IRG-rail
Independent Regulators' Group - Rail

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Working Group Access

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Report on the outcomes of monitoring of rail freight corridors' KPIs

I. Introduction

1. According to Article 20 of Regulation 913/2010 concerning a European rail network for competitive freight, (hereinafter the Regulation), regulatory bodies must cooperate in monitoring the competition in the Rail Freight Corridors (RFCs). In addition, Article 19, paragraph 2, of the Regulation states that "*the management board of Rail Freight Corridors (RFCs) shall monitor the performance of rail freight services on the freight corridor and publish the results of this monitoring once a year*".

2. In this respect Key Performance Indicators (KPIs) to evaluate the activities of each corridor (capacity, operation and market development) and their annual performance are an important tool to meet these obligations. This report looks at the relevance of the KPIs currently used by both the RFCs and IRG-Rail to monitor the corridors. It also attempts to analyse the available data, without giving opinions on RFCs performances and highlight some areas of implementation of Corridors.

3. KPIs have been developed by several parties over the years. Initially each RFC came up with its own list of KPIs based on the requirements of its stakeholders. In 2015, a joint Rail Net Europe (RNE)-RFC project team started to develop a coordinated approach with the aim to define a specific set of harmonised KPIs. These KPIs were agreed in 2016 and included into the Guidelines "Key Performance Indicators of Rail Freight Corridors" [1]. Further coordination work was carried out following the Rotterdam Sector Statement of 2016 setting out as a priority the monitoring of the quality of freight services by means of implemented and shared KPIs. As a result, Member States in collaboration with the sector came up with a recommended list of KPIs annexed to the harmonised framework for Capacity Allocation. In 2017, following extensive consultation, stakeholders jointly developed a detailed measurement and calculation procedure and a common set of commonly applicable RFC KPIs was adopted by the Network of corridors' Executive Board (NexBo) in February 2018.

4. In addition, a RNE/RFC KPI Coordination Group has also been established in order to coordinate the harmonised use of these KPIs and evaluate their use on a yearly basis. The figures of the commonly applicable KPIs are published in a harmonised form on the RNE website.

5. In parallel, in 2017, IRG-Rail carried out an evaluation of the most useful dataset for the monitoring of RFC activities from a regulatory viewpoint, and drew up its own list of KPIs which was adopted at IRG-Rail Plenary meeting in November 2017. It was agreed that in

[1] http://www.rne.eu/rneinhalt/uploads/RNE_Guidelines_KPIs_of_RFCs.pdf

addition to the general capacity management and operations KPIs used by RNE and RFCs, the IRG-Rail list of KPIs would include additional indicators mainly dealing with quality aspects.

II. RNE, NEXBO and IRG-Rail KPIs

6. The KPIs monitoring the performance of the RFCs are grouped under three categories:
   - "capacity management" – covering the performance of the RFC in constructing and allocating capacity on the RFC.
   - "operations" – covering the performance of the running traffic on the corridor in terms of punctuality, delays, cancellations.
   - "market development – covering the ability of the RFC to meet market demands.

7. The table below provides an overview of the KPIs used by NexBo, RNE and IRG-Rail. Both RNE and IRG-Rail have published their KPI list on their respective websites.

KPIs	Nexbo	RNE[2]	IRG-Rail
a) Capacity management			
Volume of offered capacity (PAPs) in mio path/days km	✓	✓	✓
Volume of requested capacity(PAPs) in mio path km	✓	✓	✓
Volume of requests (PAPs) in number of PCS dossiers	✓	✓	✓
Volume of pre-booked capacity in mio path km	✓	✓	✓
Number of conflicts in number of conflicting PCS dossiers	✓	✓	✓
Volume of requested reserve capacity (PCS dossiers requested + number of PCS dossiers)	✓	✓[3]	
Commercial speed of PAPs on O/D pair (average calculation or based on Origin/Destination pairs)	✓	✓	✓
Number of cancellations before timetable change[4]			✓
Number of modifications before timetable change[5]			✓

[2] Published on RNE website
[3] Calculation both in km/days requested and number of PCS dossiers (X+12)
[4] Available for Mediterranean and Orient corridors
[5] Available for Mediterranean and Orient corridors

KPIs	Nexbo	RNE[2]	IRG-Rail
b) Operations			
Punctuality at origin in number of trains where delay at point-status origin is < 30 mins[6]	✓	✓	✓
Punctuality at destination in number of trains where delay at point-status destination is < 30 mins[7]	✓	✓	✓
Total number of trains runs [8]	✓	✓	✓
Delay reasons (in mins attributed to each delay code)	✓		✓
Average dwell time at selected locations	✓		
Planned average speed of paths vs actual train running			✓
Number of trains affected and amount of delays caused by deviations from planned temporary capacity restrictions	✓		✓
Number and duration of disruptions and delay reasons			✓
Cancellation of trains within the timetable (number of dossiers)			✓
c) Market development			
Traffic volumes in number of trains	✓	✓	✓
Ratio of the capacity allocated by the COSS and the total allocated capacity in number of trains	✓	✓	✓
Ratio of saturation of corridor sections due to PAPs			✓
Commercial conditions			
Average track access charge per train km			✓
Customer satisfaction (results of individual surveys)		✓	✓

8. This table shows that although some of the KPIs are common to all three organisations across all categories, IRG-Rail is the only one seeking to collect data in particular on delays, cancellations and their reasons. This is also the case for information relating to charges applicable to the corridor. This is further analysed in the following sections of the report addressing each category of KPIs.

