	25	1755	

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 signalling system	Creation of siding, passing tracks, extra tracks	Adjustment of gauge	Signalling enhancement (ERTMS...)	ERTMS deployment	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	1 program in FR	1 program in FR		13
Costs	150	20	425	No cost estimation	100	100	2	797	

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 signalling system	Electrification	Creation of siding, passing tracks, extra tracks	Adjustment of gauge	Signalling enhancement	ERTMS deployment	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	4 works sites in FR	1 program in FR	1 program in FR	2 programs (1 in CH and 1 in FR)	1 program in FR	2 works sites in FR		14
Costs	150	50		285		200	154	25	100	964	

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

Route N°7: Rotterdam Antwerp



Map 20: Rotterdam - Antwerp route

101 KM	ERTMS deployment	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 projects	Costs per nature of investment in M€	%
Renewal of tracks	1.055	18%
Renewal of signalling system	632	11%
Renewal of tunnel, bridge, etc.	-	0%
Electrification	65	1%
Creation of siding, passing tracks, extra tracks	1.851	32%
Creation of new structure (line, tunnel, bridge, leapfrog)	787	13%
Adjustment of gauge	-	0%
Signalling enhancement	300	5%
ERTMS deployment	644	11%
Track enhancement	329	6%
Level Crossings	52	1%
Noise reduction	-	0%
Others	155	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	612	10%
Safety / Security	52	1%
Environment	-	0%
Higher speed	329	6%
Interoperability	760	13%
Punctuality improvement	-	0%
Maintenance of performance	647	11%
Capacity improvement	3.470	59%

Table 36: benefits of investment projects/programs

4.1.5 Breakdown per country

Costs in France in M€		Funder 1	Funder 2	Funder 3
Renewal of tracks	1040	IM		
Renewal of signalling system	632	IM		
Renewal of tunnel, bridge, etc.	0			
Electrification	0	Local Govt	IM	
Creation of siding, passing tracks, extra tracks	970	State	Local Govt	IM
Creation of new structure (line, tunnel, bridge, leapfrog)	0			
Adjustment of gauge	0	EU	State	IM
Signalling enhancement	300	State	IM	
ERTMS deployment	500	EU	State	IM
Track enhancement	0			
Level Crossings	52	State	Local Govt	IM
Noise reduction	0			
Others	100	State	Local Govt	IM
Total	3594			

Costs in Belgium in M€		Funder 1	Funder 2	Funder 3
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	State		
Creation of new structure (line, tunnel, bridge, leapfrog)	87	State		
Adjustment of gauge	0			
Signalling enhancement	0			
ERTMS deployment	97	EU	State	
Track enhancement	0			
Level Crossings	0			
Noise reduction	0			
Others	4	State		
Total	399			

Costs in Luxembourg in M€		Funder 1	Funder 2	Funder 3
Renewal of tracks	15	State		
Renewal of signalling system	0			
Renewal of tunnel, bridge, etc.	0			
Electrification	65	State		
Creation of siding, passing tracks, extra tracks	669	State		
Creation of new structure (line, tunnel, bridge, leapfrog)	700	State		
Adjustment of gauge	0			
Signalling enhancement	0			
ERTMS deployment	44	EU	State	
Track enhancement	329	State		
Level Crossings	0			
Noise reduction	0			
Others	51	State		
Total	1872			

Costs in the Netherlands in M€		Funder 1	Funder 2	Funder 3
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	0			
ERTMS deployment	0	EU	State	IM
Track enhancement	0			
Level Crossings	0			
Noise reduction	0			
Others	0			
Total	0			

Costs Switzerland in M€		Funder 1	Funder 2	Funder 3
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	0			
ERTMS deployment	4	State	IM	
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 work	%
2010	1%
2011	16%
2012	12%
2013	48%
2014	2%
2015	0%
2016	1%
2017	0%
2018	1%
2019	5%
2020	14%
2021	0%
2022	1%

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

4.2 Deployment plan relating to interoperable systems

RFC 2 already complies with most of the interoperability criteria defined in Directive 2008/57/EC. To comply with the control command and signalling 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 extended and renamed RFC 2. The creation of ERTMS corridors was itself confirmed by the obligations set by the TSI CCS (Control Command Signalling).¹⁰ In accordance with these obligations, each Member State of the corridor has notified to the European Commission the detailed timeline for equipping their corridor sections with ERTMS and/or the corridor sections already equipped. On the one hand following a positive discussion with the European Commission, and on the other hand following an agreement amongst the Member States involved in the corridor to prioritise the section from Rotterdam and Antwerp to Basel, the timeline for the deployment has been updated and is presented on the map in chapter 4.2.3.

The TSI 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.

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

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.

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 be 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.

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.

4.2.2 Compulsory systems and deactivation of national legacy systems

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

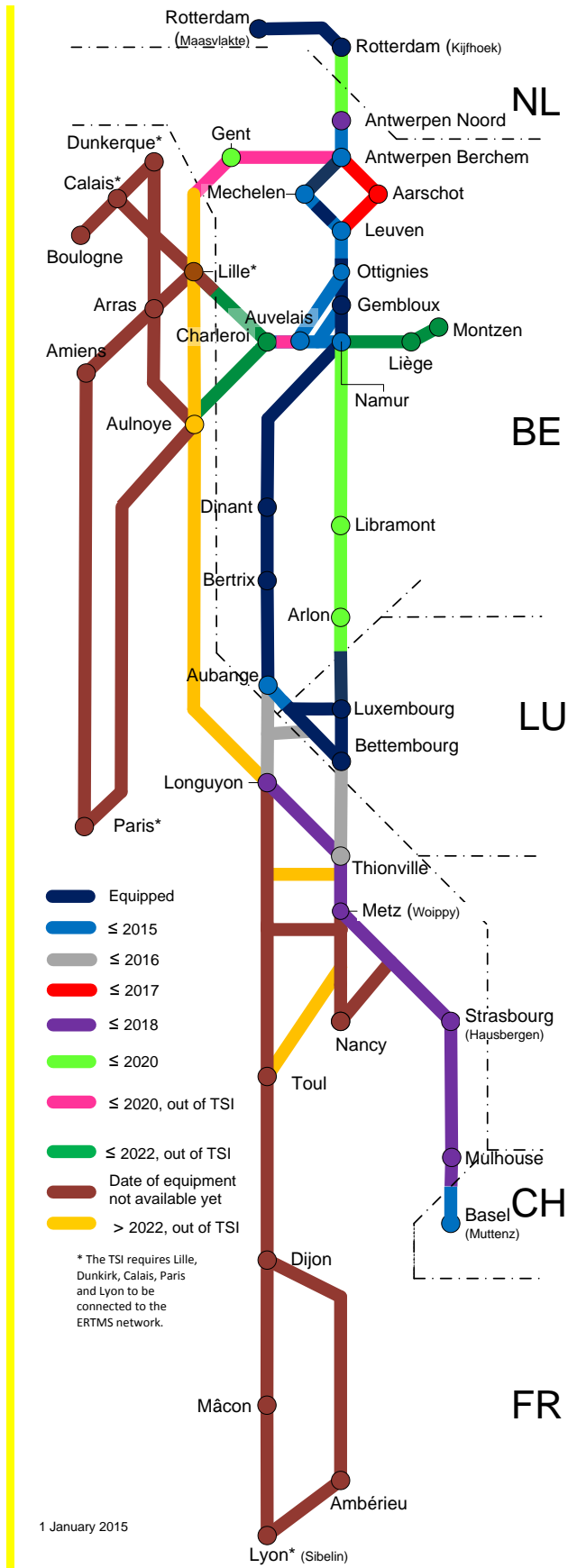
- **In the Netherlands**, from 15 December 2014, ETCS Baseline 2 (version 2.3.0d), level 1 or 2 and ATB will be compulsory to run on the corridor lines (no deactivation of the national legacy system);
- **In Belgium**, the complete network is expected to be equipped by 2022. In 2025, ETCS is very likely to 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, allowing only trains equipped with ETCS Level 1 (minimum Baseline 2) or TBL1+ to run on these tracks;

- **In Luxembourg**, trains will have to be equipped with ETCS Baseline 2 (version 2.3.0d), level 1 or 2 from 2017 onwards;
- **In France**, a reflection is under way regarding the deactivation of national legacy system;
- **In Switzerland**, all new vehicles purchased after July 1st 2014 will have to be equipped with ETCS Baseline 3 or be easily adaptable to ETCS as from 2017. They will still also have to be equipped with KVB if they come from France.

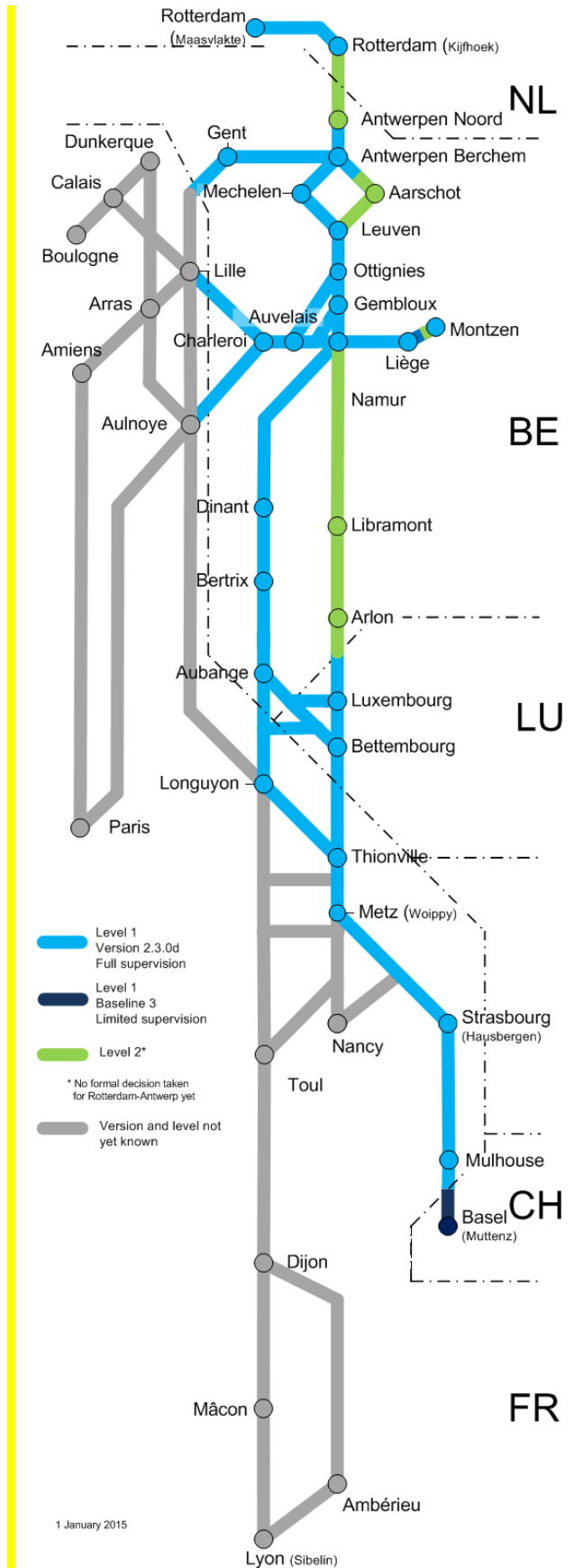
4.2.3 ERTMS deployment plan

The planning of ETCS deployment along the current corridor lines and the nature of the ETCS deployment system are described in the following maps¹¹:

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



Map 21: Timing of the ETCS deployment along the corridor lines



Map 22: nature of the ETCS deployment system along the corridor lines

4.2.4 Cost Benefit Analysis

4.2.4.1 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-/Basel routes, is approximately 370 k€ 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).

4.2.4.2 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. It is very likely that ETCS will become 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.

