



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

Comparison between technical characteristics of RFC 1 and 2

Traffic Rotterdam (Antwerp) – Basel

Railway Advisory Group
October 1st, 2014
Rotterdam



Fast track your rail freight

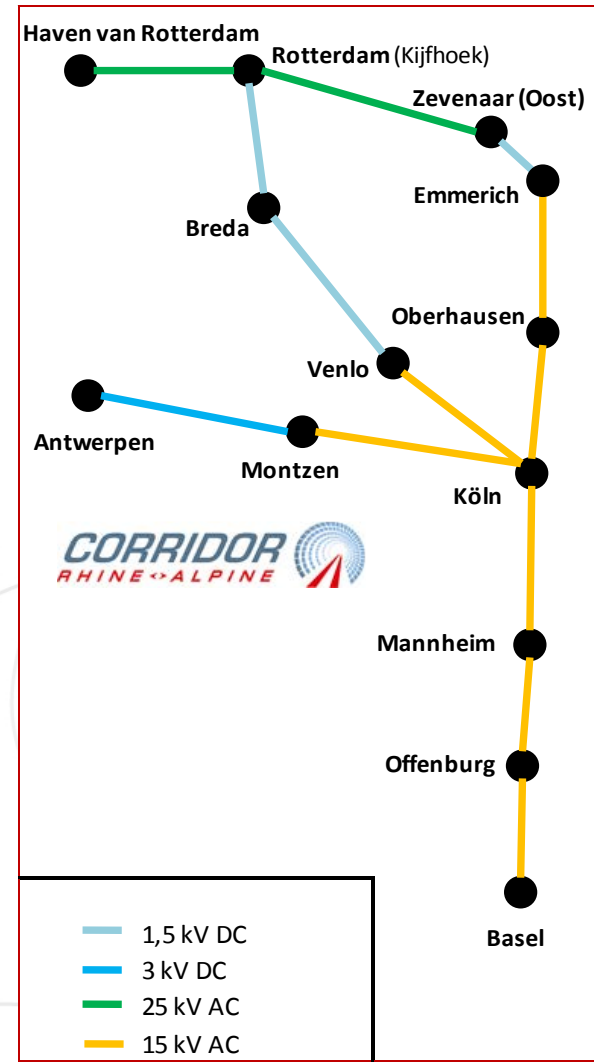
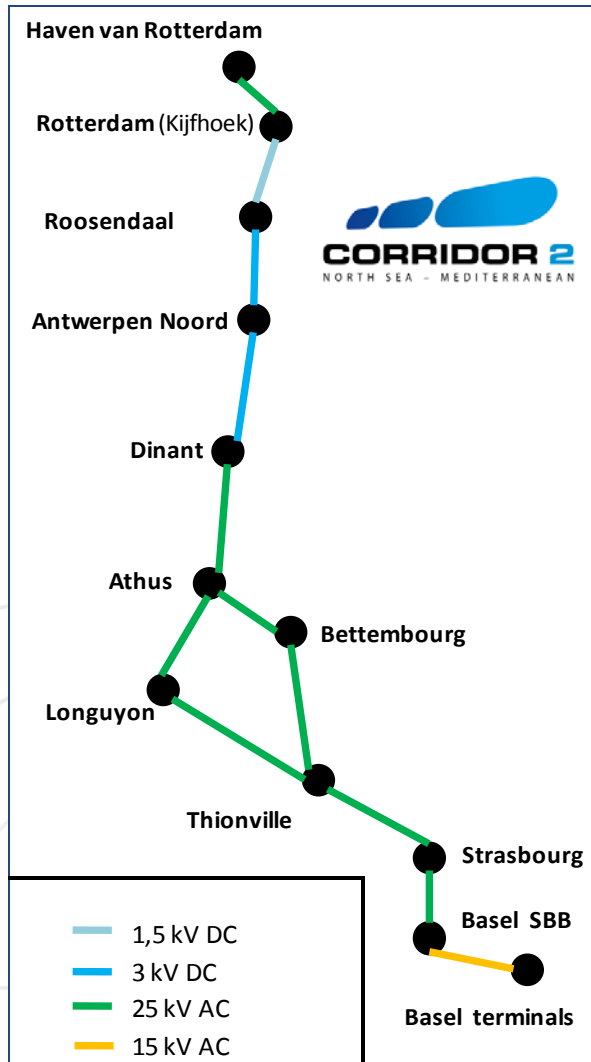
Introduction

- ❑ This Analysis was requested by RUs, in particular Dutch RUs
- ❑ RFC1 and RFC2 do not compete one with the other but they may be complementary
- ❑ Examples:
 - Long term or short term capacity problems on one RFC may be solved (at least temporarily) thanks to the other RFC
 - ✓ Congestion problem
 - ✓ Heavy works on one line (e.g. Emmerich – Oberhausen)
 - ✓ Punctual disturbances
 - Certain categories of train may only be able to run on one of the two RFCs

Introduction

- ❑ The goal is to increase the competitiveness of the rail mode through the improvement of its robustness and flexibility
- ❑ The ultimate goal is the modal shift from road to rail
- ❑ The ultimate goal is not the shift from RFC1 to RFC2 or vice versa
- ❑ Clients have recently expressed the wish that all RFCs work like if they were forming a single network of corridors