[6] Calculation is done both with 30 minutes and 15 minute punctuality threshold
[7] Calculation is done both with 30 minutes and 15 minute punctuality threshold
[8] Only for internal RFC use – not publicly available

9. In addition to these three organisations, PRIME – the platform of rail infrastructure managers in Europe has developed a catalogue of over 100 indicators for performance benchmarking. These indicators cover both passenger and freight traffic and data is essentially sourced from infrastructure managers. There is common set of core 12 high level industry indicators articulated around 5 areas (performance, safety/environment/, financial, growth and delivery.[9] The methodology for their calculation is described in detail in the catalogue. Therefore the risk of inconsistency is likely to be lower compared to some RFC KPIs.

III. Detailed KPIs

a) Capacity management KPIs

10. All corridors were able to collect the necessary data to calculate most capacity management indicators as shown in the tables below.

11. Capacity can be requested in the form of pre-arranged paths or reserved capacity.

PAP capacity offered and requested

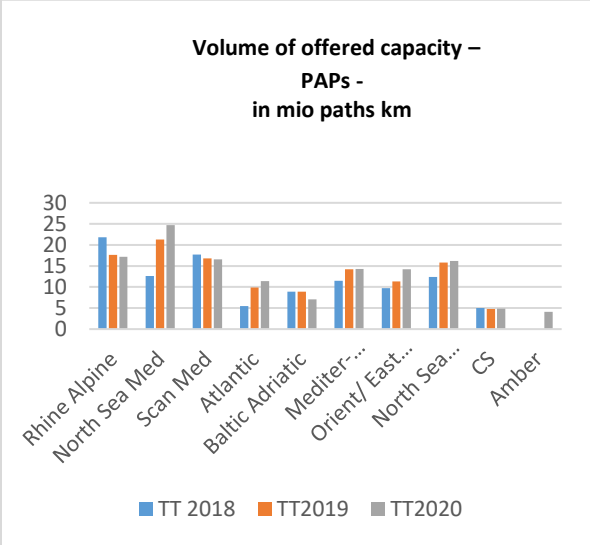
12. In general, the volume of PAP capacity offered and requested on each corridor has tended to grow each year. This is clearly the case for the North Sea Mediterranean corridor. On the other hand, the offer on the Rhine Alpine corridor has declined every year.

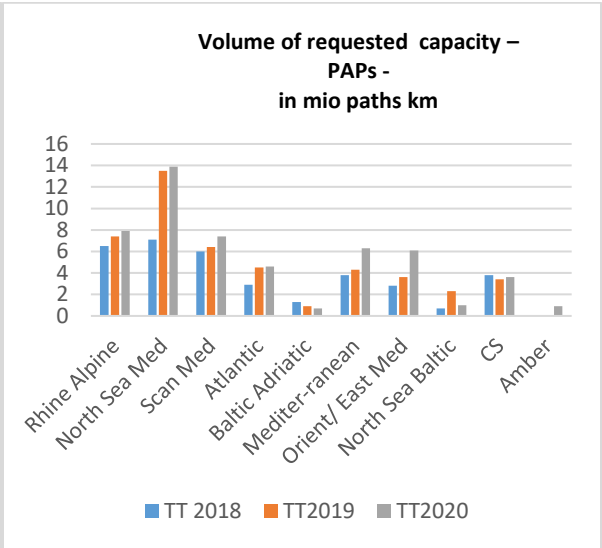
13. Since 2017, the percentage of requested PAP capacity on the total offered capacity has shown an increase on most corridors. This is due to several factors:
    - In some cases, the RFCs (North Sea Mediterranean, Atlantic and Mediterranean RFCs) have engaged with users in advance to offer better targeted capacity more aligned to consumers' needs. These three corridors contacted each railway undertakings and applicant to gather their needs from 18 to 16 months before the new Timetable. On the Mediterranean RFC, this the French infrastructure manager – SNCF Réseau- submitted a wish list template to the relevant parties. This list was also sent to the North Sea Mediterranean and the Mediterranean RFCs.
    - The situation on Scan Med is somewhat different from other corridors. On this corridor, less PAPs were offered while the number of PAPs requested/sold has increased. This is the result of two trends. On the one hand, demand for PAPs has increased. On the other hand the C-OSS is making efforts to better match supply and demand regarding the pre-arranged paths. To this end Scan Med's corridor one-stop-shop polls railway undertakings with a so-called capacity wish list. The C-OSS also makes this list available on its website. The C-OSS sought to increase the number of PAPs on the Brenner-stretch of the corridor from 10 to 20 per day. However, these efforts were thwarted by 20 additional international paths being reserved for the TTR pilot Munich-Verona. A peculiarity of the Scan Med RFC is the north-south divide. While there is an abundance of capacity in the south, i.e. south of Hamburg/Maschen, there has been some frustration about capacity shortages on the northern stretch of the corridor. One example mentioned by the C-OSS is the low number of PAPs offered through Denmark. The number of requests exceeded the PAPs offered on some of the parts of the corridor between Hamburg and Malmö.