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 leaves from the fan of sidings Zuid in the Waasland harbour on the left bank and goes underground under the Waasland canal, the River Scheldt and the Kanaal dock to end up at the right bank, where it connects 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 provides a shorter and direct link between the railway installations on the left bank and the marshalling yard in 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 built 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 has become operational in December 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:

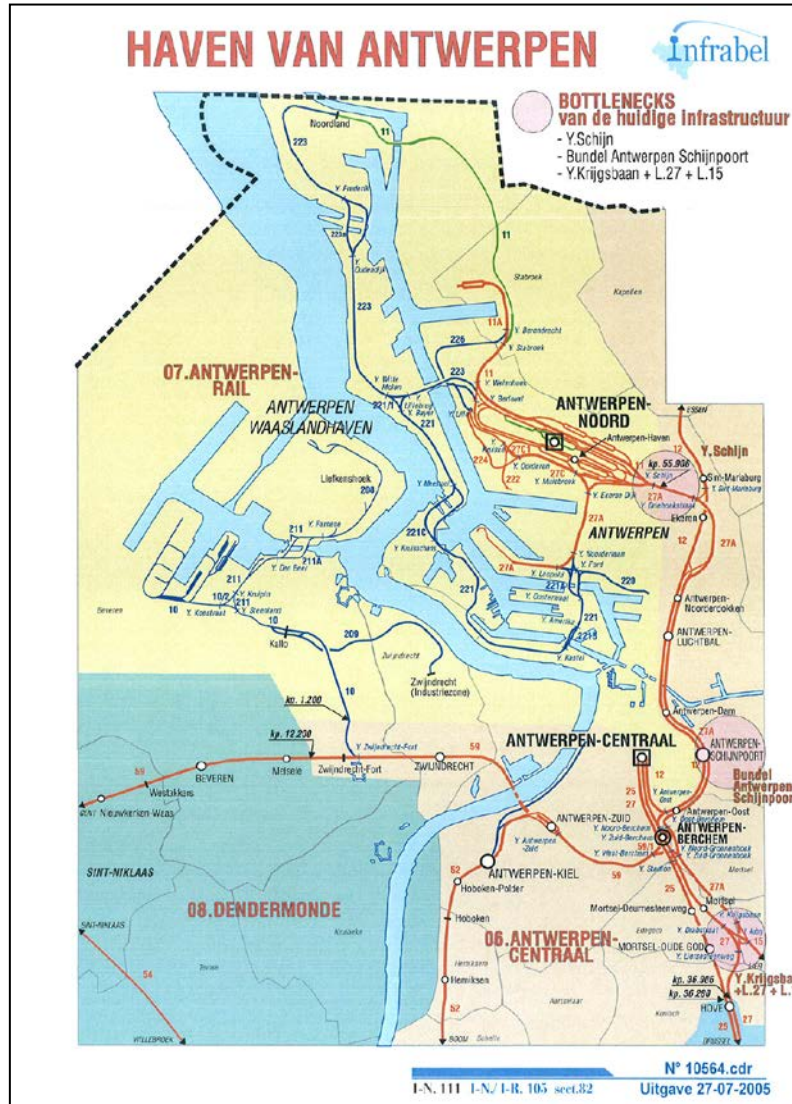
2015:	363 (both directions)
2020:	386 (both directions)
2025:	409 (both directions)
2030:	444 (both directions).

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.



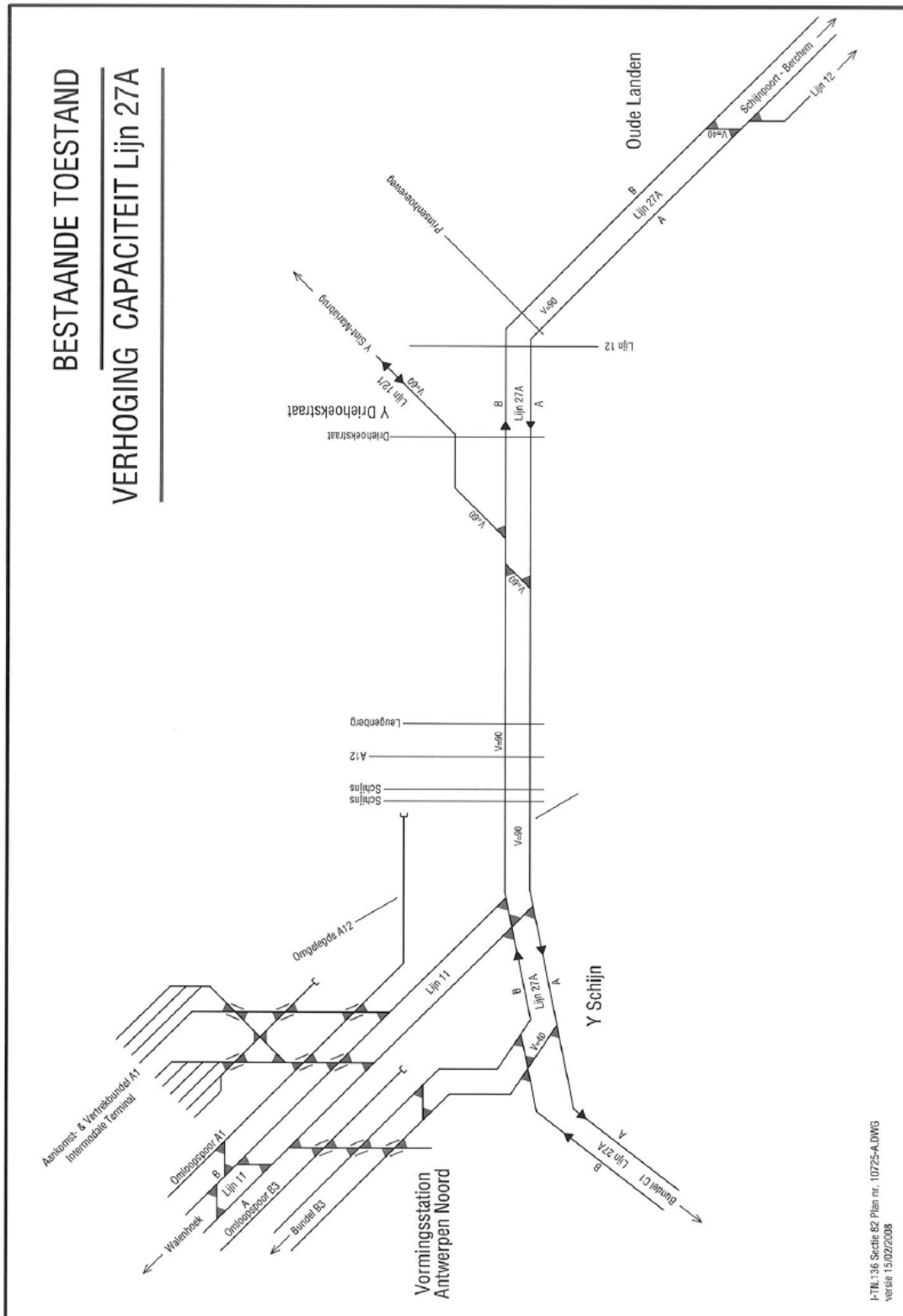
Map 23: Port of Antwerp¹²

¹² Translation in English of legend of the map :

“Bottlenecks on the current infrastructure:

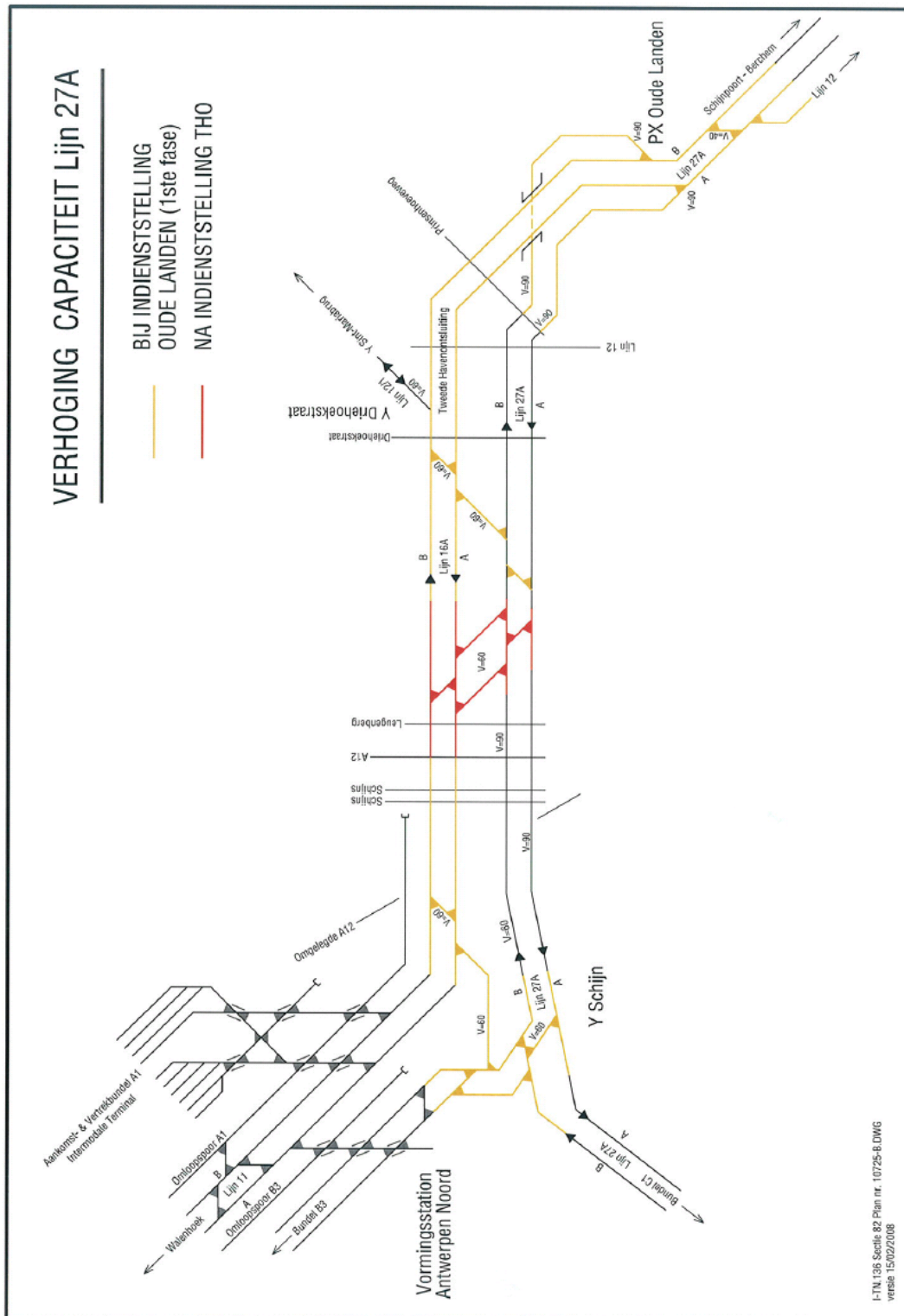
- Y Schijn (junction)
- Fan of sidings Antwerpen-Schijnpoort
- Y Krijgsbaan (junction) + L27 + L15”

Current situation
Capacity enhancement Line 27A



Capacity enhancement Line 27A

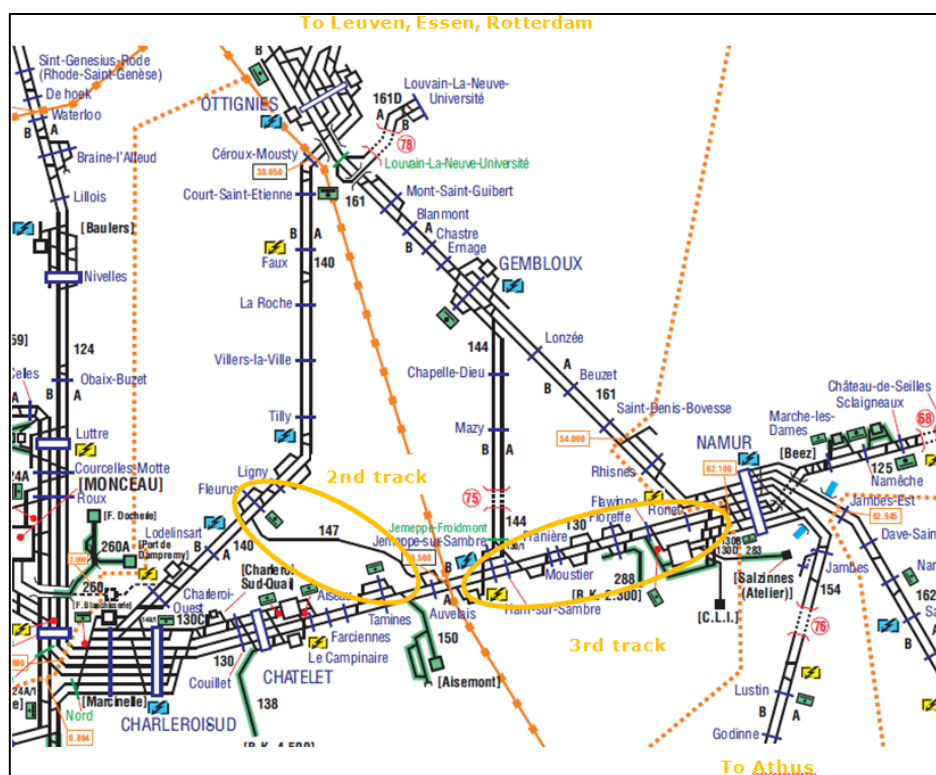
- After putting into service of the project Oude Landen (1st phase)
- After putting into service second access to the port