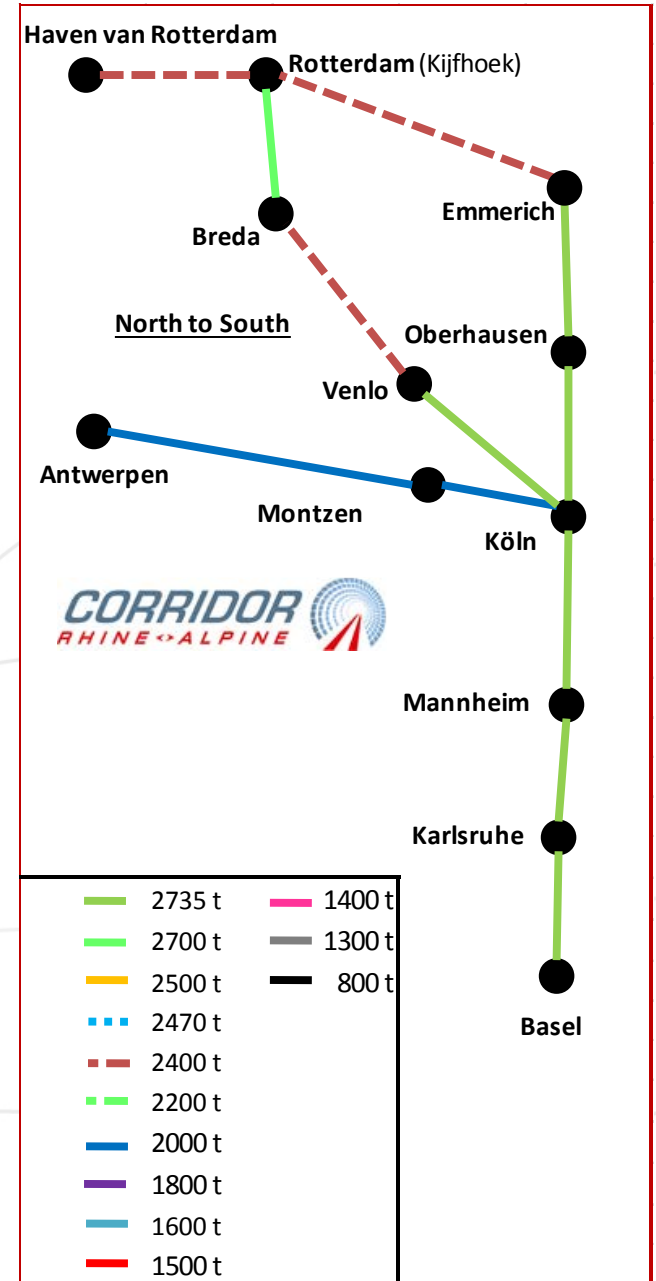
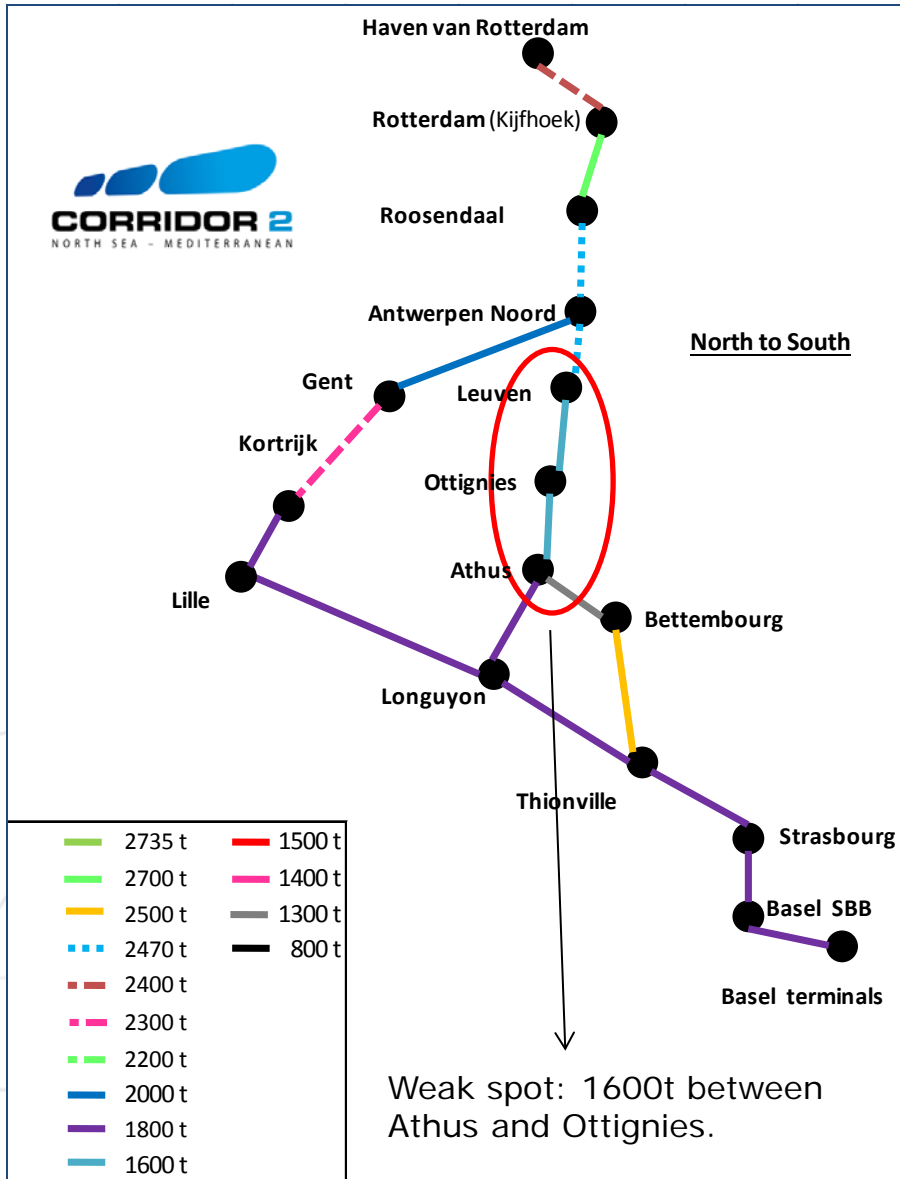
1. Power



New standard locomotives (e.g. Traxx from Bombardier), generally function with 4 different currents, thus should be able to run the full trajectory on both corridors

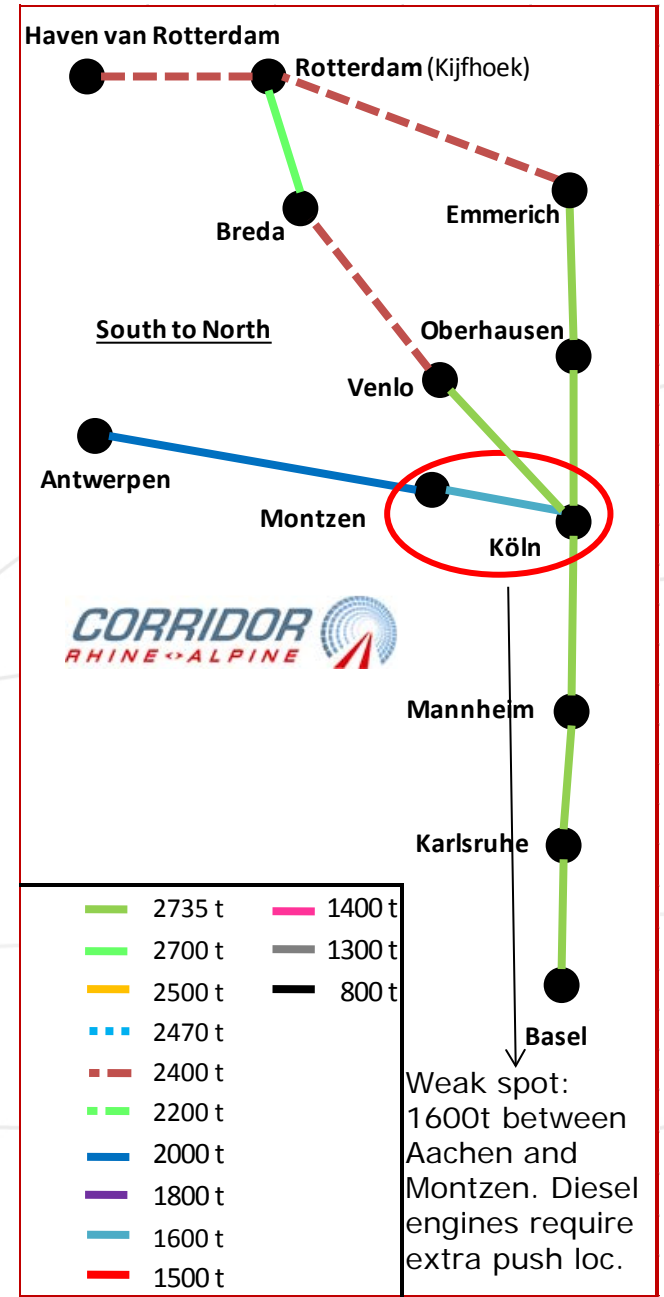
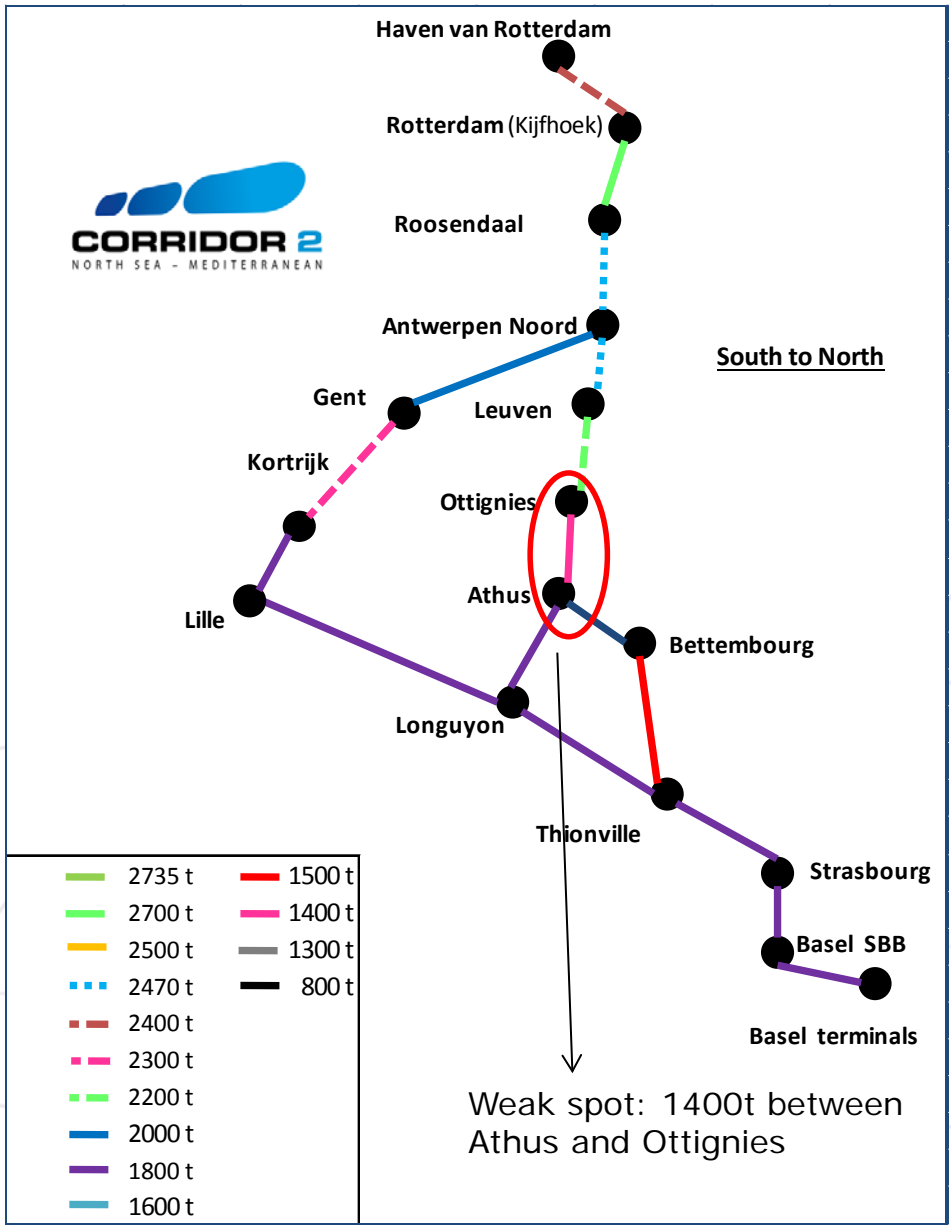
2. Train Weight (1)