[9] Prime benchmarking report and KPI catalogue can be found at https://webgate.ec.europa.eu/multisite/primeinfrastructure/content/subgroups_en

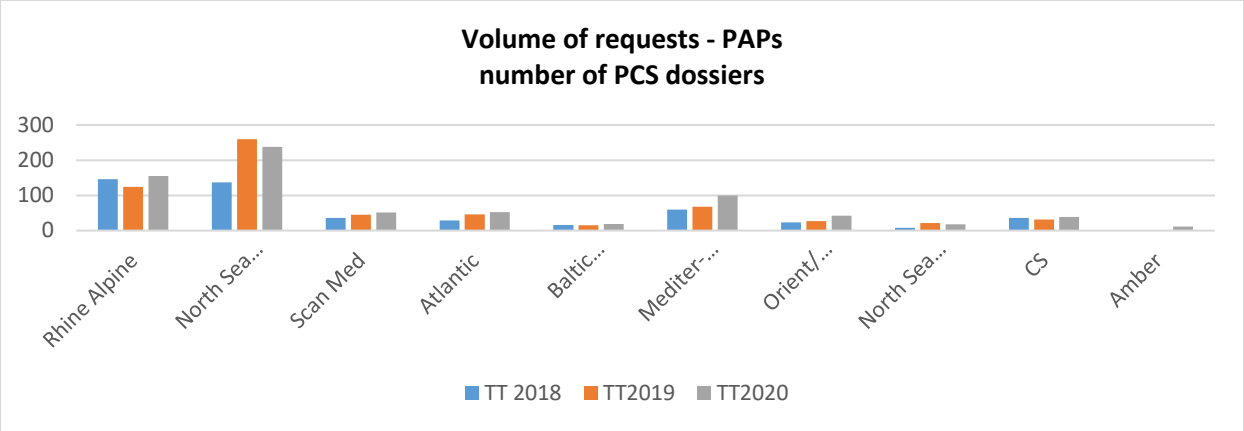
- Another reason may be the increasing difficulty for applicants to get good quality international train paths (due to a lack of capacity). As a result railway undertakings are in a way 'forced' to use the Pre-Arranged Paths (PAPs), even if they would prefer to continue and work via the infrastructure manager as before.
- In other cases, the growth is due to a general increase in requested capacity (Baltic Adriatic, Orient/East-Med and CS RFCs).

14. In general the offer of PAPs on RFCs for 2018 (Timetable 2019) appears to meet the volume of PAPs that are requested. Initial findings regarding 2019, show that this is the case on the Atlantic corridor, especially on the French side. In Germany, due to the fact that ECR/DB Cargo does not used PCS, the capacity offer by the C-OSS was lower. In Spain and Portugal, as there is no capacity issue, railway undertakings usually order their path only a few days before operations. On the Orient/East Med corridor, the volume of PAPs requested on the Orient/East Med corridor has increased. On the North Sea Med corridor however regulatory bodies have observed that the original concept of the PaP does not meet completely the needs of the market. The main obstacle appears to be the differences in commitment of the national infrastructure managers to the corridor concept in general. The number of PaPs offered on long stretches such as between Antwerp and Basel did not use to meet demand, in particular at cross border points for instance between Belgium and France (Aubange / Mont Saint Martin). But with the new approach taken by the RFC in obtaining users capacity wishes in advance, the situation has improved. On the Antwerp-Basel route for the 2019 timetable, 23 capacity wishes were received, 26 path offers were made for the corridor and 11 were requested. The offer increased to 22 paths for the 2020 timetable with 19 paths requested.,



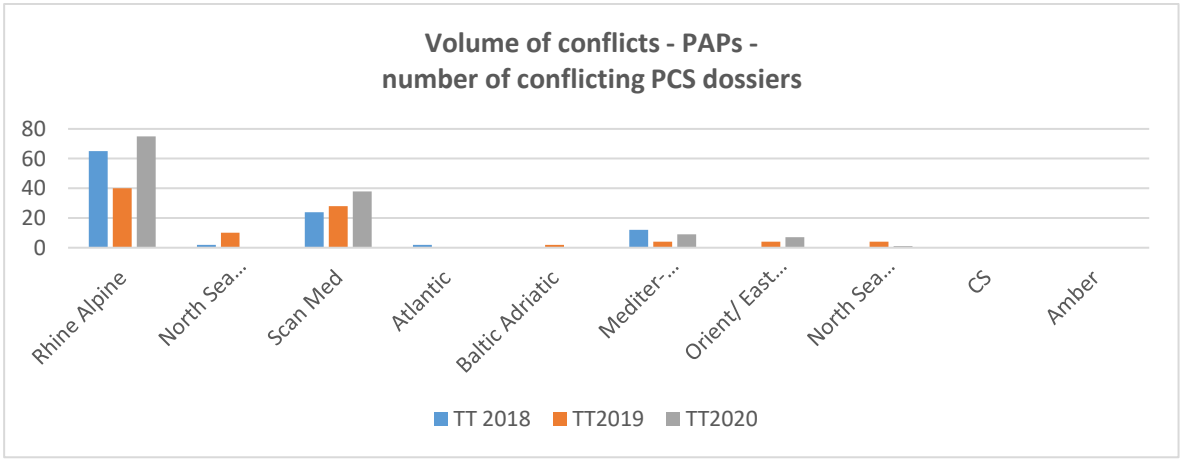


15. In terms of requested number of PCS dossiers, as shown in the graph below, a similar growth can be observed, except on North-Sea Mediterranean corridor where there has been a slight decrease in the volume of PAPs in 2019 whilst the volume of capacity requested increased. This is due to the fact that more dossiers contained path requests for multiple days, while the previous year there were more dossiers with requests for single days.