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

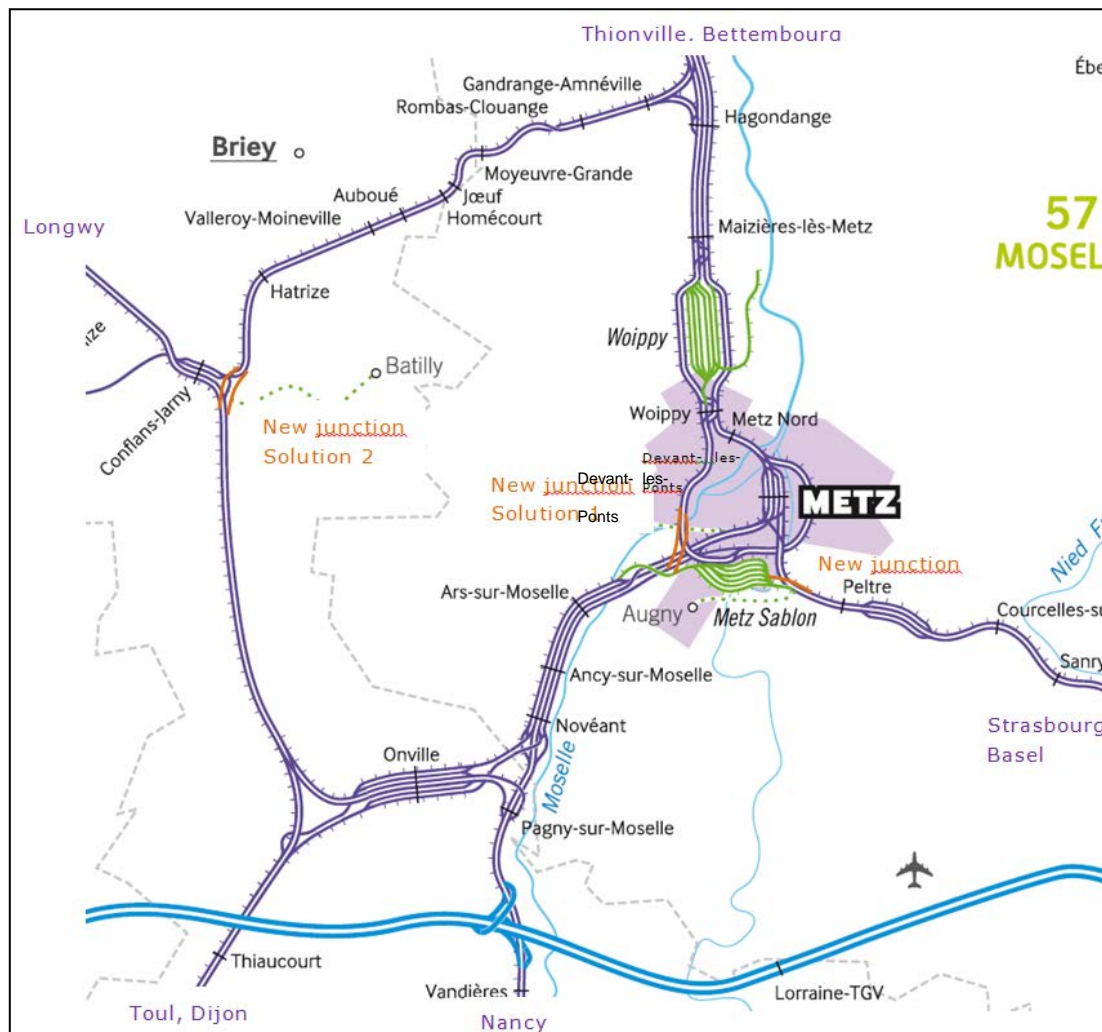
In Luxembourg, the main project concerns the renewal of the Bettembourg central signalling centre, combined with an improvement of the track layout and the building of a new line between Luxembourg and Bettembourg. It will offer the possibility to increase reliability and capacity, improving the access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



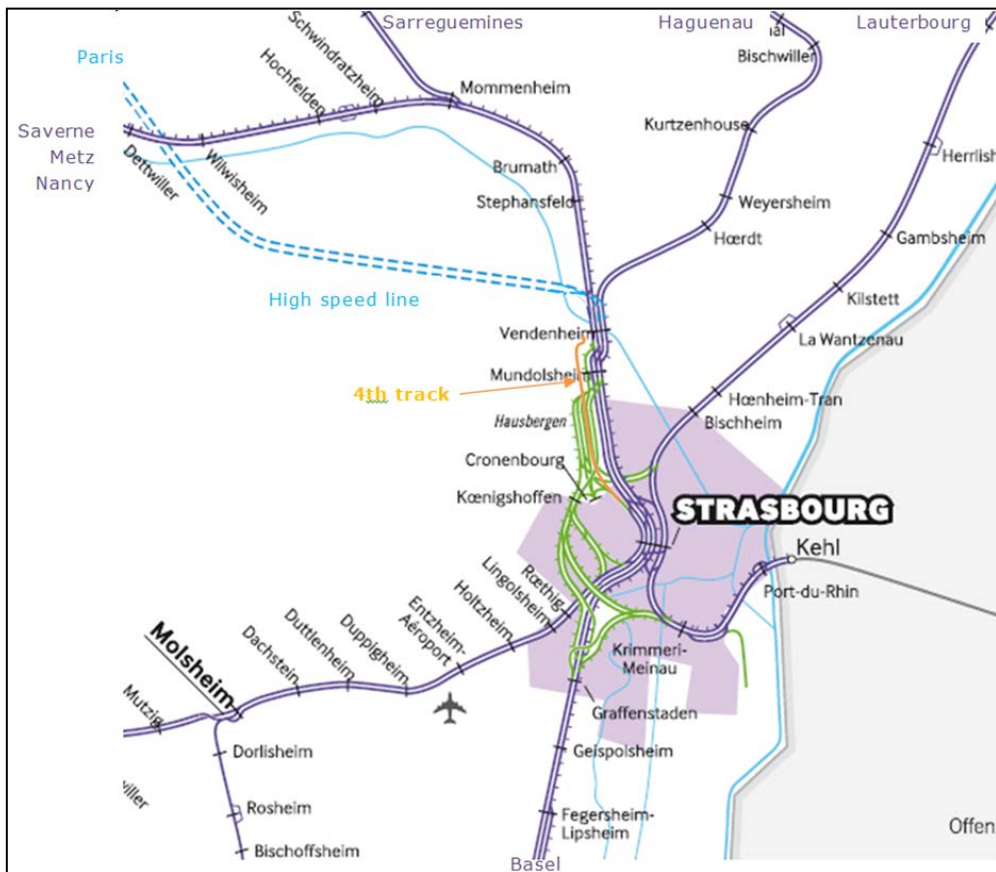
Map 27: New junctions to increase the Metz node capacity

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

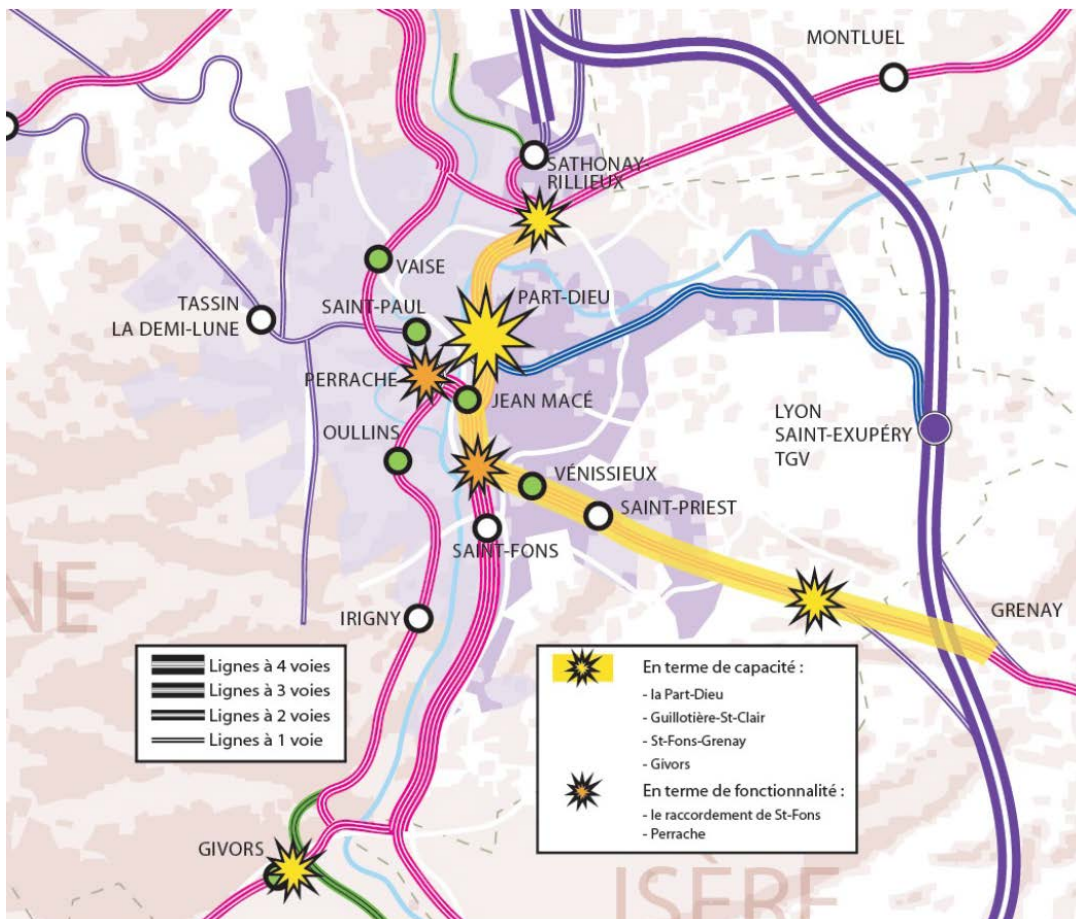
In order to allow freight trains to and from the ports of Dunkirk and Calais during rush hours, a junction has been built in Arras for these trains to take the Lens-Arras-Valenciennes route instead of going through the Lille node. As the Valenciennes-Maubeuge section is also circulated by regional trains 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 Railway Node (NFL)

The project of the Lyon Railway Node (NFL) follows the mission entrusted to the Ministry of Transport in 2009 (report Marie-Line Meaux 2011). This project is to design and implement the most adapted solutions to the capacity issues of the Lyon Railway Node at different timelines: short, medium and long term. This project - or rather "program" - assembles and structures analysis on operations, targeted investments and a "major project" on the long term. In this context, it is necessary to "shake things up" because the program covers various rail activities and articulates different levels of use of the network. It must take into account for the different timelines, projects that have their own dynamics, on a local, regional or national level. However, each project will be individually submitted to the decision process on investments by RFF.

The project is based on the decision of 25 February 2013 from the Ministry of Transport, whose guidelines are:

- > Report from the ministry in late 2011 on the NFL and the Saint-Fons – Grenay line;
- > Part-Dieu Station will be the main hub;
- > Special attention to be given to the management of passenger flows (station and platforms);
- > Short term plan and medium term plan to be defined (heart of the node and the Saint-Fons – Grenay line)
- > Additional studies needed for the definition of a long-term scenario;
- > Results of studies and consultation in 2014
- > Governance framework of the studies: appointment of a coordinator from the ministry and set up of a steering committee of major partners
- > Decision process on investments by RFF.