North to South

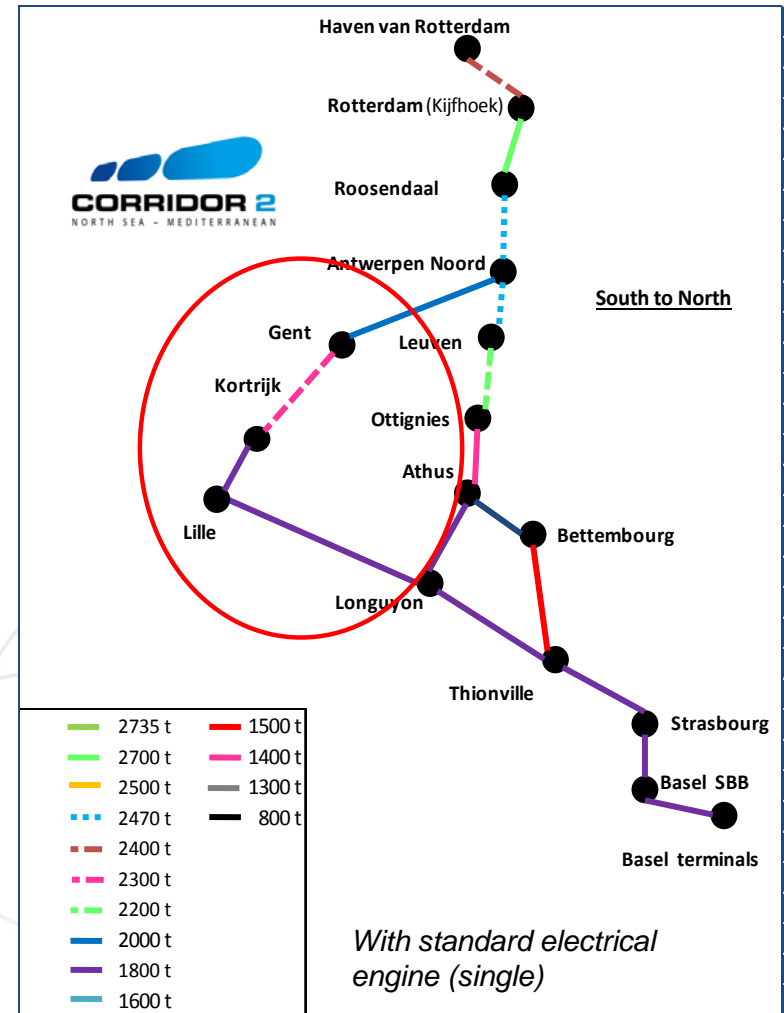
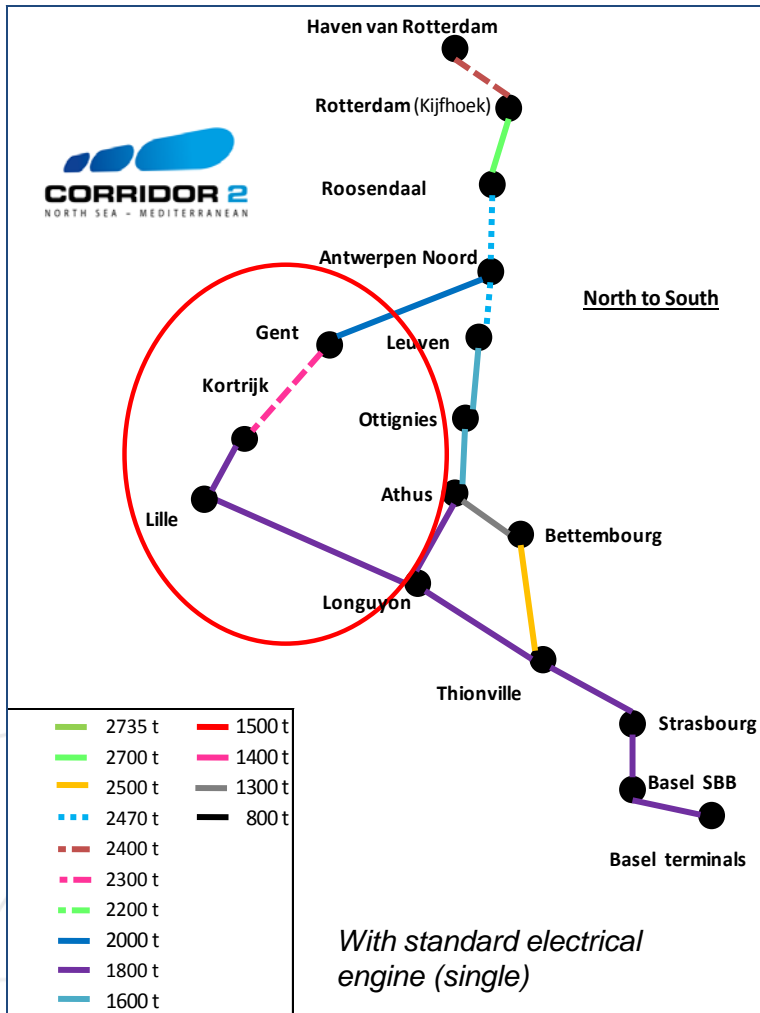