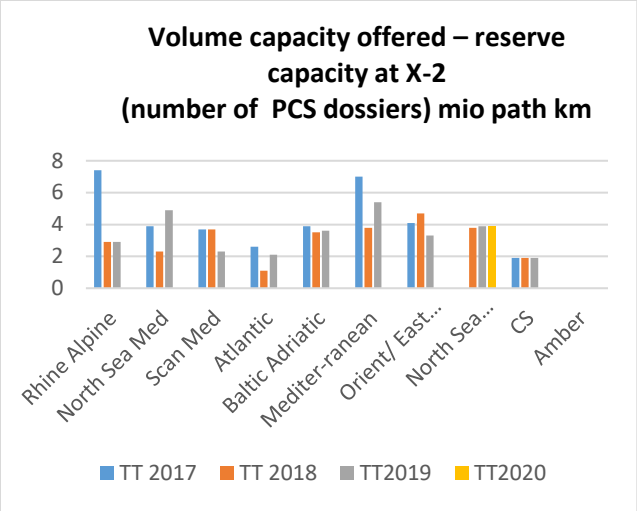
Conflicts – PAPs dossiers

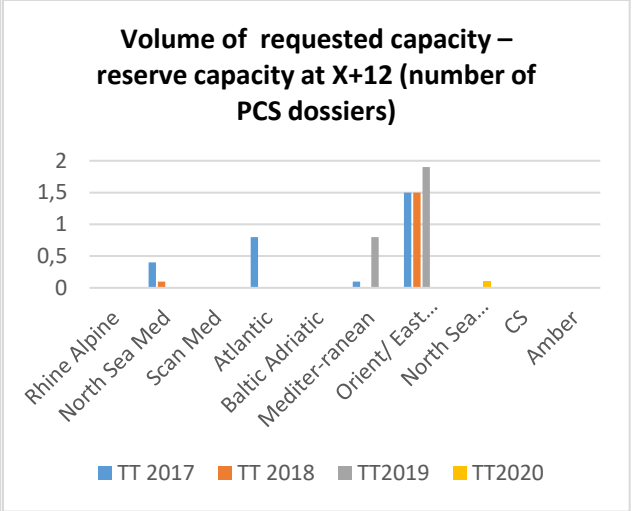
16. As the number of requests for capacity increases, this may also lead to a higher number of conflicts. On the North Sea Med corridor, the role of the C-OSS in engaging with customers and relevant infrastructure managers has been a major contributing factor in reducing the number of conflicting dossiers and no conflicts where observed in 2019. On the Rhine Alpine Corridor, out of 155 PCS dossiers requested for the allocation of PAPs, there were 75 conflicts. According to the C-OSS from Rhine Alpine RFC, some conflicts were noted based on national laws and non-harmonized train paths. In the case of Orient/East-Med RFC, the share of conflicting requests does not seem to grow significantly. In 2018 there were 4 conflicting dossiers out of a total of 27 (15 percent); in 2019 it was 7 out 42 (17 percent). On the Scan Med corridor the number of conflicts has risen in correlation with the number of dossiers, from 23 conflicts and 36 dossiers in 2018 to 28 and 43 in 2019 and 38 and 51 in 2020.



Reserve capacity

17. The Regulation also requires infrastructure managers, if justified by market needs, to offer some reserve capacity within the working timetable. All RFCs use KPIs calculating the volume of reserve capacity offered at X-2 (in October) and at X-12 (in December) in 2017 and 2018, but stopped collecting the data in 2019 in respect of the 2020 timetable.





Average commercial speeds

18. The KPI on average commercial speed of PAP on origin/destination pairs is part of the agreed KPIs list of NEXBO, RNE and IRG-Rail and is aimed to assess the quality of the PAP product. This is the case of the North Sea Mediterranean, the Scan Med and the Baltic Adriatic corridors.

19. However on some other RFCs, (the Mediterranean and the Czech Slovak corridors), data is collected on the whole corridor basis. On the Mediterranean corridor, the average commercial speed has gone from 43km/h in 2018 to 44 km in 2019.

20. The North-Sea Med Corridor has compared the PAP speed from TT 2013 to TT 2019 with the all scheduled freight trains speed for each section on the corridor. In several instances, the PAPs speed is higher than all scheduled trains speed; the PAPs' speed varies from 50 to 70 Km/h. On the Atlantic Corridor the average commercial speed is 57,1 Km.