4.3.1.9 Paris area

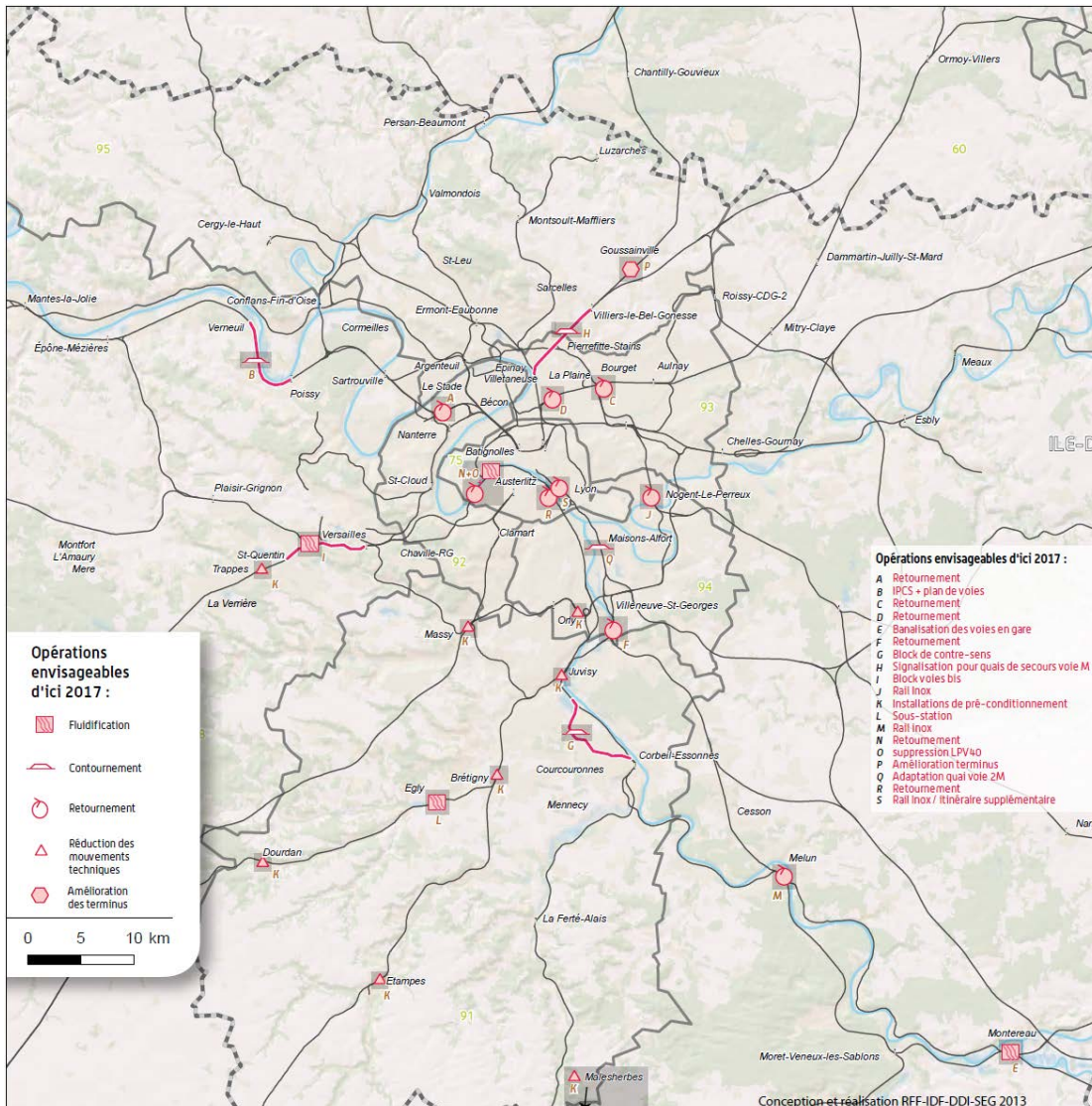
The railway system in the Great Paris Area accounts for 40% of the total national train runs on 10% of the network and provides a dual service.

> The urban service under public steering contracted with the local government (STIF) : Transilien represents 70% of the trains in the Paris area (or in number 6200 trains 7500 trains / day).

> Ile-de-France is at the heart of the national network: large stations (six stations in Paris and three high speed railway stations for interconnection) represent, in volume, a quarter of domestic passengers in French train stations, and 1.3 M train departures per year. Add also a daily traffic of 250 freight trains.

The infrastructure, which has not been designed to meet the current demand, is under excessive pressure. The ambition of the infrastructure manager is based on three lines of force for the enhancement of the network in the Ile-de-France region:

- > Improve punctuality during peak hours;
- > Network development must be based on simplification, release and filling;
- > A new economic and industrial model must be developed for a sustainable performance.



4.3.1.10 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 trains 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 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 (EU) 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.

RNE published on November 14th 2013 the “Guidelines for Coordination/Publication of Works and Possessions” following its approval by the RNE General Assembly.

These guidelines address Article 12 “Coordination of works” of Regulation (EU) 913/2010. They provide a framework for Rail Freight Corridor organisations, covering the process of coordination and publication of activities performed on the infrastructure that reduce the available capacity offered by RFCs.

RFC2 decided to adopt these guidelines as a basis for its own process of coordination for work possessions

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 website¹³.

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

¹³ 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”).

At the end of 2014 RNE decided to update the “Guidelines for Coordination/Publication of Works and Possessions” and to extend their scope not only beyond RFCs sections to all rail sections.

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.

RFC 2 also actively participates to the C-OSS community WG, in which the C-OSSs of most RFCs are represented, where best practices are shared and the harmonisation of rules and procedures is improved. This WG has started its works beginning of 2014, and close cooperation with RNE is ensured at all time.

Moreover, the Executive board of RFC 2 has agreed on a new Framework for capacity allocation, applicable from timetable 2016. More details can be found in Book IV of the CID or in annex 3.

5.2.2 Tasks

In the Regulation (EU) 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 is performed by the Corridor Permanent Team. To ensure continuity in time of absence of one or more permanent team members, one member is appointed as C-OSS leader, namely Thomas Vanbeveren, previously Corridor Manager for RNE Corridor 5 and Corridor C Quality and Capacity manager.

5.2.4 Procedures/Timeline

The C-OSS is not only be responsible for the allocation decision of the PaPs, it 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	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).
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 pre-arranged paths provided by the IMs/ABs and identification among them of the designated Network PaPs
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 39: 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 are explained more into detail in the Corridor Information Document Book IV.

5.2.5 Contact details

	oss@rfc2.eu
	+ 32 2 432 28 08
	+ 32 492 91 49 76
	RFC 2 C-OSS Fonsnylaan 13 B-1060 Brussels BELGIUM
	Office business hours (except on Belgian bank holidays*)

**bank holidays are given in the relevant CID, book I*

Chart 6: RFC 2 C-OSS details

5.3 Capacity Allocation

5.3.1 Framework

The Executive board of RFC 2 agreed on a revised framework¹⁴ for the allocation of PaPs on RFC 2. This document was signed by all concerned ministers of transport representatives on the 11th of December, 2014.

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
- 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 more into detail in Book 4 of the Corridor Information Document. These rules are summarised as such:

If no “Network PaP” is involved in the conflicting requests

L^{PAP} = Total requested length of all PaP sections on all involved RFCs

$L^{F/O}$ = Total requested length of the feeder/outflow path(s); for the sake of practicality, is assumed to be the distance as the crow flies.

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

K = The rate for priority

All lengths are counted in kilometres.

The priority is calculated according to this formula:

$$K = (L^{PAP} + L^{F/O}) \times Y^{RD}$$

The method of applying this formula is:

in a first step the priority value (K) is calculated using only the 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 priority value (K) is calculated using the total length of the complete paths ($L^{PAP} + L^{F/O}$) multiplied by the number of requested running days (Y^{RD}) in order to separate the requests;*

¹⁴ http://www.rfc2.eu/sites/rfc2.eu/files/rff/141211_decision_fca_nsm_corridor_en.pdf

- if the requests cannot be separated in this way, a random selection is used to separate the requests. This random selection shall be defined in the Corridor Information Document.

If a “Network PaP” is involved in at least one of the conflicting requests:

- If the conflict is not on a “Network PaP”, the priority rule described above applies
- If the conflict is on a “Network PaP”, the priority is calculated according to the following formula:

$$K = (L^{NetPAP} + L^{Other\ PaP} + L^{F/O}) \times Y^{RD}$$

K = Priority value

L^{NetPAP} = Total requested length (in kilometres) of the PaP defined as “Network PaP” on either RFC

$L^{Other\ PaP}$ = Total requested length (in kilometres) of the PaP (not defined as “Network PaP”) on either RFC

$L^{F/O}$ = Total requested length of the feeder/outflow path(s); for the sake of practicality, is assumed to be the distance as the crow flies.

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

The method of applying this formula is:

- in a first step the priority value (K) is calculated using only the total requested length of the “Network PaP” (L^{NetPAP}) multiplied by the Number of requested running days (Y^{RD})
- if the requests cannot be separated in this way, the priority value (K) is calculated using the total length of all requested “Network PaP” sections and other PaP sections ($L^{NetPAP} + L^{Other\ PaP}$) multiplied by the Number of requested running days (Y^{RD}) in order to separate the requests
- if the requests cannot be separated in this way, the priority value (K) is calculated using the total length of the complete paths ($L^{NetPAP} + L^{Other\ PaP} + L^{F/O}$) multiplied by the Number of requested running days (Y^{RD}) in order to separate the requests

if the requests cannot be separated in this way, a random selection is used to separate the requests. This random selection shall be defined in the Corridor Information Document.

5.4 Applicants

According to Article 15 of the Regulation an 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 applicant which is not a railway undertaking shall appoint to the IM/AB in conformity with the national conditions, the designated railway undertaking(s) which will use the train path/reserve capacity on behalf of the applicant. It also has to sign the “General Terms and Conditions for requesting international freight paths through the

Rail Freight Corridor 2 (RFC2) one-stop shop” of the C-OSS, at the latest before placing the request

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 – describes the rights and obligations of applicants vis-à-vis C-OSS, in particular where no railway undertaking has been assigned yet.

5.5 Traffic Management

RFC2 participated in the activities of an RNE traffic management working group dedicated to the implementation of article 16 and 17 of Regulation (EU) 913/2010. This working group looked at the means to fulfil the requirements of Regulation (EU) 913/2010 and the extent to which the already existing traffic management rules and procedures applied in the different networks could be aligned. It concluded with the publication of a “Framework for setting up a Freight Corridor Traffic Management System” in August 2014.

In parallel, RFC 2 set up its own working group with traffic management experts from its infrastructure managers with the view to implement the RNE framework on the corridor.

As far as the implementation of article 16 is concerned, all bilateral procedures have recently been written or updated. This refers to procedures at IM level (bi-lateral agreements) and for each border section (operational documents).

All these documents and procedures have been updated based on a UIC leaflets 311 and 471-1. A list of all these documents is expected to be published on the RFC2 website by the end of 2014.

The operational documents to enter a terminal also exist and are available upon request from each IM.

In addition, in many instances including TAG meetings, bilateral meetings and the Ghent Conference of March 2014, RFC2 discussed with maritime ports about the improvement of traffic management procedures within or in the vicinity of the port areas.

Ports expressed ambitious long term objectives for rail market share but said that this would require an improvement of rail competitiveness. They specifically mentioned that

- the first/last mile costs are more expensive than the train run
- their freight volumes are such that bundling is often necessary
- parties involved in traffic management in the ports cannot use contractual relationships to solve problems as three or four categories of parties are often involved in this process.

To address these issues and after consultation of the TAG, RFC2 decided to carry out studies about the improvement of traffic management procedures in some ports or in the vicinity of some ports. To start with, Infrabel and RFF have respectively launched studies on the port of Antwerp and on a marshalling yard (Grande Synthe) that is located at the entrance of the port of Dunkirk.

5.6 Traffic Management in the event of disturbance

RFC2 also worked on the implementation of article 17 of the Regulation about traffic management in the event of disturbances.

It adopted a common target for punctuality (see sections 3.2 “punctuality objectives” and 5.8.3.2 “key performance indicators”).

On top of that, the RFC2 traffic management working group is working on a “guideline for traffic management in the event of disturbance”. The objective of this guideline is to identify IT solutions which in the future will enable IMs to access running advices from other IMs in the domestic systems used by traffic controllers. The ultimate goal is help traffic controller through the provision of an indication of the time of handover at a border section.

In this work, IMs have focused on the following points:

- establishing a state of play of each IM current traffic management system
- listing all short term already planned IT projects for each IM
- sharing information about measures taken by IMs to implement TAF/TAP TSI
- assessing the impact of this implementation on operational business (including on the exchange of information between IMs and RUs).

All RFC2 IMs feed Train Information System (TIS) with data related to the location of the international freight trains that are on their network. These data are available to all IMs and to all RUs.

5.7 Corridor Information Document

5.7.1 Specification

The Management board of 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 is 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 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).

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 is 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 is carried out every year – one for the timetabling year Y and the second for the timetabling year Y-1.

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

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

5.7.3 Corridor Information Document Language

The CID is in English, and a French version may be provided at a later stage.

5.7.4 The preparation process

The CID is 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 carries 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 were sent a questionnaire, previously presented in a TAG meeting and agreed upon by all participants. The terminals were requested to make the answers to this questionnaire available on their websites, and supply the Corridor with the hyperlink to this information. These links are then 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. However, when terminals do not deliver this information, the Corridor may add a link to the website of the terminal, where available.

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 (EU) 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 from 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.

	<p>Act: (improve)</p> <p>Post-processing Normative / actual value comparison</p> <p>Set defaults</p> <p>Identification of problems</p>	<p>Plan: (prepare)</p> <p>Operation Clarify and define improvement topic Define and describe the problem Collecting information Find of causes Formulation of improvements Set of measures</p>
	<p>Check: (evaluate)</p> <p>Analysis Monitoring of results Registration of results Summary of results Visualization of results</p>	<p>Do: (implement)</p> <p>Operation Implementation of the measures Keep deadlines Documentation of measures</p>

Table 45: 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

Cross corridor reporting

If traffic flows on several corridors can be identified, cross-corridor reporting is being considered.

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. Confidentiality 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 checks

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 Performance 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. These numbers are only indicative.