2. Train Weight (2)

South to North

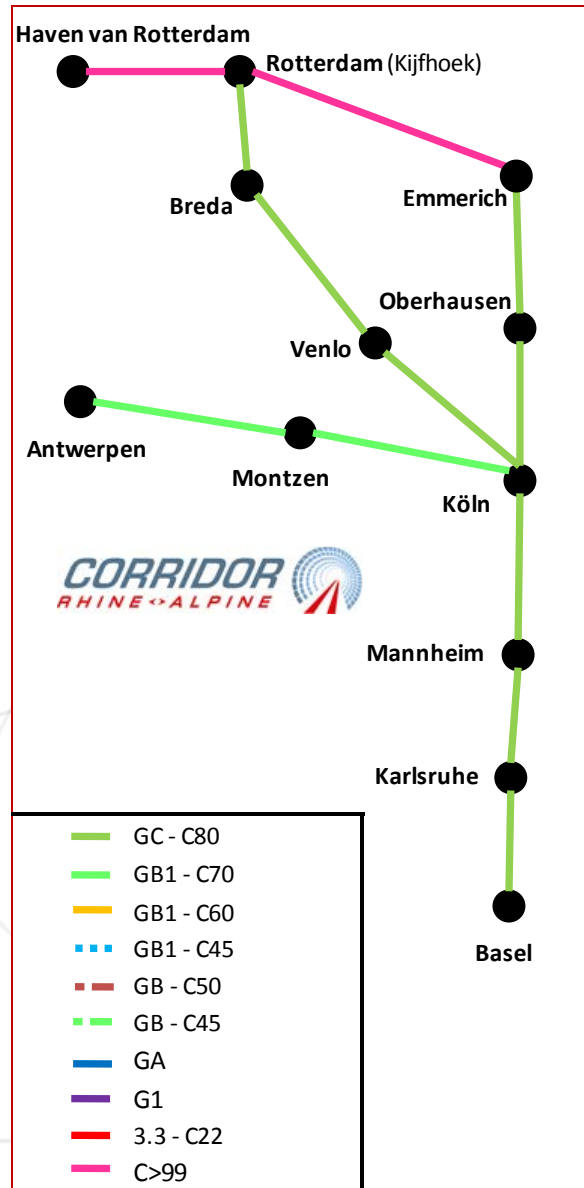
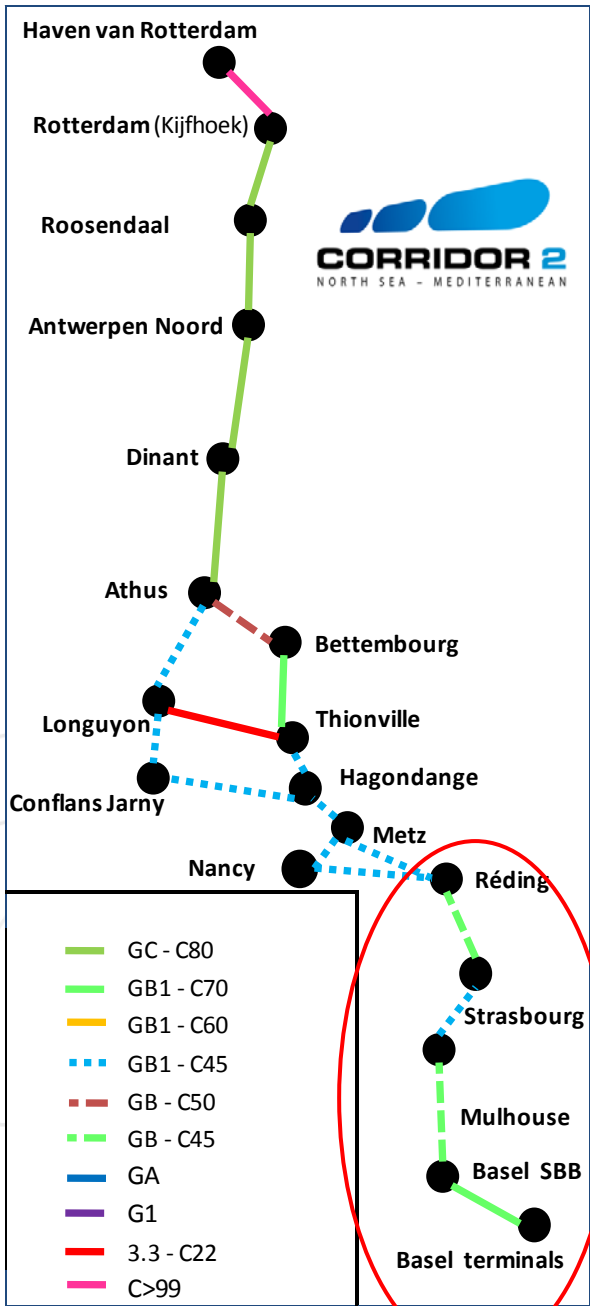


2. Train Weight ⁽³⁾ via artère Nord-Est



On RFC2, the weak spots between Leuven and Athus may be avoided by following the 'artère Nord-Est' route through northern France. This would elevate the allowed maximum train weight to 1800t for both directions (given a single standard engine); however this would add 130 km.

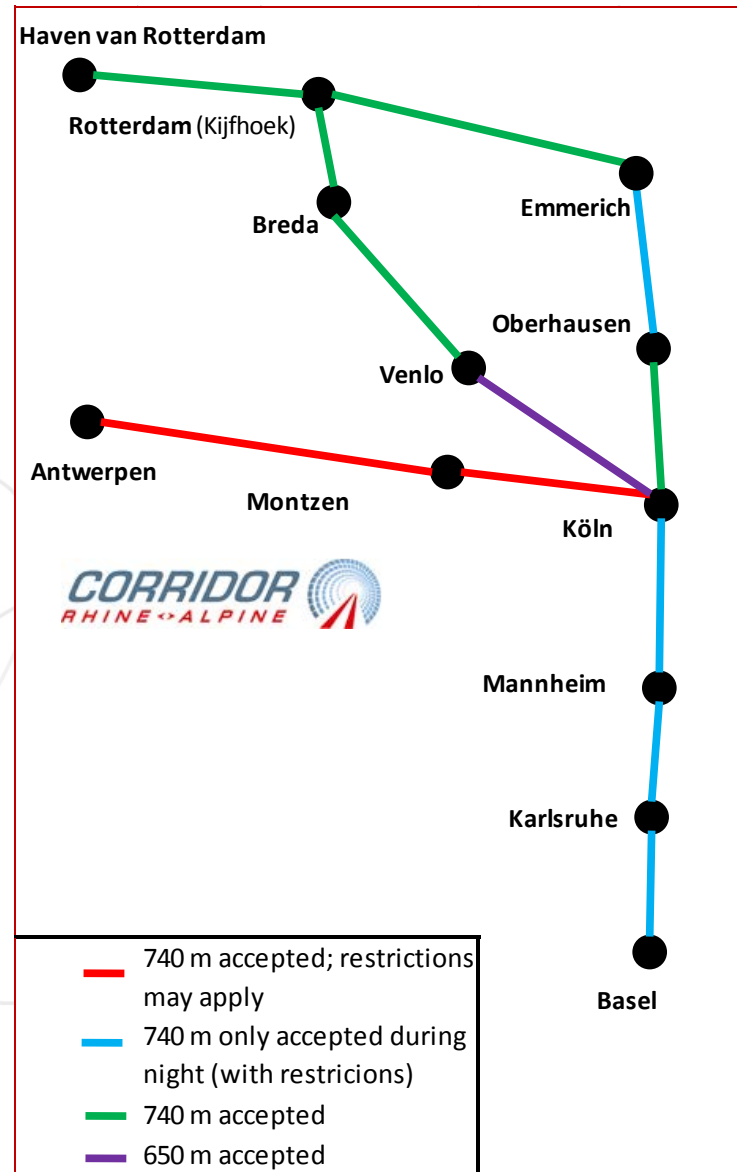
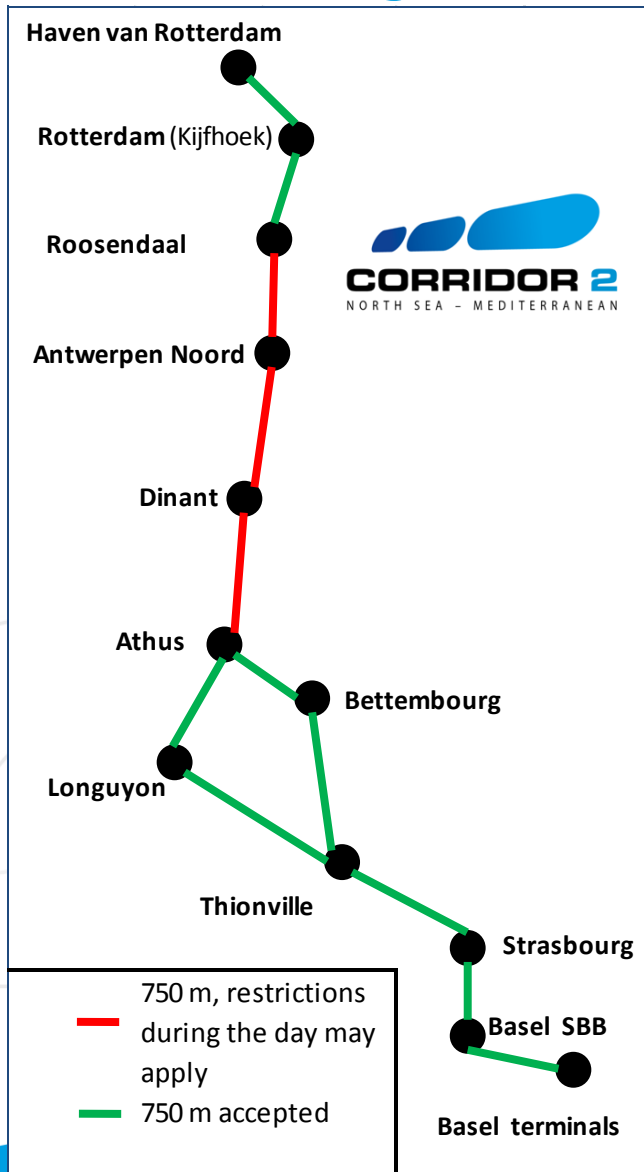
3. Loading Gauge



