Rail Freight Corridor Rhine-Alpine

Annual Report 2018

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In 2018 RFC Rhine-Alpine had a strong focus on developing and implementing an improved international contingency management (ICM). Together with DB Netz and SBB Infrastructure and based on feedback of many stakeholders after the Rastatt closure in 2017, the ICM Handbook was drafted. It was discussed with many stakeholders and finally adopted by RNE and PRIME and supported by many sector organisations and political stakeholders.

Based on input from traffic management experts of all infrastructure managers (IM) partners, RFC Rhine-Alpine then became the first RFC to implement the ICM Handbook by developing re-routing scenarios and establishing processes for ICM conference calls. RFC Rhine-Alpine also organised a first simulation of the new international conference calls. With all the experiences made, RFC Rhine-Alpine was happy to serve as a blueprint for the RFC Network.

International rail freight does not seem to have fully recovered in 2018 from the Rastatt disruption. For the whole year 2018 the statistics on train volumes at borders show an overall increase of about 2.8%. With this growth the number of trains did not reach the 2016 figures, even though inland waterways, our main competitor, were hampered by low water levels on the Rhine for several months in 2018. Sector stakeholders complain about a further decrease in punctuality of load units which – among other reasons – also led to the cancellation of about 5–10% of planned trains. This could be one reason for the relatively low increase in the number of trains at borders in 2018.

The performance analysis of RFC Rhine-Alpine shows a decrease in both departure and arrival punctuality. Performance management has been one of the focus topics of RFC Rhine-Alpine in 2018. New ways to improve performance, e.g. with a task force related to specific traffic involving terminal operators, a combined transport operator, RUs and IMs were sought after. With this task force we are slowly moving towards a better joint understanding, greater transparency and joint approaches for improving performance.

In the offer of pre-arranged paths (PaPs) for the timetable (TT) 2019 we had made some structural changes to better adapt to customer needs. For example, we introduced shorter PaPs on the northern and southern parts of the corridor. While this resulted in a lower number of offered PaP-km, the share of requests and the number of requested PaP-km went up. In TT 2019 several of our partner IMs also offered very fast paths between Cologne and Gallarate, the so-called Cologne Gallarate Improved Supply (COGIS). These paths did not have the status of a PaP, but they were promoted by our C-OSS and offered via PCS.

For the first time in TT 2020 two PaPs harmonised with RFC ScanMed were constructed. It was also decided to offer COGIS again in the same way as in TT 2019.

Despite some improvements during the last years, the PaP offer is still not satisfactory and the Management Board (MB) of RFC Rhine-Alpine is planning to develop a new approach during 2019 for improved harmonisation of international paths on the corridor.

Regarding the allocation in the draft and final timetable (DTT and FTT), in July and August 2018 several partner IMs were not able to comply with the agreed international timeline. This was also a problem for the allocation via the C-OSS of RFC Rhine-Alpine. As the delay at RFI was announced to take an entire month, the C-OSS of RFC Rhine-Alpine tried to assure at least the existing partial information via PCS. In the future this will not be possible
In 2018 RFC Rhine-Alpine had a strong focus on developing and implementing an improved international contingency management.

anymore in PCS. The Management Board of RFC Rhine-Alpine agreed that the allocation via PCS can only be done based on complete information from all IMs; at the same time it is pushing for an increased harmonisation quality of the paths.

With regard to construction works and other temporary capacity restrictions (TCR), the IMs in RFC Rhine-Alpine coordinated the planned TCRs and then published an overview in CIP, namely the full list as an Excel file and information on the effects of major works on train re-routing (so called “impact sheets”). The WG TCR of RFC Rhine-Alpine also took up a request from the Railway Undertaking Advisory Group (RAG) and drafted an overview of planned maintenance windows on the corridor. This is taken up as a regular coordination task of the WG TCR in 2019.

In 2018 considerable progress was made in the construction works of running projects, such as the Ceneri Base Tunnel and 4m corridor in Switzerland or the Giovi Pass in Italy.

Attention was also focused on the further ETCS deployment. Installations on the border sections to Switzerland are completed and on the track between Iselle and Domodossola, ETCS could already be put into operation. In intensive expert discussions, essential functional problems were discussed and an opinion on critical issues was worked out and sent to the ERTMS coordinator of the EU Commission, DG MOVE.