Apart from the TPM WG, pragmatic bilateral working groups can be set-up, with composition depending on subject and/or corridor section, to act on issues raised in the TPM WG. These working groups are led 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:

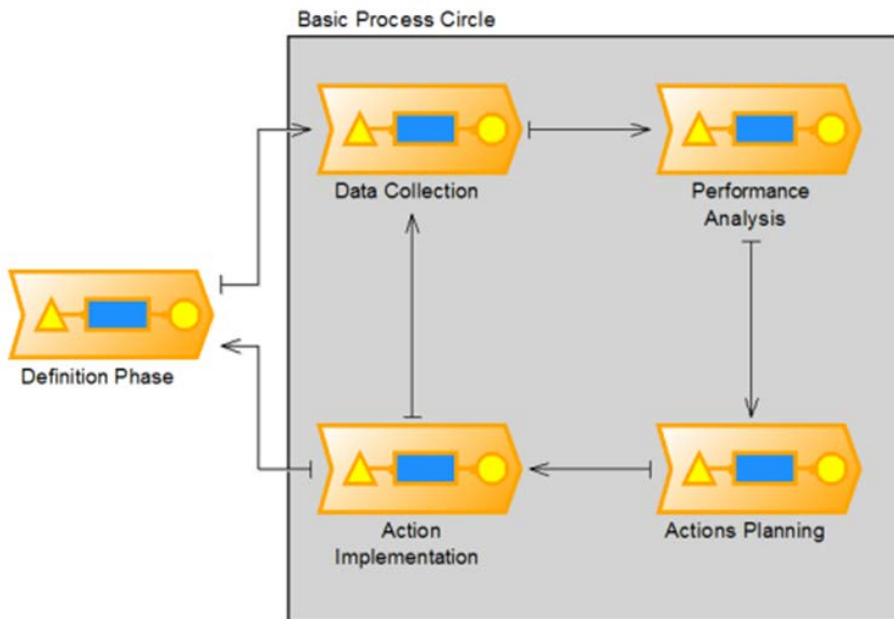


Chart 7: work flow for each part of the TPM-process

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

	Project Leader	Performance Coordinator	IM Performance Manager
Tasks	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 46: 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 to 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. 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.

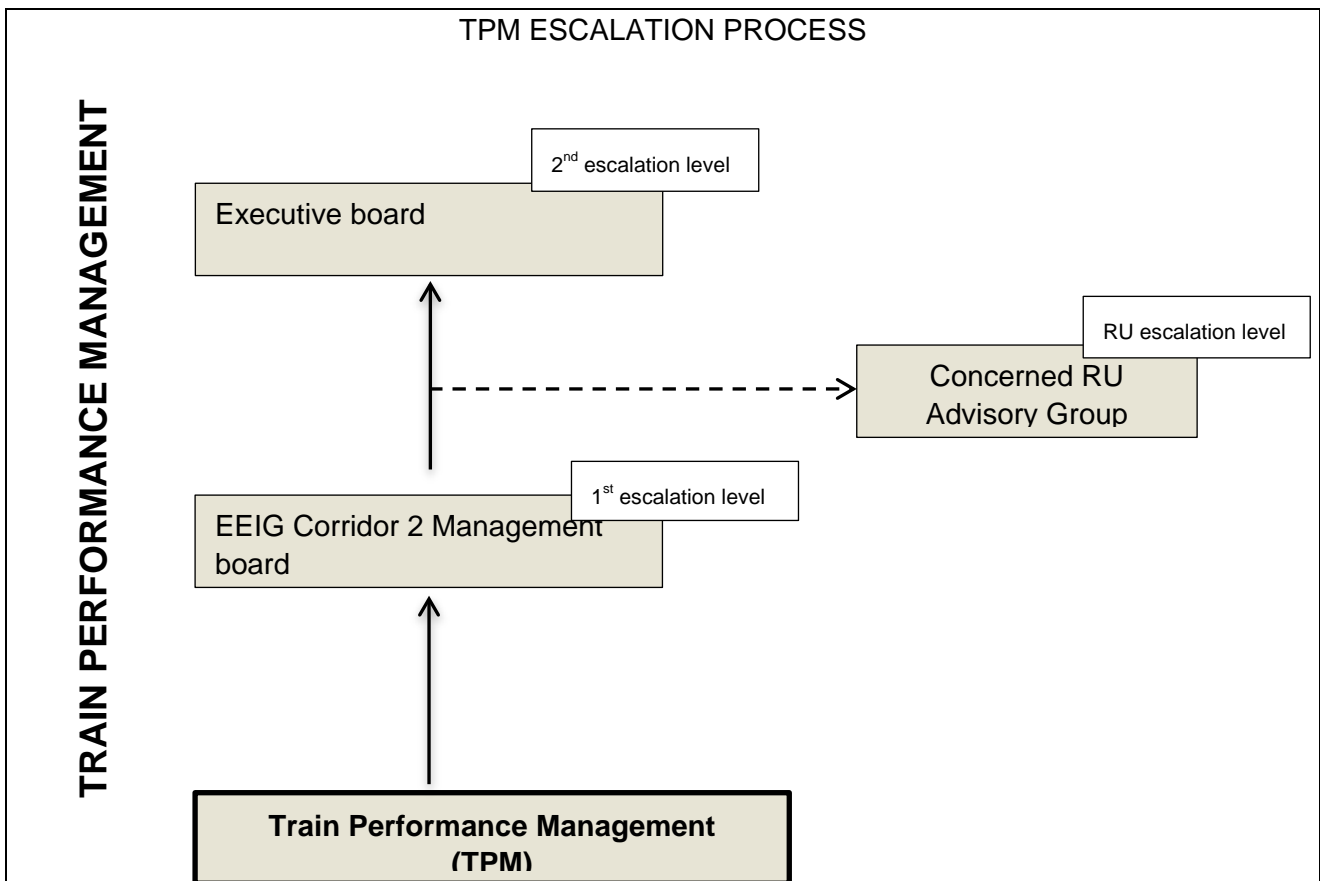
Changes must be addressed to the responsible Corridor Coordinator and agreed by all involved parties.

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



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 monitors its performance by using a number of Key Performance Indicators and other measurements. These were 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 lies 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 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 run 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 on a fixed number of 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 (with a specification for PaPs for which standard priority rule applies and PaPs for which Network PaP priority rule applies). 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; with a specification for PaPs for which standard priority rule applies and PaPs for which Network PaP priority rule applies). 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 (with a specification for PaPs for which standard priority rule applies and PaPs for which Network PaP priority rule applies). This KPI will be updated twice a year after the given timeframe.

KPI 8: Allocated pre-arranged paths in active timetable

The number of pre-arranged train paths which are allocated by the C-OSS which have reached the status of active timetable, placed 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 9: 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 10: 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.

KPI 11: Allocated Reserve Capacity in Active Timetable

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

KPI 12: Number of Conflicting Applications (double booking at X-8)

The number of requests for pre-arranged paths received by the C-OSS at X-8 which are in conflict with another request. This KPI describes more into detail the conflicts solved by consultation, decided based on the standard priority rule, decided based on the Network PaP priority rule. 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 twice a year.

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 twice a year.

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.

OM 6: Cancelled Trains

Measures the amount of cancelled trains (entire trajectory) on a selection of corridor trains. This KPI is updated on a monthly basis.

Monitoring of the allocation process:

OM 7: 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 8: Double Bookings

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

OM 9: 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

In order to be aware of the satisfaction level of our customers regarding the services provided and to increase the quality of these services, RFC 2 launched its first survey in September 2014.

To make the results of the satisfaction survey more comparable, RFC 2 and RNE have jointly developed a harmonised survey for all rail freight corridors. The questionnaire addresses topics such as coordination of works, the CID, capacity allocation, C-OSS, traffic management, train performance management, communication tools and advisory group meetings.

This survey will be conducted once a year and its results will be published on RFC 2 website and in its annual report. It will also be presented in the advisory group meetings.

Regulation (EU) 913/2010 requires management boards to carry out such a satisfaction survey and describes its principles.

Annex 1 List of RFC 2 lines

Country	Line number	From	to	length	Type of line
Netherlands	-	Roosendaal Grens	Roosendaal	8,4	principal
Netherlands	-	Roosendaal	Lage Zwaluwe	22,8	principal
Netherlands	-	Lage Zwaluwe	Moerdijk	1,3	principal
Netherlands	-	Lage Zwaluwe	Kijfhoek aansluiting Zuid	17,8	principal
Netherlands	-	Vlissingen Sloehaven	Roosendaal	66,9	connecting
Netherlands	-	Kijfhoek aansluiting Zuid	Kijfhoek Zuid	2,1	principal
Netherlands	-	Kijfhoek Zuid	Kijfhoek Noord	1,4	connecting
Netherlands	-	Kijfhoek Noord	Waalhaven Zuid	11,4	connecting
Netherlands	-	Waalhaven Zuid	Pernis	4,6	connecting
Netherlands	-	Pernis	Europoort	15,3	connecting
Netherlands	-	Europoort	Maasvlakte Oost	14,0	connecting
Netherlands	-	Europoort	Maasvlakte West	14,0	connecting
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.Otterbeek	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 Ledeborg	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.Kruijin	1,0	connecting
Belgium	10L/1	Y.Koestraat	Y.Hazop	2,0	connecting
Belgium	10	Y.Walenhoek	Y.Hazop	15,9	connecting
Belgium	11/1	Y.Berliwal	Y.Walenhoek	0,8	connecting

Country	Line number	From	to	length	Type of line
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 Ledeborg	Gent Sint Pieters	2,7	principal
Belgium	53/36/139	Leuven	Ottignes	28,0	principal
Belgium	58.1	Y. Noord Ledeborg	Y. West Ledeborg	0,7	principal
Belgium	165	Y. Aubange	Athus	1,6	diversionary
Belgium	94	Blandain-Frontière	Ath	40,4	principal
Belgium	90(1)	Ath	Y. Lens	14,4	principal
Belgium	96/2	Y. Lens	Y. Jurbise	1,9	principal
Belgium	96	Y. Jurbise	Y. Soignies	21,6	principal

Country	Line number	From	to	length	Type of line
Belgium	96/1	Y.Soignies	Y.Ecaussinnes	2,1	principal
Belgium	117	Y.Ecaussinnes	Luttre	24,0	principal
Belgium	124A	Luttre	Charleroi-Sud	14,5	principal
Belgium	130	Charleroi-Sud	Namur	36,8	principal
Belgium	125	Namur	Flemalle-Haute	51,2	principal
Belgium	125A	Flemalle-Haute	Kinkempois-Block 2	10,2	principal
Belgium	125L/1	Y.Renoy	Kinkempois-reception	0,6	principal
Belgium	125B	Kinkempois-Block 2	Y.Garde-Dieu	0,7	principal
Belgium	40(1)	Y.Garde-Dieu	Froidmont	0,7	principal
Belgium	40	Froidmont	Visé	15,9	principal
Belgium	24/1	Visé	Y.Berneau	3,6	principal
Belgium	24	Y.Berneau	Montzen-Frontière	24,9	principal
Belgium	130A	Erquelines-Frontière	Charleroi-Sud	29,4	principal
Belgium	124A/1	La Sambre	Y.La Sambre	1,0	principal
Belgium	96	Ghlin	Y.Jurbise	8,2	connecting
Belgium	116	Manage	La Louvière-Gare Industrielle	5,3	connecting
Belgium	124L/1	Monceau-Formation	Courcelles-Motte	4,2	connecting
Belgium	214	Bressoux	Chertal	7,2	connecting
France	032000	Chaudenay	Toul	114,1	principal
France	001000	Culmont-Chalindrey	Chaudenay	3,1	principal
France	070000	Lérrouville	Strasbourg Ville	213,3	principal
France	089000	Metz Ville	Lérrouville	64,9	principal
France	090000	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	212000	Hirson	Tournes	61,0	principal
France	222000	Hirson	Tournes	24,0	principal
France	267000	Hirson	Fives	112,5	principal
France	278000	Fives	Mouscron	14,6	principal
France	085000	Conflant-Jargny	Hagondange	27,9	principal
France	095000	Longuyon	Onville (ligne jusqu'à Pagny)	65,2	principal
France	830000	Rac de Lyon (Dijon/Perrigny)	Rac de Chasse sur Rhone	205,0	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	843000	Is sur Tille	Culmont Chalindrey	42,9	principal
France	849000	Dijon/ Rac de Perrigny	Is sur Tille	28,6	principal
France	860000	Rac évite-Perrigny	Saint-Amour	107,1	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) Ottmarsheim	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
France	278306	Rac de Rougebarre	Rac de Rougebarre	1,0	principale
France	295000	Rac de Rougebarre	Rac de St André	105,2	principale
France	292306	Rac de St André	Rac de St André	1,0	principale
France	292000	Rac de St André	Rac de Santes	8,6	principale
France	289000	Rac de Santes	Don-Sainghin	17,8	principale
France	286000	Don-Sainghin	Lens	16,4	principale
France	301301	Rac d'Avion	Rac d'Avion	1,1	principale