Weak spot: the Vosges mountains and the access to Basel suffer from a limited loading gauge, but this only affects the semi-trailer transport, a modest part of the market

Fast track your rail freight

4. Train Length (740/750m acceptance)

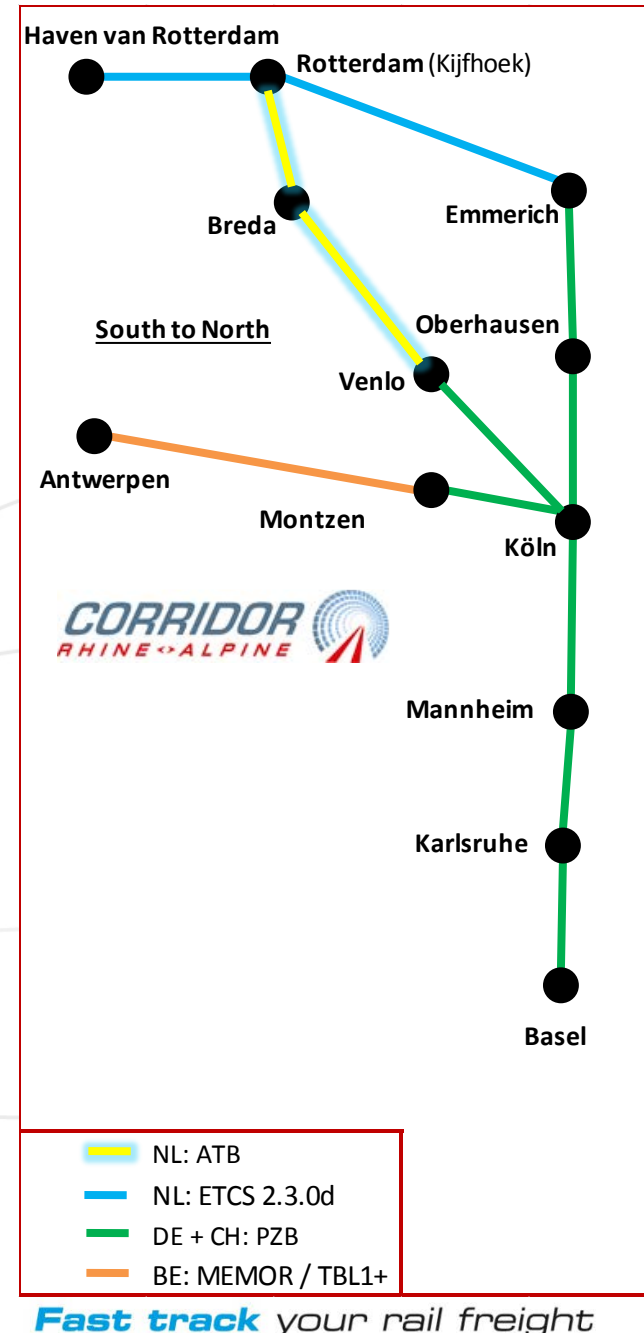
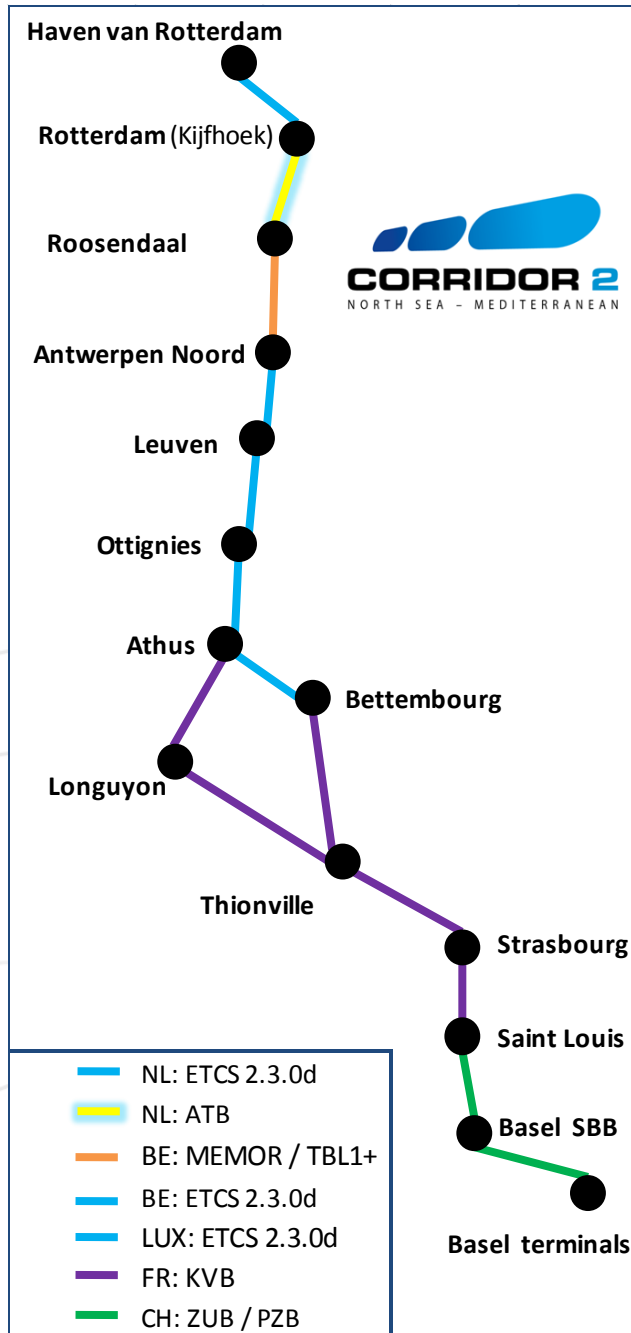


5. ETCS (1)

Control Command systems in 2015

More on-board systems are needed on RFC2

In 2015, RUs need only two on-board systems to run trains on the main line of RFC1



5. ETCS ⁽²⁾

- For timetable 2015, it does not seem possible for a loco to run on both corridors: the main issue is the lack of compatibility between ATB and KVB
- ETCS on RFC1 and RFC2 are expected to be implemented by the end of the 2010's. Locomotives equipped with ETCS Baseline 3 should then be allowed to run on both corridors.