The approach to extend the view beyond the infrastructure to include the users’ perspective was continued with several activities. One of these was a survey on the planned onboard unit deployment by vehicle owners.

At the end of 2018 an implementation plan Update was signed by the Executive Board (ExB) and published in the Customer Information Platform (CIP). It contains up-to-date information on the infrastructure measures related to RFC Rhine-Alpine (investment plan) and the state of play regarding ERTMS deployment and the train length possible on the corridor (objective: 740m trains).

Two studies were finalised in 2018: our special Transport Market Study focussing on major growth drivers and an internal study to improve coordination of international ad hoc path requests on the RFC Rhine-Alpine borders.

RFC Rhine-Alpine (as part of the RFC Network) participated in the TEN-T Days that were organised by the EU Commission in Ljubljana in April 2018 and in the Rail Freight Day of the EU Commission and RNE in Vienna in December. Several members of the Management Board and the Managing Director of RFC Rhine-Alpine also presented their view on the sector development in panels during the Rail Freight Day.
The Executive Board (ExB) decided to put contingency management on its agenda as a priority following the Rastatt incident in 2017. A ministerial declaration with focus on supporting and enabling ICM in the rail freight sector was signed on 23 May 2018 in Leipzig with ministers from the RFC Rhine-Alpine and some of the RFC North Sea-Mediterranean. The development of the ICM Handbook by the Management Board of RFC Rhine-Alpine together with partner IMs was highly welcomed, which was endorsed at the level of all rail freight corridors and IMs in Europe.

In the second half of 2018, the Executive Board developed a targeted action plan following the Leipzig declaration, revised the corridor’s implementation plan and adopted a revised harmonised framework for capacity allocation (FCA). The intention of the action plan is to deliver on the issues taken up in the 2018 Leipzig declaration and the 2016 Rotterdam declaration, respectively. The revised implementation plan indicates an updated list of investments and shows the targeted ERTMS rollout for large sections of the corridor. The Implementation plan also shows an overview of the rollout of 740m-compliant infrastructure, which is a key priority for Railway Undertakings and shippers. The revised framework for capacity allocation aims to allow pilot projects, developed in the framework of the timetable redesign project. Even where the RFC Rhine-Alpine is not concerned, it is deemed necessary that each ExB adopt the revised FCA to avoid discrepancies between RFCs.
2 Performance Report

2.1 Traffic Development

- Traffic volume

Figure 1: KPI International Traffic Volume

Definition: number of international freight trains per year crossing a border of RFC Rhine-Alpine in either direction, regardless of origin or destination. If several cross-border sections exist these have been summed up:

- **NL–DE**: Hengelo–Bad Bentheim, Venlo–Kaldenkirchen, Zevenaar–Emmerich
- **CH–IT**: Brig–Domodossola, Ranzo–Luino, Chiasso–Chiasso border

Overall traffic development
In 2018 overall traffic mostly recovered from the loss of confidence in the market following the Rastatt disruption in 2017. Compared to the 2017 decrease of 3.2%, the traffic for the entire corridor increased by 2.8% in 2018. The low water levels of the Rhine helped to slightly improve rail freight traffic. However, the growth could have been expected to be more significant. During 2018 the economy in Europe was slowing down, which could explain the low growth momentum of train volumes on RFC Rhine-Alpine. The lack of train drivers and moderate punctuality did not help the situation.

Border crossings NL–DE
At the Dutch border points there was an overall increase in traffic of 0.9% compared to 2017.

On the one hand, traffic recuperated moderately after the Rastatt incident in 2017. On the other, the low water levels of the Rhine also gave freight a boost. This was countered, however, by a drop in the amount of coal trains after the closure of several coal-fired energy plants in January and March.

Border crossing BE–DE
In Belgium, compared to 2017, traffic at the Montzen border point increased by 4% in 2018. This was mainly due to the general recovery of the train volume which was reduced by the Rastatt incident.
Border crossing DE–CH
Compared to 2017, traffic at the Basel border point increased by 4.5% in 2018. Again, the effect of the Rastatt incident is evident.