Number of cancellations/modifications before timetable change

21. Another KPI, that can be used to evaluate the quality of the PAPs, is the number of modifications/cancellations before the timetable change. This data is only available for the Mediterranean RFC for TT2018 and the Orient/East Med RFC for TT2017:

    - 6 dossiers were modified before the timetable change in the Orient/East Med Corridor for the 2017/18 timetable and none for the following year;
    - 18 dossiers were modified before TT change and 2 dossiers were cancelled before TT change (25% of the dossiers) in the Mediterranean Corridor in 2018,

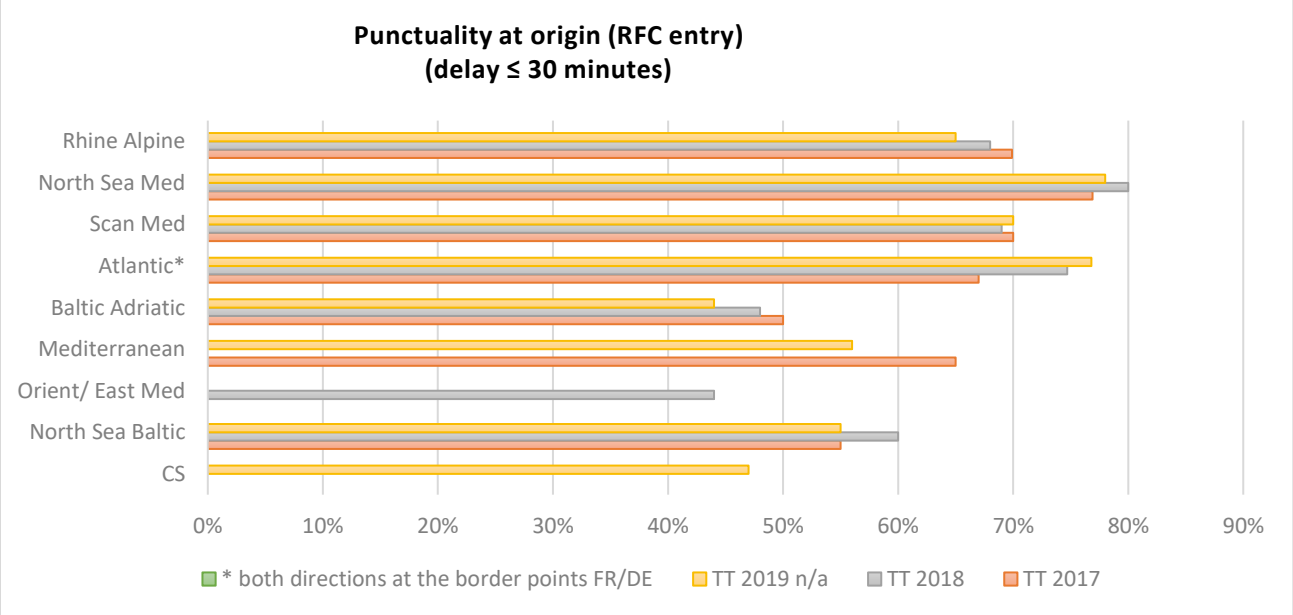
22. This data shows that freight railway undertakings and freight customers require a more dynamic system offering more flexibility in capacity allocation in terms of both quality and timeframe. This is currently addressed by the Timetable Redesign Project (TTR) that is piloted on several RFCs.