5. ETCS ⁽³⁾

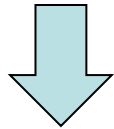
- ATB (NL) and KVB (FR) do not seem to work well together on a freight loco
- The problem may come from the fact that KVB is automatically switched on when the loco engine is switched on
- A solution to be explored would be to make KVB be switched on only in the French territory
- This solution has been implemented successfully for the German – French traffic

5. ETCS ⁽⁴⁾

- Three issues require a specific focus
 - The 2.3.0d on board equipment of a major RU does not work on the 2.3.0d track side equipment of the port of Rotterdam
→ ProRail/Keyrail will investigate
 - Operations would be more efficient if trains that are not equipped with ATB could reach the Roosendaal marshalling yard
→ ProRail will liaise with the Dutch ministry
 - There should be technical solutions to solve the lack of compatibility between ATB and KVB
→ the RFC2 ERTMS group will investigate

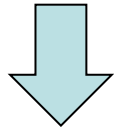
6. Distance ⁽¹⁾

Rotterdam



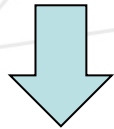
80 km

Antwerp



348 km

Thionville



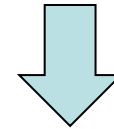
344 km

Basel

Total distance = 772 km



Rotterdam



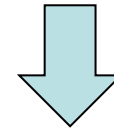
188 km

Oberhausen



337 km

Mannheim



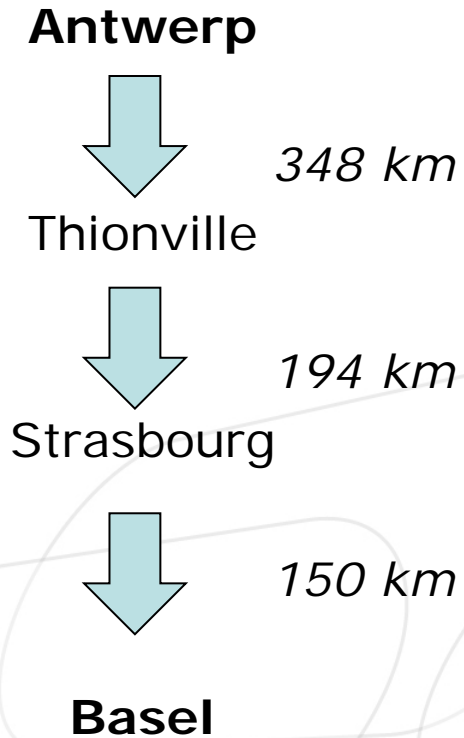
250 km

Basel

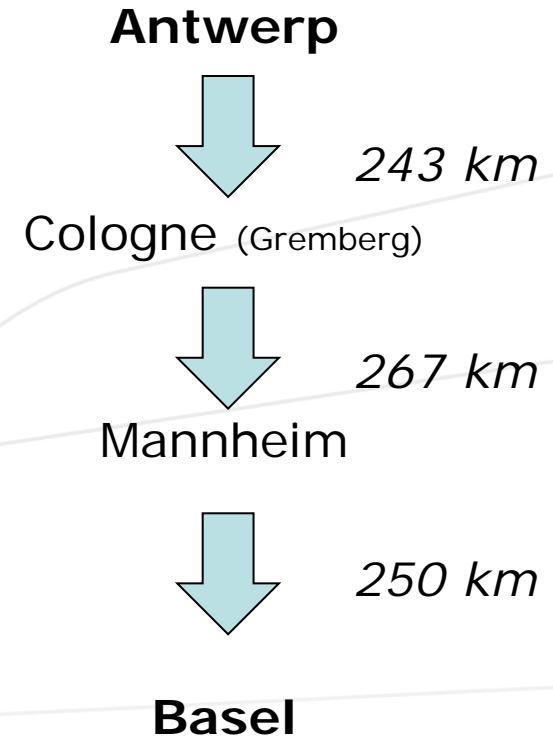
Total distance = 776 km



6. Distance ⁽²⁾



Total distance = 692 km

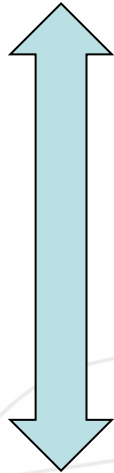


Total distance = 760 km



7. Journey Time PaPs ⁽¹⁾

Rotterdam



Average speed:

*56,4 km/h**

Basel

**Average PaP Catalogue 2015 journey
time= 14h36m
(both directions)**



* Distances per considered train run may vary from distances displayed in slide 10&11 due to different trajectories

Rotterdam



Average speed:

58,4 km/h

Basel

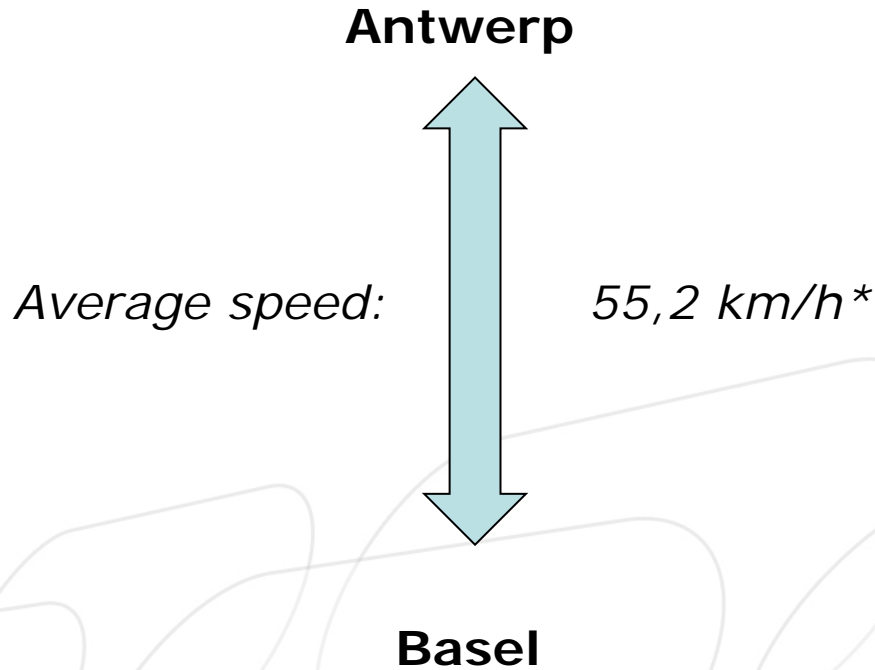
**Average PaP Catalogue 2015 journey
time= 13h17m
(both directions)**



Fast track your rail freight



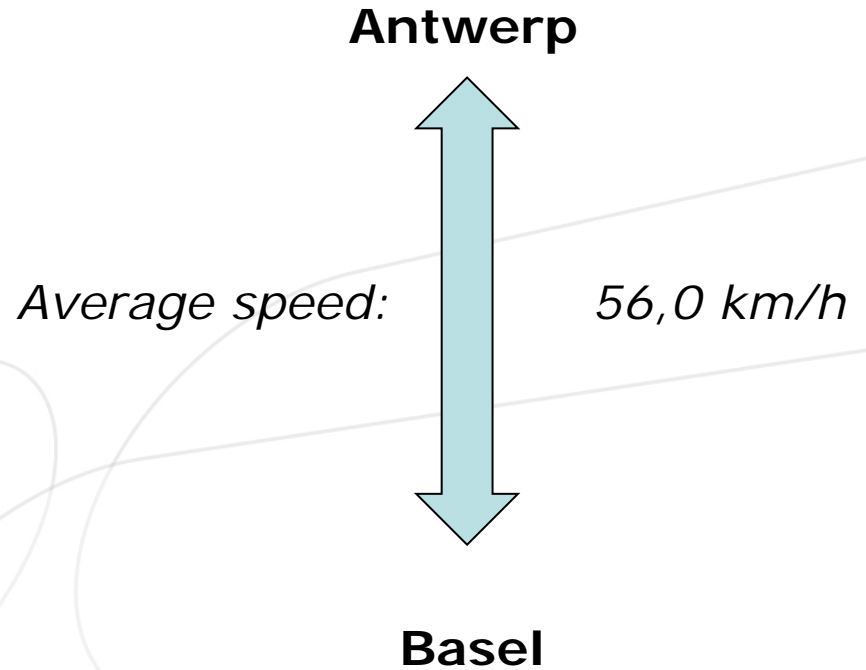
7. Journey Time PaPs (2)