Country	Line number	From	to	length	Type of line
France	301000	Rac d'Avion	Arras	17,0	principale
France	272000	Arras	Rac de Pierrefitte Stains	181,7	principale
France	272321	Rac de Pierrefitte Stains	Rac de Pierrefitte Stains	1,4	principale
France	990000	Stains	La Courmeuve	2,9	principale
France	992300	Rac du Bas Martineau	Rac du Bas Martineau	2,3	principale
France	229000	Rac du Bas Martineau	Le Bourget	1,0	principale
France	229306	Rac du Bourget	Rac du Bourget	2,1	principale
France	957000	Bobigny	Sucy Bonneuil	21,2	principale
France	956306	Rac de Sucy	Rac de Sucy	1,2	principale
France	990000	Rac de Sucy	Valenton	4,6	principale
France	272000	Fives	Triangle d'Ostricourt	21,7	diversionary
France	284311	Rac d'Ostricourt	Rac d'Ostricourt	1,2	diversionary
France	284000	Rac d'Ostricourt	Rac d'Avion	15,0	diversionary
France	272000	Triangle d'Ostricourt	Sin le Noble	13,0	diversionary
France	272000	Arras	Sin le Noble	23,2	principale
France	262000	Beuvrages	Sin le Noble	31,6	principale
France	272326	Rac de Douai	Rac de Douai	1,6	principale
France	250000	Somain	Rac de Busigny	50,2	principale
France	242316	Rac de Busigny	Rac de Busigny	0,7	principale
France	267306	Rac d'Aulnoye Aymeries	Rac d'Aulnoye Aymeries	1,1	principale
France	242000	Jeumont	Longueil Ste Marie	170,9	principale
France	245300	Rac Nord de Longueil Ste Marie	Rac Nord de Longueil Ste Marie	2,3	principale
France	243300	Rac Sud de Longueil Ste Marie	Rac Sud de Longueil Ste Marie	1,6	principale
France	232000	Rac de Longueil Ste Marie	Ormoy-Villers	20,7	principale
France	229000	Ormoy-Villers	Le Bourget	46,1	principale
France	301000	Lens	Dunkerque	90,5	principale
France	295000	Calais	Lille	104,4	principale
France	314000	Calais	Fréthun	7,8	principale
France	216312	Fréthun	Tunnel	0,6	principale
France	314000	Fréthun	Boulogne sur Mer	32,0	connecting
France	301306	Rac de l'Yzer	Rac de l'Yzer	1,3	principale
France	284000	Rac de la Cité Montgré	Rac de la Cité Montgré	1,1	principale
France	284306	Rac de Sallaumines	Rac de Sallaumines	1,2	principale
France	259000	St-Just-en-Chaussée	Douai	2,5	principale
France	863300	Rac de St-Amour	Rac de St-Amour	1,223	principale
France	830900	Dijon	Gevey-Chambertin	6,892	principale
France	844300	Rac Culmont-Chalindrey	Rac Culmont-Chalindrey	1,344	principale
France	862310	Rac de Perrigny	Rac de Perrigny	1,326	principale
France	862300	Rac sup de Longvic	Rac sup de Longvic	1,134	principale
France	229000	Hirson	Anor	7,998	principale
France	223000	Charleville-Mézières	Hirson	6,744	principale
France	304000	Calais	Dunkerque	41,4	principale
France	269000	Baisieux	Fives	13,8	principale
France	266300	Rac de Lezennes	Rac de Lezennes	1,9	principale
Luxemburg	6	Bettembourg	Bettembourg-Frontière	2,5	principal
Luxemburg	5	Kleinbettingen-Frontière	Luxembourg	18,7	diversionary
Luxemburg	7	Pétange	Luxembourg	20,4	diversionary
Luxemburg	6	Luxembourg	Bettembourg	14,1	diversionary
Luxemburg	4/3	Luxembourg	Wasserbillig (Mertert port)	42,5	connecting
Luxemburg	6a	Esch/Alzette	Bettembourg	11,4	principal
Luxemburg	6f	Pétange	Esch/Alzette	15,7	principal
Luxemburg	6g	Rodange (Aubange) Frontière	Pétange	4,1	principal
Luxemburg	6j	Rodange (Athus) Frontière	Pétange	4,1	diversionary
Luxemburg	6h	Rodange (Mont Saint Martin) Frontière	Pétange	5,2	diversionary
Switzerland	-	Basel	Basel RB (Muttentz)	3,5	principal
Switzerland	-	St Louis Haut Rhin	Basel	4,4	principal
Switzerland	-	Basel SBB RB	Kleinhüningen 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.
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.
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 (EU) 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 30 minutes for freight trains.
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	ERTMS is a major industrial project being implemented by the European Union, which will serve to make rail transport safer and

Management System)	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	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> - lead track - automated switching - hump with entry and/or exit group - direction tracks.
Network / Rail Network	<p>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".</p> <p>World Bank definition: total length of railway route open for public passenger and freight services (excl. dedicated private resource railways).</p> <p>OTIF definition: 'the lines, stations, terminals, and all kinds of fixed equipment needed to ensure safe and continuous operation of the rail system'.</p> <p>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.</p>
Network Statement (NS)	<p>DIRECTIVE 2012/34/EU 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.</p> <p>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.'</p>
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 pre-set 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 (EU) 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 restriction of use)	Non-availability of part of the rail network for full use by trains during a 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 and other active applicants (AA) representatives which are contacted by the Corridor in order to get feedbacks concerning corridor tasks. This feedback and RU/AA proposals must be taken into consideration. This advisory group is set up by the Corridor to be in line with the EU Regulation (EU) 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 (EU) 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 (EU) 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	<p>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.</p> <p>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'.</p> <p>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.</p>
Terminal Advisory Group (TAG)	<p>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.</p> <p>This advisory group has to be set up by the Corridor to be in line with the EU Regulation (EU) 913/2010.</p>
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

	<p>only a locomotive running light (deadheading) to a point elsewhere on the railway. A train may carry passengers, freight or, rarely nowadays, both.</p> <p>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.</p>
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/EU)
X-11 (months)	Deadline for publication of pre-arranged paths (Annex III(4), Directive 2012/34/EU)

Annex 3: Framework for Capacity Allocation

The Framework for capacity allocation is available on RFC 2 website, at the following address:

English version: http://www.rfc2.eu/sites/rfc2.eu/files/rff/141211_decision_fca_nsm_corridor_en.pdf

French version: http://www.rfc2.eu/sites/rfc2.eu/files/rff/141211_decision_fca_nsm_corridor_fr.pdf

Annex 4: Example of a TPM report



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

Month X

Punctuality Development

Namur - Basel

Source: RNE TIS / OBI SE 1

<u>Punctuality</u> : Monday - Sunday	<u>Punctuality target</u> : Objective, 0' - 30' = 80%
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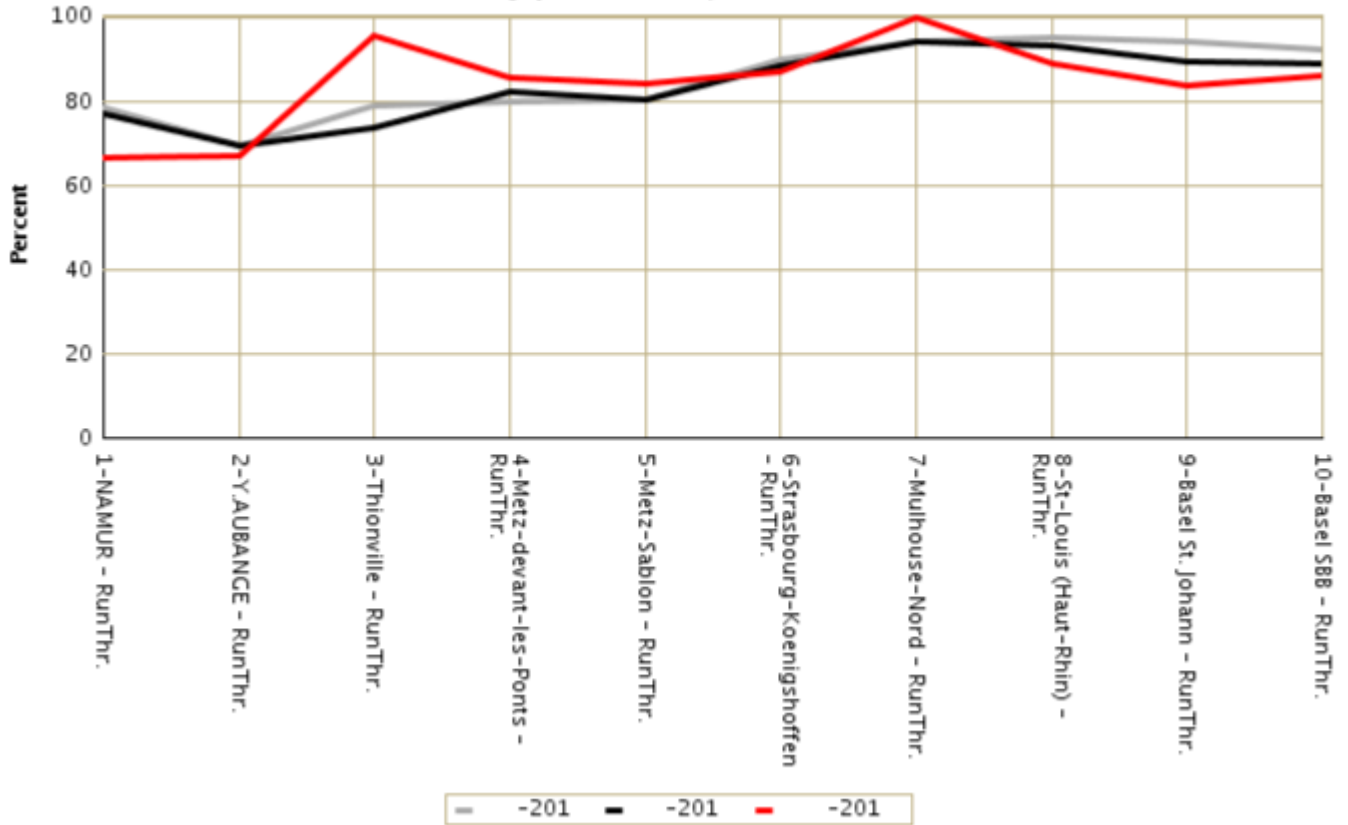
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Considered trains:

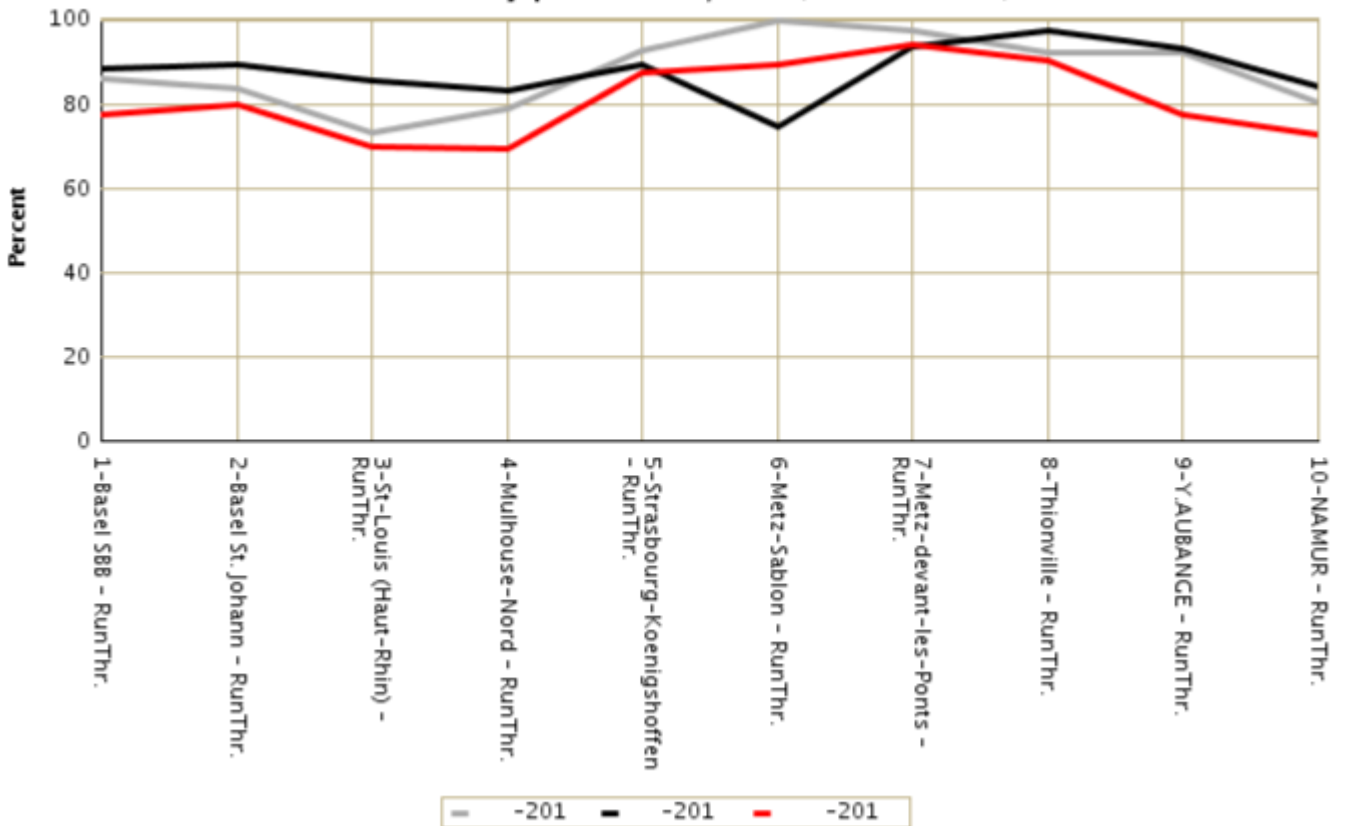
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4XXXX; 4XXXX; 4XXXX; 4XXXX

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

Punctuality per month, N-S (0'-30' mins)



Punctuality per month, S-N (0'-30' mins)




Comments / Major events

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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: ...
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					Treated by: ...
13					
					Treated by: ...
14					
					Treated by: ...