Border crossings CH–IT
In 2018, in Italy traffic increased by 2% compared to 2017. Whereas the Chiasso and Domodossola border points had a significant increase in traffic in 2017 due to the Luino line closure, the trend was reversed in 2018 with the reopening of the line.

Modal split

Rotterdam
The total transport volume in the Port of Rotterdam increased in 2017, which slightly benefitted the rail transport. The share of rail traffic increased by 0.2% compared to the previous year (by rounding this results in 1% higher market share in Fig. 2).

Antwerp
In 2017 the overall volume of barge, rail and road traffic increased. The growing interest in rail transport led to a 1% increase for rail.

Genoa
In 2017, as in 2016, the rail sector could not benefit from the overall traffic increase. No changes in modal shift could be reported as most of the hinterland traffic continued to use the road.
Trans-alpine traffic

In 2018 the overall trans-alpine freight traffic increased by 2%. On RFC Rhine-Alpine 27.9 million tons crossed the Alps, which constitutes an increase of even 2.9% compared to the previous year. This was mainly due to the reopening of previously closed sections in Rastatt and the Luino line in 2017 which had severely reduced the overall rail freight transport volume. However, the 2016 level could not be reached in 2018; volumes remain 2.6% below the 2016 value.

The rail share of the overall trans-alpine traffic increased by 0.6%, benefitting from the continued decrease in road haulage. 52% of all freight transport crossed the Alps on the corridor in combined transport (unaccompanied and RoLas).

Figure 3: Modal Split Trans-Alpine Traffic 2015–2018

Source: BAV quarterly report 1/2019 on cross-alpine traffic

Definition: Modal split [%] for trans-alpine freight traffic is based on net tons.
2.2 Path Allocation

Volume of offered, requested and pre-allocated capacity

Figure 4: KPI Volume of Offered, Requested and Pre-Allocated Capacity

The evolution of the amount of offered PaPs from TT 2015 to TT 2019 is displayed here (white bars). These PaPs are offered along the routing of the corridor in the directions North–South and South–North. Most of the offered PaPs are planned from Monday to Sunday (seven days of operation); nevertheless, some might have a lower availability (e.g. four or five running days), or a given PaP might not be available during some days throughout the year because of TCRs.

The figure also shows a comparison of the volume of all requests (blue bars) that were received at the Corridor One Stop Shop (C-OSS) of the RFC Rhine-Alpine for the annual timetables 2015–2019. Due to conflicts, it was not possible to allocate all the requested capacity as PaPs (green bars), but in all other cases, tailor-made solutions could be offered to the applicants instead. In addition to the requests of PaPs, a high number of connected feeder and outflow paths were requested and allocated.
Volume of requests including number of conflicts at X-8

Figure 5: KPI Conflicting PaP Requests

The parameter shows the number of PaP conflicts for the timetable period 2015–2019, in which two or more customers requested the same PaP during the phase of PaP requesting (X-8) in number of dossiers.

During the last timetable period, only 40 out of 126 dossiers were in conflict. That represents a reduction of 38% of conflicts in comparison with 65 dossiers in the previous year for TT 2018. Fewer conflicts made the process of pre-allocation easier and faster. The reduction of conflicting dossiers was, for example, due to the fact that the offer was presented in a more market-oriented fashion for TT 2019.
Volume of offered and requested reserve capacity

Reserve capacity (RC) for international rail freight on RFC Rhine-Alpine is developed in a flexible approach. The offer is published in the form of capacity slots with no specific time range and as capacity per section on a daily basis. Reserve capacity can be requested 30 days before the train run for the entire current timetable year.

Figure 6 shows a retrospective view of offered and requested reserve capacity from the timetable period 2015–2019. No requests were placed from TT 2017 to TT 2019.

Most other RFCs have a similar situation with very low or no reserve capacity requests. Several RFCs developed and tested a different approach for reserve capacity.