Average PaP Catalogue 2015 journey time = 13h33m (both directions)



* Distances per considered train run may vary from distances displayed in slide 10&11 due to different trajectories



Average PaP Catalogue 2015 journey time = 13h34m (both directions)



Fast track your rail freight

8. Price and access charge ⁽¹⁾

RU costs summary:

- RUs generally agreed that the cost of a train run (excluding overhead costs) is approximately divided into:
 - 1/3: driver and ground crew
 - 1/3: locomotive (between 20 and 30 k€ per month)
 - 1/3: energy and path (path is between 7 and 15%)
- For combined transport, the price is divided into
 - 1/5: driver and ground crew
 - 1/5: locomotive
 - 1/5: wagon
 - 1/5: energy
 - 1/5: path

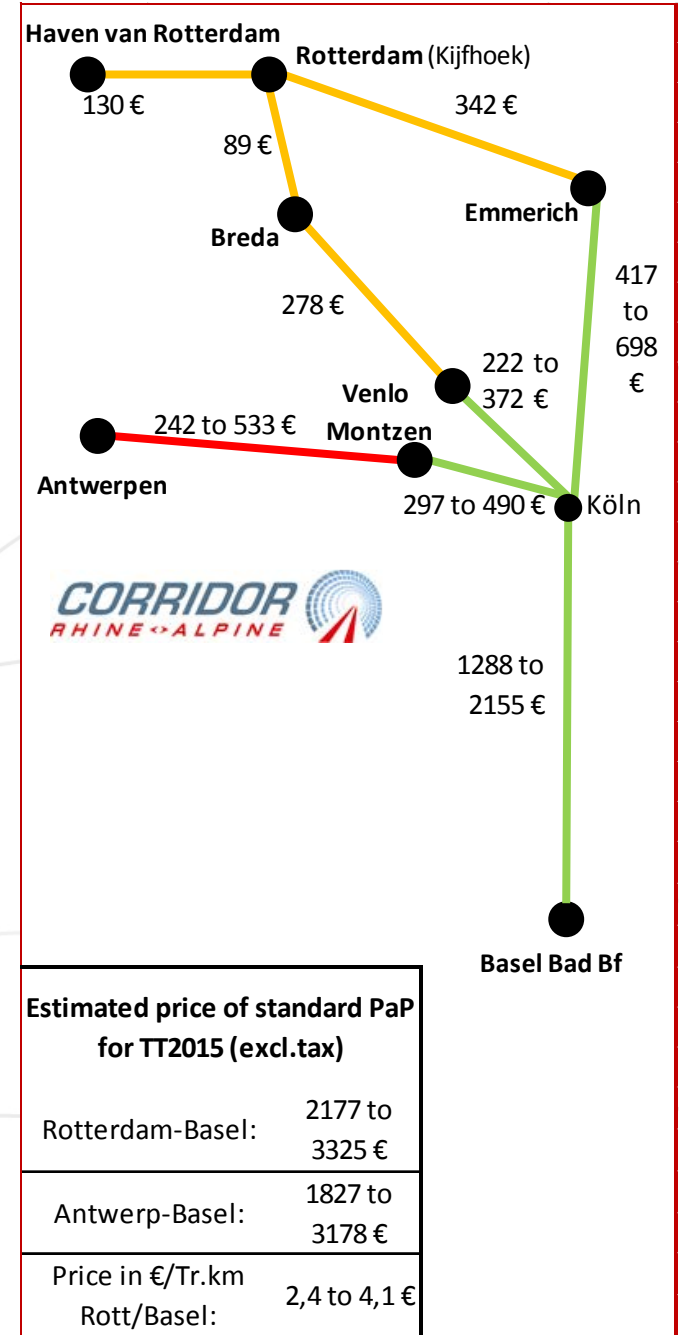
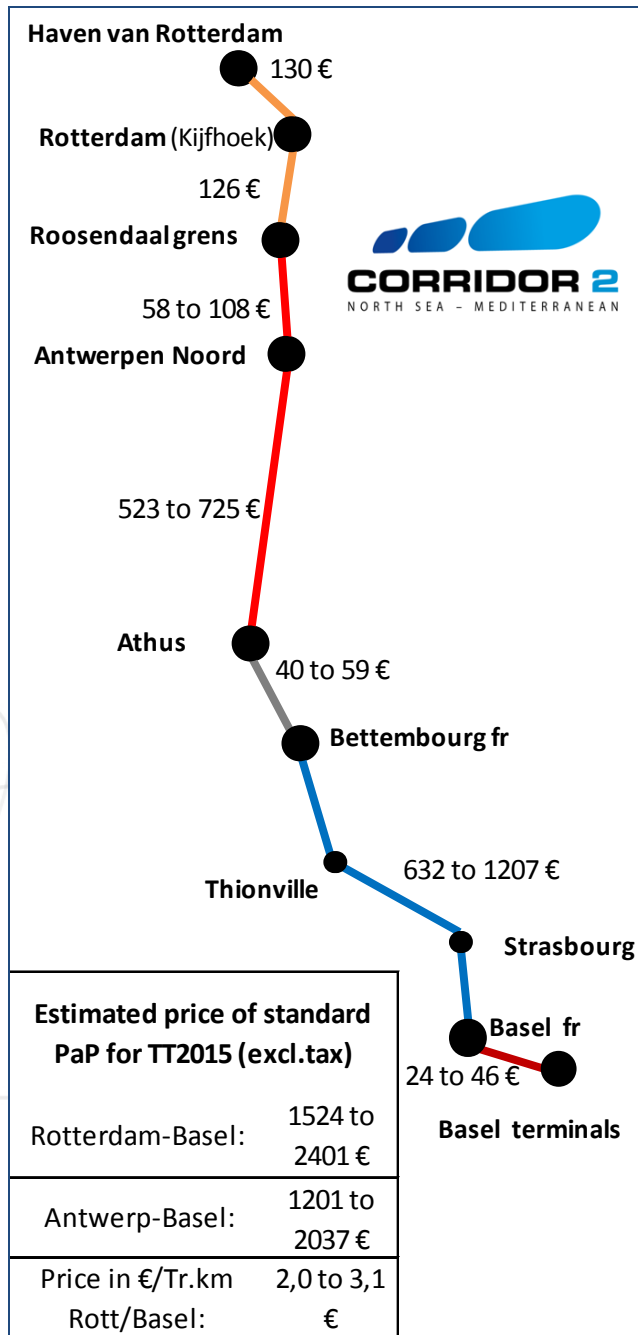
RUs expressed that the cost (per kilometre) of a train run for the RU is roughly the same on RFC1 and RFC2.

8. Price and access charge ⁽²⁾

Assumptions used for the access charge comparison

- Train length : 600 meters
- Weight: 1600t
- The prices (or price ranges) listed are the prices for the pure path (without energy - or energy access where applicable)
- All prices are calculated without taxes
- Sources from national IMs/ABs

8. Price and Access charge (3)



9. Available Capacity ⁽¹⁾

- ❑ Currently there is no objective definition of the term 'bottleneck'. This makes comparing between Corridors difficult.