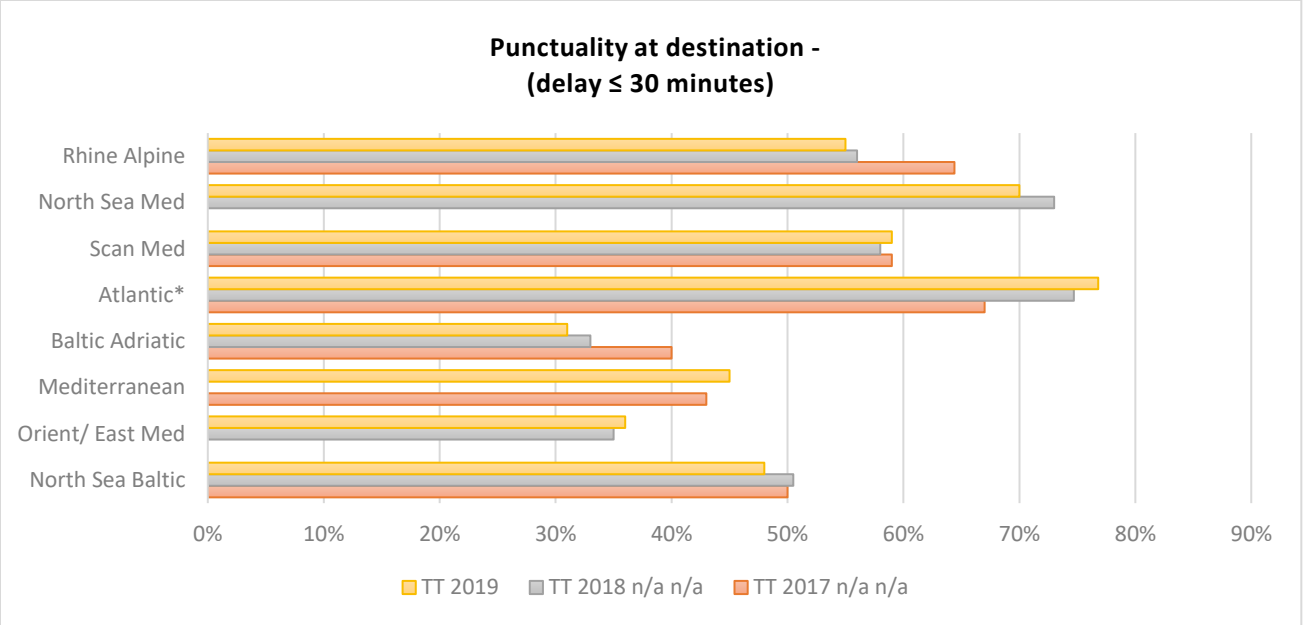
b) Operation KPIs

Punctuality

23. Collection of data for punctuality KPIs is foreseen by NEXBO, RNE and IRG-Rail. Punctuality is measured at origin or destination in number of trains where the delay is less than 30 minutes (although some corridors have also data based on a 15 minute threshold). Data gathering on punctuality and delays is patchy. Information on punctuality at origin and destination is available on eight corridors, measuring trains arriving within 30 minutes of the agreed threshold. The Atlantic RFC reported in particular that information for this KPI was not available due to difficulties in both identifying precisely RFC trains running on the corridor and linking train paths between France and Spain regarding the different loading gauges. As a result the RFC measures punctuality only at border points. On that corridor, 76.8% of trains arrived within 30 minutes at the border point between France and Germany, 78.1% on the French side at the border point with Spain, 69.4% on the Spanish side and 64.9% at the border point between Spain and Portugal.

24. Data comparison highlights clear differences between the West European and the East European traffic. The punctuality seems higher in the Western part of Europe, mostly because in the Eastern part traffic is more dynamic, which results in many changes to the TT few days/hours before the effective running of the train. In general, there is a decrease of punctuality from origin to destination, because it often happens that TTs are not completely harmonised at the border, and thus discrepancies between one IM and another are counted as delay.





Train runs

24. This KPI calculates the number of train runs at an actual time at a specific point or status on selected border points, and the deviation from the planned time at that point.

25. Although this is a KPI identified by NexBo, RNE and IRG-Rail, information is poor and has only been collected for the Baltic-Adriatic, Mediterranean and Orient/East Med RFCs. It is therefore difficult to provide any general insights concerning the number of trains run and the related cancellations. To note that RNE collects data for internal use only and thus does not publish it.

Other Operations KPIs

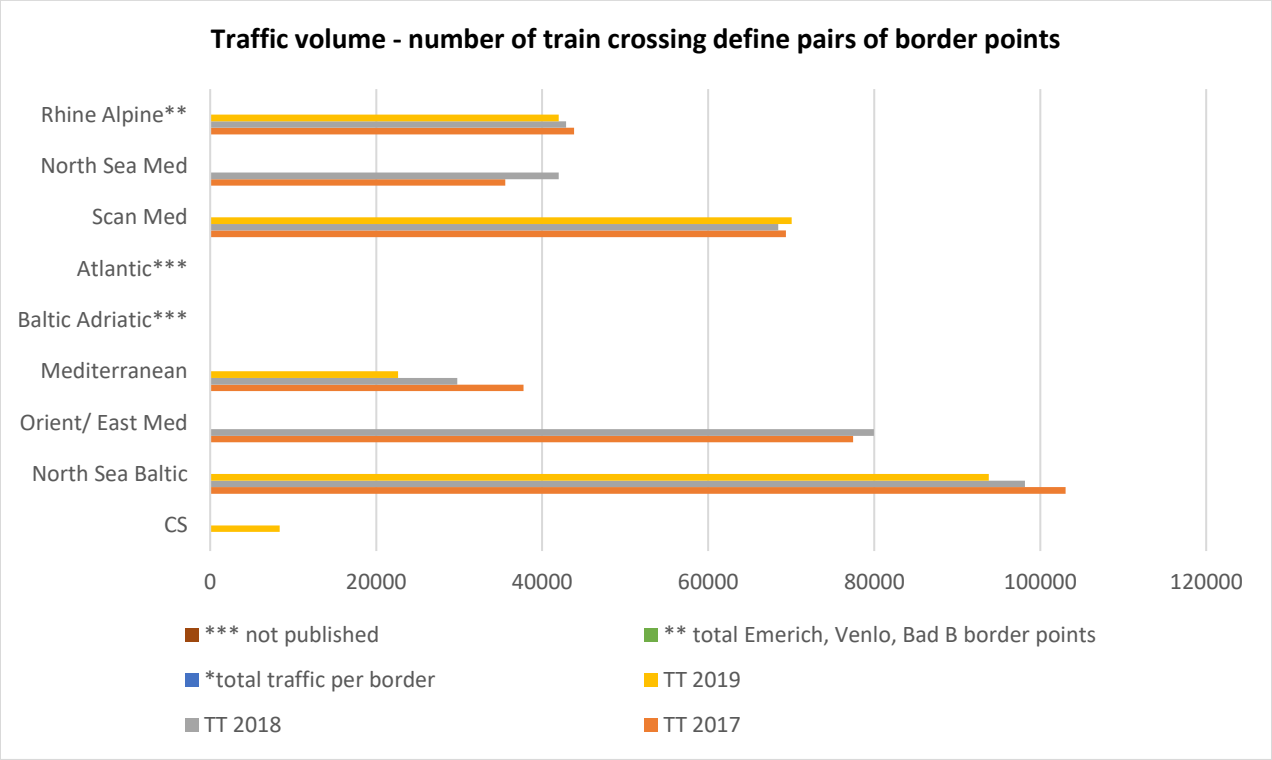
26. Both NexBo and IRG-Rail have identified additional KPIs, including delay reasons in minutes attributed to each delay code and the number of trains affected and the amount of delay caused by deviations from planned temporary capacity restrictions. So far no corridors have reported data for these KPIs.