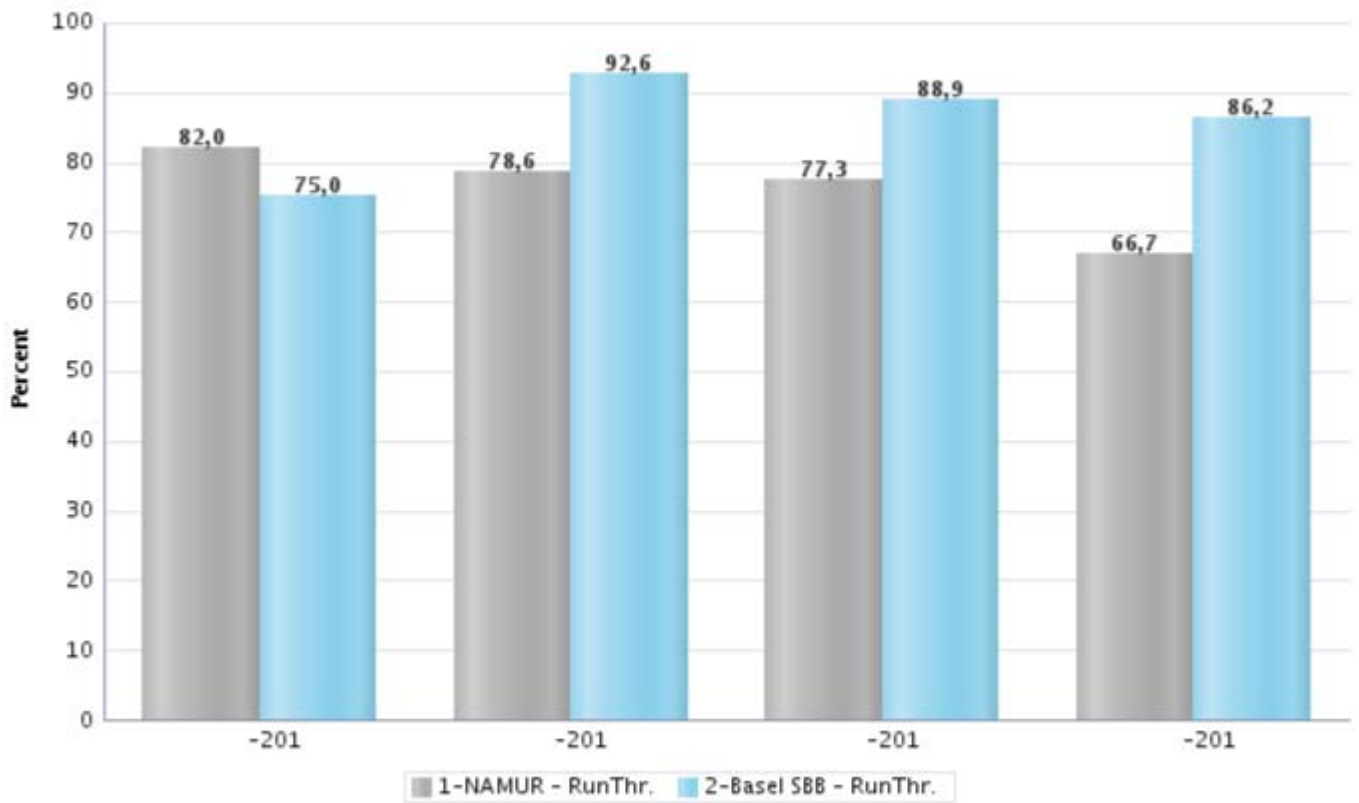
 Applied and successful

 Under evaluation

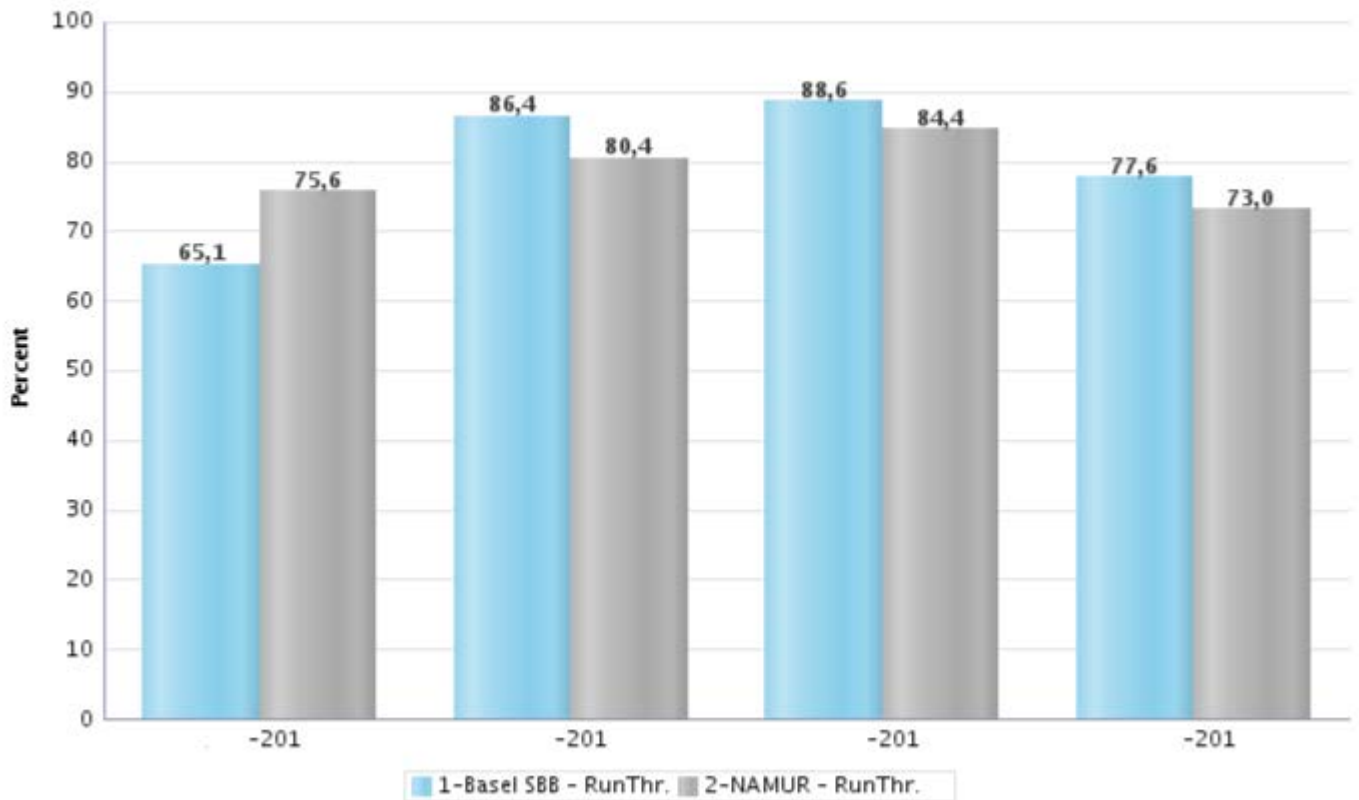
 Unsolved problem (new action / measure needed)

 Agenda item for next meeting

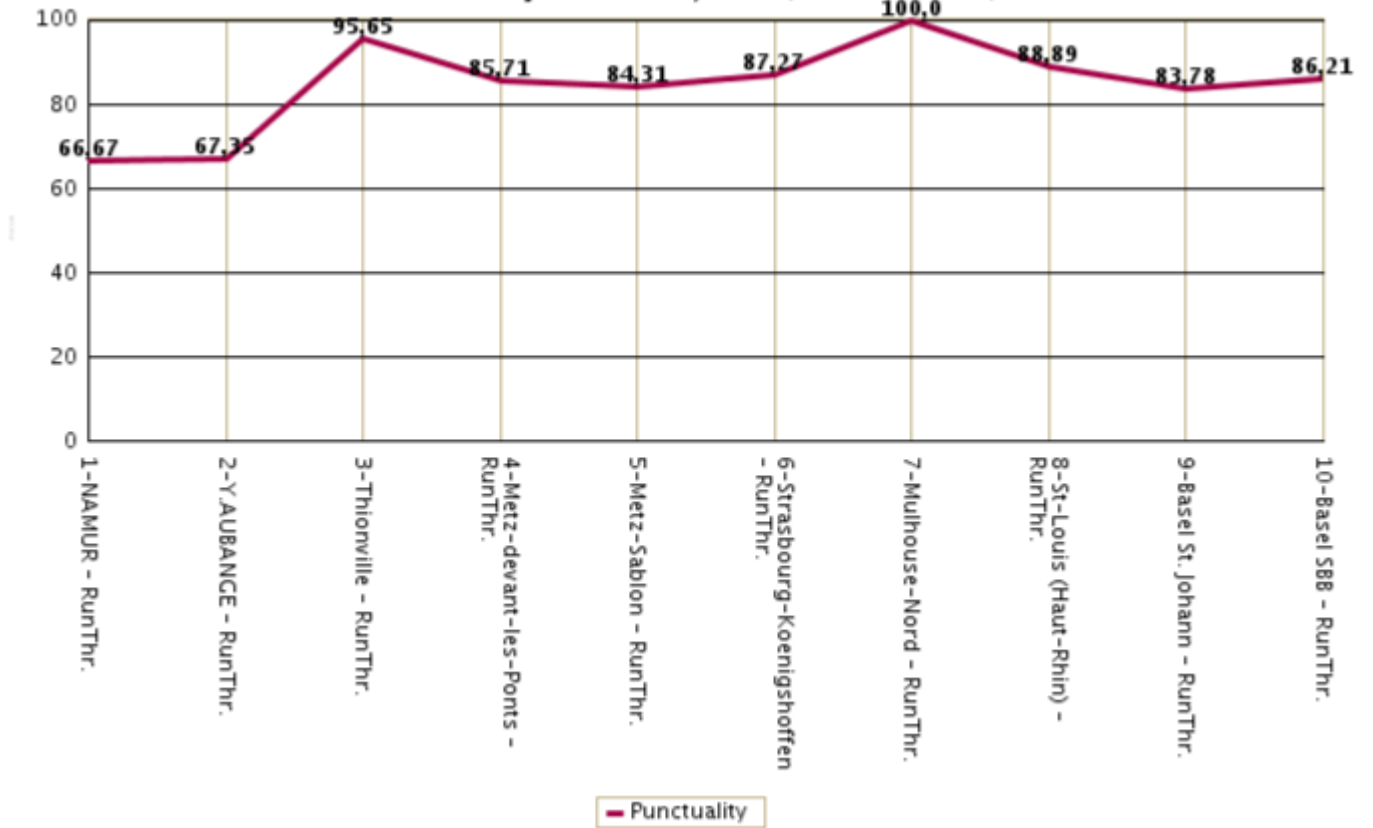
Punctuality origin & destination, N-S (0'-30' mins)