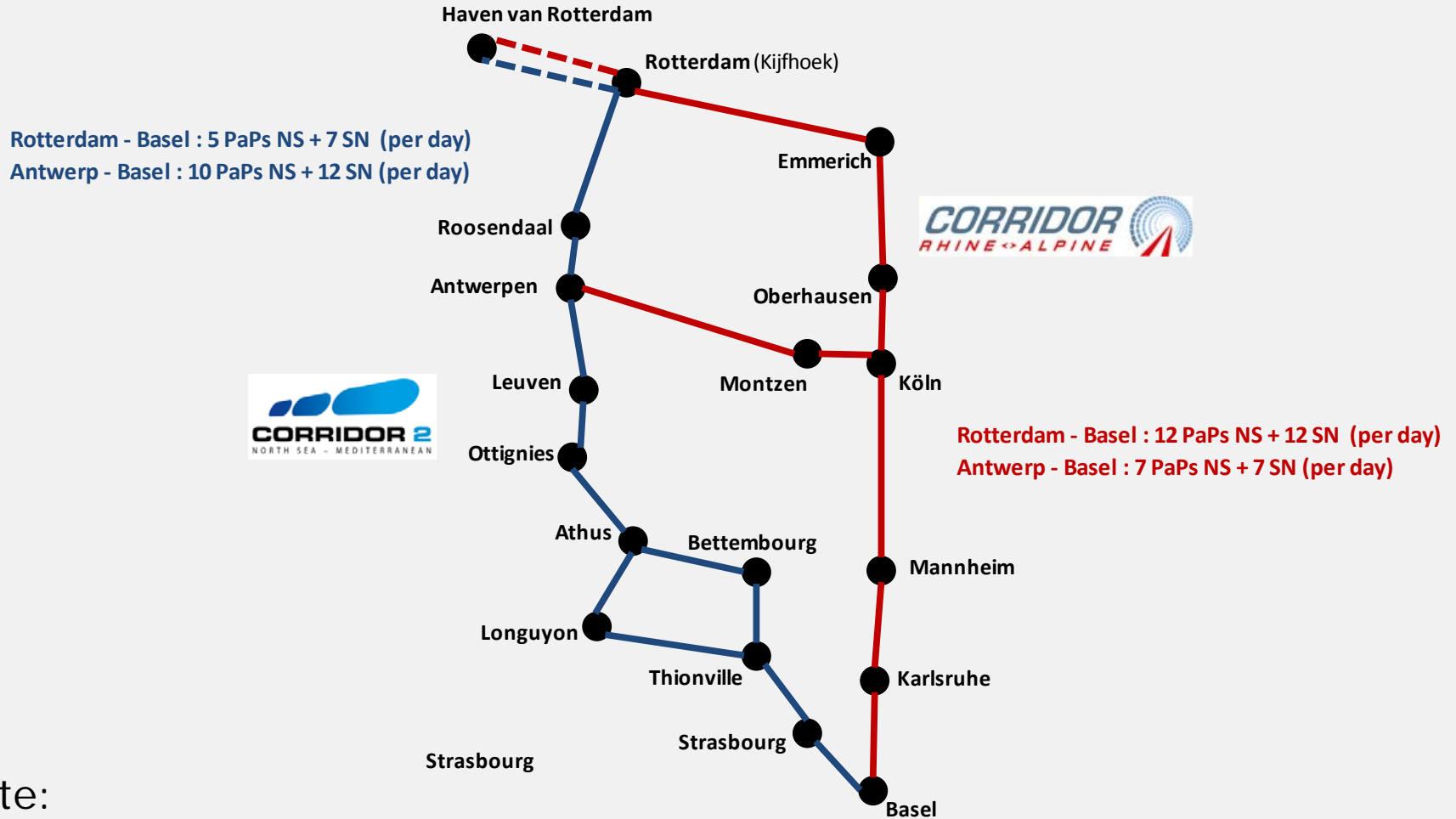
- ❑ During some hours of the day, both corridors suffer from capacity problems

- ❑ More precisely:
 - ❑ For RFC2: Antwerp area, Namur, Athus, Metz, Nancy and Strasbourg

 - ❑ For RFC1: the following lines have been declared legally congested by DB Netz: line 4000 between Offenburg and the Gundelfingen junction

9. Available Capacity (2)

Number of PaPs in Corridor Catalogue for TT 2015





Note:

The number of conflicts between requests was high on RFC1 while no conflict occurred on RFC2

9. Parameters used: TT 2015 PaP Catalogue

Between Rotterdam/Antwerp and Basel

 max train length	max tonnage	max.Profile	reference Loc	# of PaPs (or part of) for which parameter set applies	
ProRail	750	2700	P/C 70/400	BR 189	13 PaPs
Infrabel1	600	1400	P/C 70/400	TYPE 13	3 PaPs
Infrabel2	700	1400	P/C 70/400	TYPE 13	9 PaPs
Infrabel3	600	1600	P/C 70/400	TYPE 13	7 PaPs
Infrabel4	700	1600	P/C 70/400	TYPE 13	3 PaPs
Infrabel5	700	1500	P/C 70/400	CL66	13 Paps (only if from/to Rotterdam)
ACF1	700	1300	P/C 50/375	TYPE 13/3000	4 PaPs
ACF2	700	1400	P/C 50/375	37000	2 PaPs
ACF3	700	1600	P/C 50/375	37000	1 PaP
ACF4	700	2000	P/C 50/375	37000	1 PaP
RFF1	700	1400	P/C 50/375	37000	3 PaPs
RFF2	700	1600	P/C 50/375	37000	7 PaPs
RFF3	700	2000	P/C 50/375	37000	1 PaP
RFF4	700	2200	P/C 50/375	TYPE 13	1 PaP
RFF5	600	1400	P/C 50/375	37000	1 PaP
RFF6	575	1400	P/C 50/375	37000	2 PaPs
RFF7	690	1400	P/C 50/375	37000	1 PaP
RFF8	595	1400	P/C 50/375	37000	2 PaPs
RFF9	580	1400	P/C 50/375	37000	2 PaPs
RFF10	670	1400	P/C 50/375	37000	1 PaP
RFF11	580	1600	P/C 50/375	37000	1 PaP
SBB	700	1800	P/C 50/375	27000	22 PaPs

 max train length	max tonnage	max.Profile	reference Loc	# of PaPs (or part of) for which parameter set applies	
Keyrail	740	2700	P/C 70/400	189	24 PaPs
Infrabel1	600	1600	P/C 70/400	185	4
Infrabel2	700	1600	P/C 70/400	185	8
Infrabel3	600	1800	P/C 70/400	CL66	1
Infrabel4	700	1800	P/C 70/400	CL66	1
DB Netz1	690	2000	P/C 70/400	185	31
DB Netz2	709	2000	P/C 70/400	185	7

Conclusion ⁽¹⁾

- ❑ Control command systems seem to be the number 1 obstacle to the development of the Rotterdam-Basel traffic on RFC2
- ❑ Other obstacles have been identified including the training of drivers, language issues and even reputation problems (strikes)
- ❑ Certain problems like loading gauge restrictions only affect niche markets and should disappear in the long run
- ❑ RFC2 also provides potential advantages for RUs
 - Access charges are cheaper
 - RFC2 does not go through a densely populated area => local populations have not complained about the development of rail freight traffic and potential related noise issues

Conclusion ⁽²⁾

- Possible short term and long term solutions have been identified
- The RFC 2 Management Board will focus on their implementation in close cooperation with the RFC 2 RAG and with the support of the RFC 2 Executive Board

The sole responsibility of this publication lies with the author.
The European Union is not responsible for any use that may be made of the information contained there in.



ACF



Contacts

Head Office

9, place de la Gare
L-1616 Luxembourg

Permanent Team Office

13, Avenue Fonsny
B-1060 Brussels

www.rfc2.eu



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