27. In addition IRG-Rai's KPIs list contains specific indicators on number, duration and reasons for delays and cancellations. No data has been obtained so far on those KPIs.

c) Market Developments KPIs

28. The KPIs that have been identified to evaluate the capability of RFCs to meet market demands include the calculation of traffic volumes and the ratio of capacity allocated by the C-OSS in the yearly timetable for each corridor versus the total number of allocated international freight trains in the yearly timetable. Only IRG-Rail has identified the ratio of saturation of corridor sections due to PAPs as another useful KPI.

29. The same observations made in relation to the Operation KPIs regarding the lack of data can be made on the market developments KPIs. It is therefore not possible to extrapolate any considerations.



30. Information on the percentage of capacity allocated by the C-OSS in comparison to the total capacity allocated“ is available only for North Sea Mediterranean and the Atlantic RFCs (2017). On the North-Sea Corridor the C-OSS allocated 33% of the whole freight capacity in 2017, and 34% in 2018; while in the Atlantic Corridor the C-OSS allocated 59% of freight capacity in 2017. On the Atlantic RFC, there is a clear link between the capacity offered by the C-OSS and the demand on the corridor. Therefore it is possible to estimate the new traffic generated by the establishment of the corridor. For example, for the 2020 timetable, a decrease of one third in the total of allocated path kilometres can be observed regarding the capacity being offered, as opposed to a 12% increase in the total path kilometres volume requested.

VI. Commercial conditions KPIs

31. In relation to the commercial conditions of use, IRG-Rail had defined two KPIs:
    a. average track access charge per train-km on the RFC related rail infrastructure and
    b. customer satisfaction.

32. Information so far is only collected by RNE on customer satisfaction. No information is collected and is available on the average track access charge on each RFC. Information on track access charges only relates to domestic networks and is not comparable.

33. Concerning the customer satisfaction KPI, the Regulation requires the Management Boards of the RFCs to conduct a yearly satisfaction survey among users of the RFCs and to publish the survey's results. RNE coordinates the compilation of the survey and publishes it on its website. The latest survey drawn up by RNE can be found at: http://www.rne.eu/rneinhalt/uploads/RFC_User_Satisfaction_Survey_2018_Overall_Results_final.pdf

VII. Conclusions/Recommendations

34. IRG-Rail overview of the RFCs KPIs for the Timetable (TT) years 2017 and 2018 has highlighted several issues:

Identification of KPIs

- Although there is a core list of KPIs that are used by RNE, Nexbo and IRG-Rail, in many instances, the information to calculate these common KPIs is not available on all corridors. This is particularly the case in relation to Operations and Market Development KPIs. On the other hand, PRIME – the platform of rail infrastructure managers in Europe has developed a catalogue of KPIs, including indicators on punctuality and costs.

- Data does not appear to be available to compile the additional KPIs identified by IRG-Rail (eg commercial conditions) raising the question whether these KPIs should be retained for the time being. For instance, data needed for the IRG-Rail specific KPIs such as commercial speed, percentage of allocated capacity by RFCs or number of dossier cancelled/modified before TT change is generally not available.

Implementation of KPIs

- The data submitted in relation to operational KPIs is of poor quality. This may be due to the reluctance of some infrastructure managers to provide additional data to that submitted to RNE or NEXBO. The fact that RNE operation tool Traffic Information System (TIS) is not fully functional yet, especially concerning the uploading of information from national Infrastructure Managers (IMs) to the RNE database can also be a contributing factor.
- The regulatory bodies note that there is very little information on operational corridor KPIs (ie on punctuality , delay reasons, are available since infrastructure managers are not capable of distinguishing corridor trains from normal traffic. It should be possible to have a system earmarking the capacity allocated by the EEIG/C-OSS, so that in the national systems this capacity can be identified as corridor capacity.
- KPIs tend to rely on the reporting and data of the C-OSS (offer, allocation), rather than information provided by individual infrastructure managers, thus possibly providing an incomplete picture.
- Some consolidation may be possible in collecting data on delays and cancellation as these are indicators that have been singled out by NEXBO and IRG-Rail. Information provided by infrastructure managers to the PRIME benchmarking may also be helpful.

Recommendation

- IRG-Rail will continue to engage with NexBo and RNE to promote a single and harmonised list of KPIs. IRG-Rail will also exchange with PRIME on best practices for developing strong indicators helping regulatory bodies to better understand the performance of each rail freight corridor.
- IRG-Rai will encourage the sector to pursue a system that will make it possible to earmark corridor trains. It will continue to encourage infrastructure managers and RFCs to make

best use of the IT tools developed by RNE. In particular IRG-Rail calls for infrastructure managers to fully contribute to the Train Information System (TIS), the RNE web platform that delivers real-time train data concerning international (partly national) passenger and freight trains. TIS functionality is a key element in supporting train and performance management including on RFCs.