After many discussions on this topic, the RFC Rhine-Alpine Management Board decided to focus on improving the existing bilateral coordination of ad hoc requests. A study was carried out in 2018 and complemented by workshops with the ad hoc timetable experts at all. As a result, the so-called “pre-check” coordination has been intensified at several borders. Other measures for improved coordination have been agreed. The results of the study will be followed up in 2019.
Average speed of offered PaPs

**Figure 7: KPI Average Speed of Offered PaPs for TT 2019 and TT 2020**

The travel speed of a pre-arranged path varies due to the geography and the train parameters associated with the specific pre-arranged path as well as the applicants’ need for operational stops (e.g., for changing engines, working break, driver change). These are the main factors that influence the complete travel time of a train from A to B. Therefore, and to see the evolution of this parameter during the different timetable periods, a new KPI has been agreed upon by the RFC Network based on discussions with RUs in the RNE KPI working group “Key Performance Indicators for Rail Freight Corridors”.

Figure 7 shows the most requested relations on the corridor. The KPI is calculated using the departure and arrival times including all foreseen stops along the train run. Every chosen relation consists of at least two published PaPs.

A comparison in the development of the KPI is also shown here for the timetable periods 2019 and 2020. The information has been retrieved from the PaP-Catalogue, which is published yearly on the second Monday in January of each year and therefore data concerning TT 2020 could...
**Allocation ratio of PaPs for TT 2019**

Figure 8: KPI Allocation Ratio of PaPs for TT 2019

![Allocation ratio of PaPs for TT 2019](image)

**Definition:** This indicator shows the percentage of allocated trains by the C-OSS in relation to the allocation of international rail freight trains in the annual timetable on the chosen border crossings of the corridor.

be included in this report. Furthermore, new relations were included in respect to the former timetable period and a comparison could not always be made (empty columns of the graph). Overall, in some of the shown sections, a reduction of the average speed can be seen. One reason for this is the increase in works on the lines of the corridor; but transitions at border stations are also a crucial factor for decrease in average value.

The allocation ratio is calculated based on data provided by the infrastructure managers and the C-OSS of RFC Rhine-Alpine. At every border of the corridor, the number of crossing trains, which has been allocated via PCS and associated with PaPs, is compared to the number of trains in the annual timetable, which has been allocated by the infrastructure managers of the corridor.

Figure 8 shows that particularly in the southern part of the corridor the ratio of trains allocated by the C-OSS is higher than in the North.
Train Performance Management

Punctuality improvements are a top priority of the Management Board of RFC Rhine-Alpine as well as of the Sector Statement (2016). In 2017 this was again confirmed by the inclusion into the corridor MoU signed by the CEOs of RFC Rhine-Alpine. The overall punctuality reported has been stagnating for many years. Both departure and arrival punctuality remains at a low level. RUs and their customers complain about decreasing and low punctuality and about low reliability, which have a negative impact on end customers’ trust. On RFC Rhine-Alpine the high amount of traffic and many construction works lead to capacity bottlenecks which also influence performance. The goal of TPM on RFC Rhine-Alpine is an international approach to improve the quality of train performance together with the relevant stakeholders involved in the intermodal transport chain and hence improve customer satisfaction.

Train punctuality is measured based on the comparison of the time in the timetable of a train identified by its operational train number and the actual running time in operations at certain measuring points. Punctuality measurement is based on the timetable for the entire train run delivered to the Train Information System (TIS)\(^1\).

Punctuality KPI for RFC Rhine-Alpine

**Figure 9: Yearly Punctuality KPI**

<table>
<thead>
<tr>
<th>Year</th>
<th>RFC entry</th>
<th>RFC exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>2018</td>
<td>70</td>
<td>70</td>
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<tr>
<td>2017</td>
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<td>60</td>
</tr>
<tr>
<td>2017</td>
<td>47</td>
<td>47</td>
</tr>
<tr>
<td>2018</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: Report provided by RNE based on TIS data

Definition: The KPI considers all international freight trains crossing at least one border and defined point on the corridor. The trains are measured at their entry and exit points on the RFC.

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\(^1\) TIS is a web-based application provided by RNE that conveys real-time train data for international freight trains.
RNE calculates the defined punctuality figures using TIS data. Based on these punctuality figures as well as specific reports, which deliver additional figures for intermediate and border stations, weak points with high delays can be identified and analysed, with the aim to improve overall punctuality on the corridor. A special focus is set on departure punctuality which is the major influencing factor for arrival punctuality.