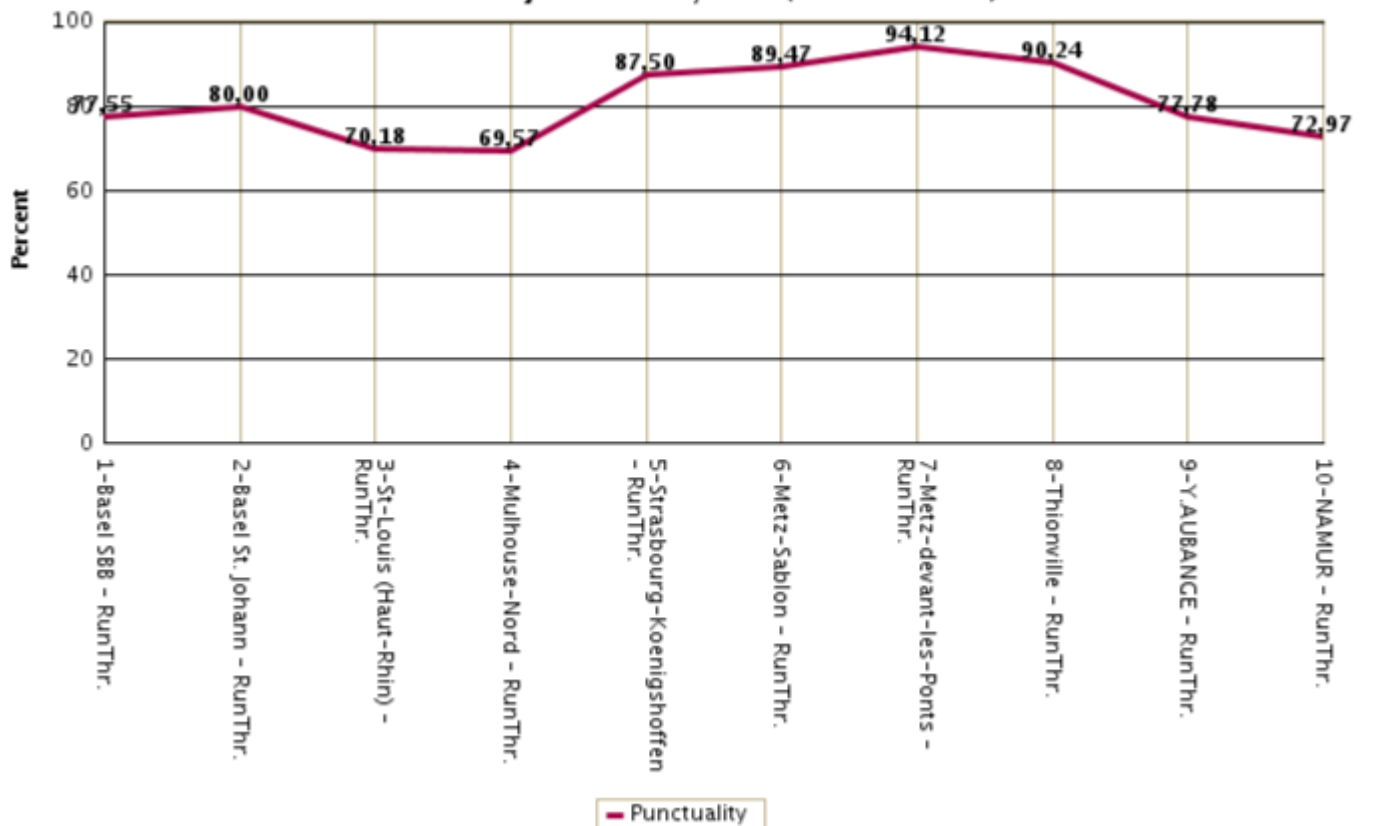
Punctuality origin & destination, S-N (0'-30' mins)



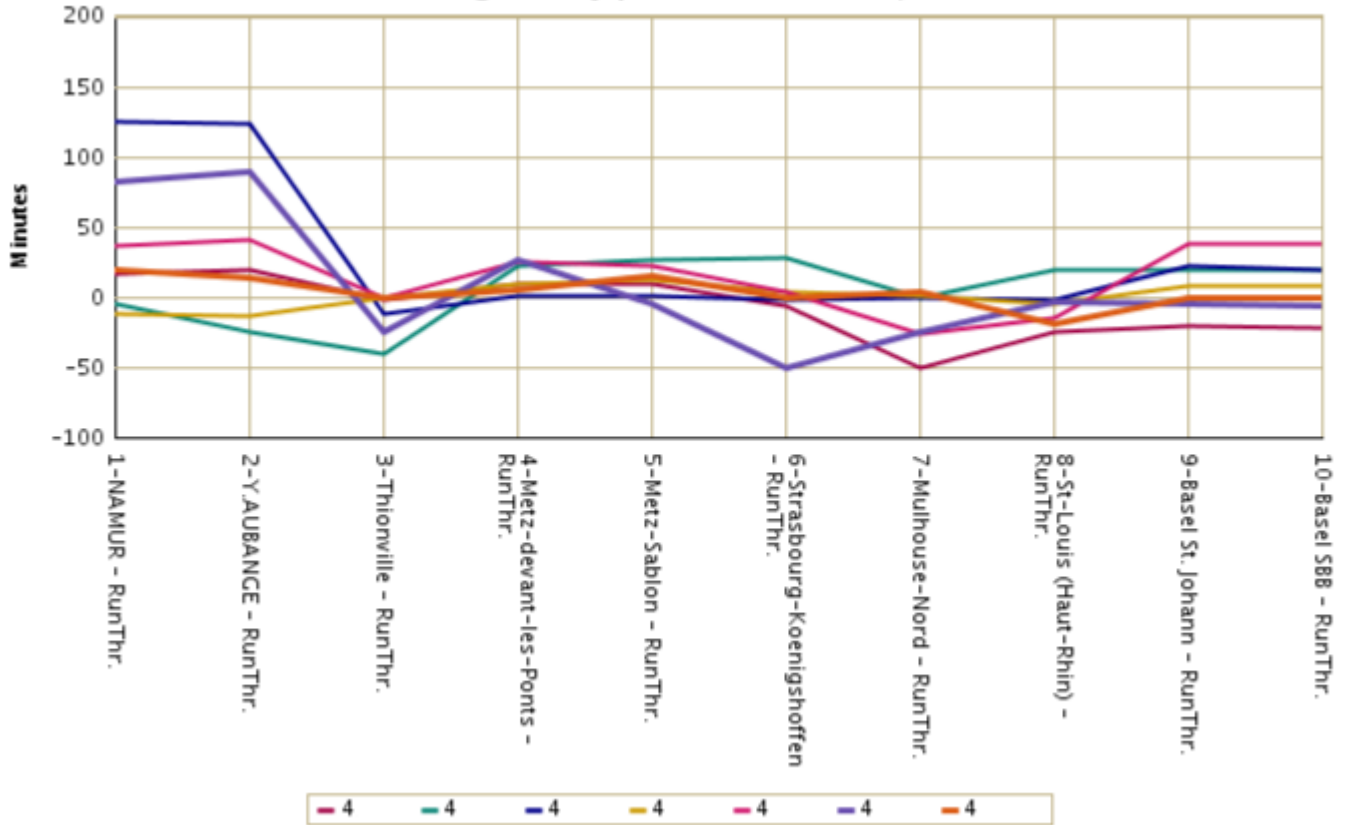
Punctuality all trains, N-S (0'-30' mins)



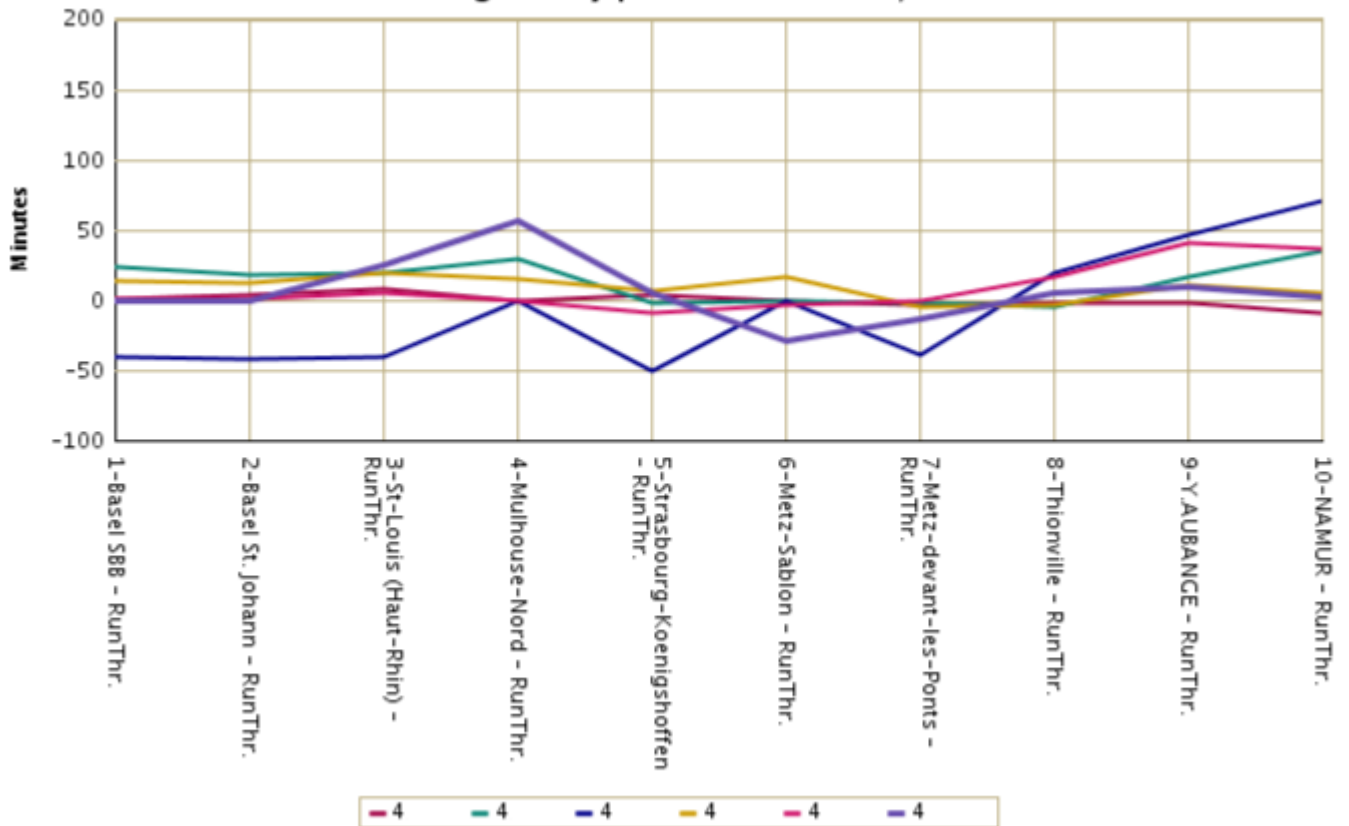
Punctuality all trains, S-N (0'-30' mins)



Average delay per train number, N-S



Average delay per train number, S-N



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 occurrence	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 occurrence	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 occurrence	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: Lengths of RFC 2 Sections

Corridor 2 Section Table - Lengths		
#	Corridor Section	KM
S1	Rotterdam-Antwerpen Mariaburg	71,5
S2	Antwerpen Mariaburg-Antwerpen Noord	2,9
S3	Antwerpen Noord-Antwerpen Schijnpoort	11,2
S4	Antwerpen Mariaburg-Antwerpen Schijnpoort	8,9
S5	Antwerpen Noord-Antwerpen W.H.	23
S6(a)	Antwerpen W.H.-Kortrijk	97,8
S6(b)	Kortrijk-Lille	30,8
S7(a)	Antwerpen Schijnpoort-Namur	129,3
S7(b)	Namur-Aubange	167,9
S8	Aubange-Longuyon	32,7
S9	Aubange-Bettembourg	32
S10	Bettembourg-Thionville	15,6
S11	Longuyon-Thionville	49,2
S12	Thionville-Metz	34,3
S13	Metz-Strasbourg	159,9
S14	Strasbourg-Basel	149,8
S15(a)	Lille-Valenciennes	47,8
S15(b)	Valenciennes-Aulnoye	35
S16	Aulnoye-Longuyon	188,6
S17	Longuyon-Toul	124,8
S18	Toul-Dijon	194,6
S19	Dijon-Lyon	196,7
S20	Metz-Toul	71,5
S21	Dijon-Ambérieu	193,8
S22	Metz-Longuyon (via Conflans-Jarny)	86,8
S23(a)	Lille-Dunkerque	95,6
S23(b)	Lille-Calais	116
S23(c)	Lille-Berguette Isbergues	56,6
S24	Lille-Amiens	117,4
S25	Amiens-Paris	125,4
S26	Lille-Somain	42,8
S27	Somain-Busigny	54
S28	Charleroi-Lille	122
S29	Namur-Charleroi	37,3
S30	Liège-Namur	56,2
S31	Montzen-Liège	46,3
S32	Charleroi-Aulnoye	54,6
S33	Aulnoye-Busigny	35
S34	Busigny-Tergnier	45,6
S35	Tergnier-Paris	175,9