RFC data covering 2018/2019 timetable

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
Capacity management	Volume of offered capacity	Km*days offered mio	2018	17.6	21.27	16.8	9.9	8.9	14.2	11.3[1]	15.8	4.81
	Volume of requested capacity	Km*days requested mio	2018	7.4	13.5	6.4	4.5	0.91	4.3	3.6	2.3	3.4
	Volume of requests	Number of PCS dossiers	2018	124	260	45	46	15	68	27[2]	21	31

[1] In 2019/20 TT – 14.2 mio
[2] In 2019/20 TT – 42 dossiers

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
	Volume of capacity (pre-booking phase)	Km*days(pre-booking phase)	2018	6.4	13	5.1	4.47	0.85	4.2	3.6[3]	1.9	3.4
	Number of conflicts	Number of PCS dossiers submitted to the C-OSS that conflict with at least one other PCS dossier/ total number of dossiers	2018	40	10	28	0	1	4	4[4]	5	0

[3] In 2019/20 TT – 5.9 mio
[4] In 2019/20 TT – 7 dossiers

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
	Number of cancelations before timetable change	Number of dossiers cancelled or partially cancelled (cancellation of the train path or part of the train path in one or more train running days)/ total number of dossiers	2018	not available (n/a)	n/a	n/a	n/a	n/a	n/a	0	n/a	n/a
	Number of modifications before timetable change	Number of dossiers modified (number of path modifications in terms of timetable or calendar or train number) / total number of dossiers	2018	n/a	n/a	n/a	n/a	n/a	n/a	0	n/a	n/a

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
	% of capacity allocated by the COSS in comparison to the total capacity allocated	Per each RFC section: PAP Km*days allocated/ total Km*days allocated	2018	n/a	41	n/a	n/a	n/a	29.4	n/a	n/a	n/a
	% of saturation of corridor section due to PaPs	total capacity of the corridor line section allocated to PaPs/total potential capacity of the corridor line section	2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Operations	Punctuality at origin	The calculation formula for this KPI corresponds to that of KPI 2 in the RNE Manual 'Cooperation in Train Performance Management'	2018	65%	78% (69% 15 mins)	70%	?? 76.8% FR/DE	44%	56%	44% (2017/18)	n/a	**n/a**

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
	Punctuality at destination	The calculation formula for this KPI corresponds to that of KPI 1 in the RNE Manual 'Cooperation in Train Performance Management'	2018	55%	70% (60% 15 mins)	59%	?? 64.9% SP/PT	31%	45%	36% (2017/18)	n/a	n/a
	Number of train runs	Total number of train runs having a RA (Running Advice) on selected pairs of border points	2018	n/a	Available btw specific points. Eg Bettembourg/Zoufftgen 9372	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Punctuality and delay reasons	In minutes;	2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		list of delay reasons		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
	Planned average speed of paths vs actual train running	Absolute number	2018	n/a	available on pairs of routes as km/h per corridor route eg Antwep-Basel52.2 km/h	n/a	n/a	46.7 (46.6 in 2019)	43 (44 in 2019)	n/a	n/a	n/a
	Number of trains affected and amount of delay caused by deviations from TCR	Number of trains; delay minutes by TCRs	2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Number and duration of disruptions – delay reasons need to be identified	Absolute numbers, minutes	2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
	Cancelations of trains within the timetable (number of dossiers)	Cancellation of the train path or part of the train path in one or more train running days	2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Market development	Traffic volume	Number of train runs with RA on selected border points	2018	Emerich,Venlo, BadB: 42,000 - Aachen West: 24,000 - Basel: 53,000 - Domo, Luino, Chiasso; 47,000	41,981	70,041	n/a	69,952	22,621	79,963 (2017/18)	98,151	n/a
	Relation between capacity allocated by the C-OSS and total traffic	Number of trains allocated by the C-OSS involving selected points/number of train runs having a RA on selected border points	2018	n/a	Basel/St Louis:78% Blandain/Baisieu: 141% Equelinnes/ Jeumont: 32% Aubange/ Rodange: 96%	Kornsjö: 4,1% Peberholm: 46,1% Padborg: 48,5% Kufstein: 0% Brennero: 0%	n/a	n/a	n/a	Curtici - Lőkösháza: 64% Štúrovo -- Szob: 34%	n/a	n/a

Business area	KPI	Calculation formula	Reference year	Rhine Alpine (RFC1)	North Sea Med (RFC2)	Scan Med (RFC3)	Atlantic (RFC4)	Baltic Adriatic RFC5)	Mediterranean (RFC6)	Orient/ East Med (RFC 7)	North Sea Baltic (RFC8)	CS Corridor (RFC9)
					Aubange/ Mont St Martin: 117% Zoufftgen/ Bettembourg: 36% Mouscron/ Tourcoing: 94% Essen/ Roosendaal: 27% Calais/tunnel: 48%					Episcopia Bihor - Biharkeresztes: 30% Břeclav - Kúty: 14% Giurgiu - Ruse: 10% Others: 0%		
Commercial conditions of use	Average track access charge per train-km on the RFC related rail infrastructure	€/trainkm	2018	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Business area	**KPI**	**Calculation formula**	**Reference year**	**Rhine Alpine (RFC1)**	**North Sea Med (RFC2)**	**Scan Med (RFC3)**	**Atlantic (RFC4)**	**Baltic Adriatic RFC5)**	**Mediter ranean (RFC6)**	**Orient/ East Med (RFC 7)**	**North Sea Baltic (RFC8)**	**CS Corridor (RFC9)**
	Customer satisfaction KPI	Qualitative data	2018	survey available [5]*	survey available*	survey available*	survey available*	survey available*	survey available*	survey available* 4.0	survey available*	n/a

[5] * http://www.rne.eu/rail-freight-corridors/rfc-user-satisfaction-survey/