The involvement of RUs, terminals and other actors along the transport chain is a key factor for punctuality analysis and improvement measures. Therefore, the Working Group Train Performance Management of RFC Rhine-Alpine organises dedicated task forces and workshops with the relevant stakeholders on specific points or trains.

All RFCs agreed to measure punctuality within a 30 minutes threshold. However, as discussions in PRIME have focussed on a 15 minutes threshold, this value is also shown for the overall punctuality KPIs for RFC entry and RFC exit. Trains have to be identified as international trains (with an international train number) and cross at least two predefined points on RFC Rhine-Alpine to be included into our performance statistics.

Punctuality measured at RFC entry and RFC exit decreased in 2018 compared to 2017. Trains running from North to South are slightly more punctual than punctuality of trains running from South to North.
These graphs show all delay minutes, also for the trains within the 30 minutes punctuality threshold. As far as available, all delay reasons are taken out of TIS which is fed by national delay coding agreed within UIC. National coding can be done slightly differently at each RFC Rhine-Alpine member IM (as at all European IMs), especially concerning the treatment of secondary delays.
Distribution of delay reasons is assigned according to the UIC leaflet 450-2 and shown by main delay reason group:

**IM²:**
UIC code-groups 10–49 considering all IM reasons, such as timetable planning, dispatching errors, infrastructure failures, temporary capacity restrictions (as far as not considered in timetables), unplanned works.

**RU³:**
UIC code-groups 50–79 considering all RU reasons, such as loading, train preparation, train formation by RU, rostering/re-rostering, rolling stock failures, loading irregularities, RU staff. Delays caused by terminals before handing trains over to the IM network are also coded as RU reasons (normally as late train preparation/loading).

Secondary delays:
UIC code-groups 90–99 considering delays which are indirectly caused by previous reasons, such as the delayed circulation of the same or another train and the resulting track occupations or conflicts within nodes. Incidents with trains/dangerous goods are also reflected here.

External reasons:
UIC code-groups 80–89 considering delays which are beyond the influence of IMs and RUs, such as weather conditions, natural events, suicides, authorities, strikes.

**Line closures or other events affecting punctuality in 2018:**

**Derailment in Pioltello (RFI)**
On 25 January 2018 a passenger train derailed on the Milano–Brescia line, close to the Pioltello station. This event also affected freight trains from/to the eastern part of Milan [e.g. Milan Smistamento, Melzo, Brescia]. The capacity of this section was reduced until 1 March 2018.

**Modernisation of railway infrastructure Cadenazzo–Luino (SBB-RFI)**
Total line closure Cadenazzo–Luino due to infrastructure works from 8 January until 28 April 2018 (8:00 am–5:00 pm) leading to major capacity restrictions with re-routings via the Lötschberg/Simplon line.

The codes 40/41 delays caused by previous/next IM/RU are not considered in the calculation as otherwise delays would be counted twice in the international context.

**Track renewal Gelterkinden–Tecknau (SBB)**

**Basel Rangierbahnhof: Partial renewal of shunting technology (SBB)**
Partial renewal of shunting technology from 1 August 2018 until 30 November 2019. Moderate capacity reduction with partial closure of the station at weekends. Since 10 August 2018, only half of the track group F has been available. Direction N–S: Adaptation of processes, adaptation of formations to the North, restrictions in the acceptance of trains from the South.

**Third track Zevenaar–Oberhausen (ProRail)**
In the context of the project Third Track Zevenaar–Oberhausen there were different periods during the year with single track use between Zevenaar Oost and Emmerich. Besides the freight trains, ICE trains as well as the regional and the regional passenger trains RE19 of RU Abellio were still running. These delays often caused major congestion on both sides of the border. This had a negative impact on the punctuality of the freight trains on the corridor.

**Recurring delay causes which impact freight traffic on the Infrabel network**
No major one-time events were identified that had a significant influence on the punctuality of freight trains on the Infrabel network in 2018. From analysis of the validated delays, several recurring delay causes could be identified, which had a significant impact on punctuality. Cable theft, accidents involving a person, caused 10.88% and 10.65%, respectively, of the validated delays. Infrabel has several ongoing campaigns which try to mitigate the delays due to these causes.

**Weather conditions caused major disruptions (DB Netz)**
The operational performance on the RFC Rhine-Alpine routes was negatively affected by several factors in 2018. Several disruptions due to bad weather conditions were significant. These events led to line closures and capacity restrictions in rail traffic. In addition, many construction works were carried out in the DB network. A representative example is the commissioning of the new signal box in Basel Bad Rbf and Weil am Rhein.

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2 The codes 40/41 delays caused by previous/next IM/RU are not considered in the calculation as otherwise delays would be counted twice in the international context.

3 The codes 70/71 delays caused by previous/next IM/RU are not considered in the calculation as otherwise delays would be counted twice in the international context.
Figure 12: Overview of Projects on RFC Rhine-Alpine
3 Investments

This chapter reports on projects that made significant progress or were completed during 2018. These projects are part of the implementation plan of RFC Rhine-Alpine.

3.1 Projects in the Netherlands

1. Third track Zevenaar–German border

In 2018 the third track between Zevenaar and the German border was completed. This track is equipped with ERTMS and 25KV catenary voltage and connects to the new third track in Germany.

Figure 13: Construction Works between Zevenaar and the German Border

2. ERTMS rollout strategy

In the summer of 2018, the ERTMS rollout strategy was adapted on ministry level to the latest insights. This implied looking at the optimum rollout order within a target setting budget for 2030, based on the routes with European agreements and the greatest social benefits and connection to already existing and expected ERTMS lines.

The below route sections of RFC Rhine-Alpine fall within the scope:

- Kijfhoek–Lage Zwaluwe–(Roosendaal border)
- Amsterdam–Meteren
- Meteren–Eindhoven
- Eindhoven–Venlo border
- (Roosendaal)–Breda–Den Bosch

The other two route sections are:

- Schiphol Airport–Lelystad
- Hoofddorp–Duivendrecht

Figure 14: ERTMS Implementation in the Netherlands

Explanation of the line colours ERTMS picture
- black line = already equipped with ERTMS
- orange line = ERTMS rollout by program
- dotted line = trial track with ERTMS and ATB
In 2018 the second phase of the construction of a new fan of sidings in Zwankendamme was finalised. This phase consisted of the construction of the fan itself, with four tracks able to accommodate 740m long trains. The global project aims at improving the rail connections between the Port of Zeebrugge and its hinterland and benefits from CEF co-funding. The study of the modernisation of the existing marshalling yard at Zeebrugge was finished in 2018.

Regarding the construction of the third track between Brugge and Dudzele, the renewal of the bridge at the Blankenbergsesteenweg was completed in 2018.

Moreover, the works on the construction of a third and fourth track between Gent and Brugge continued. All level crossings in the section between Gent and Brugge were replaced, except for one level crossing in Hansbeke. In 2018 several existing bridges were adapted to make the third and fourth track possible. Construction started in Oostkamp and on the section between Aalter and Beer-nem.

The study on capacity needs for the rail freight corridors in Belgium continued in 2018, in order to define the needs and priorities for adapting the corridors to the European requirements. Necessary infrastructure projects are being analysed, such as tracks to set aside long trains.

Also, the study concerning the sidings of Gent-Zeehaven continued, in order to create two tracks able to accommodate 740m long trains, and an application for CEF co-funding was introduced, including also two long tracks in the yard of the Mercator Dock.

In August 2018 the electrification of the section Mol–Dutch border (L19) started and should be finished by the end of 2020. The project benefits from CEF co-funding.

ETCS deployment continued according to Infrabel’s masterplan, which foresees for the whole network to be equipped by 2022. On 16th October 2018 the Royal Decree regarding the date of decommissioning of the Class B systems on the Belgian network was published. ETCS will become mandatory from TT 2026 (14 Dec. 2025).
In 2018, the blueprint and approval planning for the third track continued.

On 10 September 2018 the ceremonial handover of the completed bridge construction took place on the Rosa-/Rothofstraße. Two more street overpasses in Hamminkeln and Praest went into operation during the summer.

Three railway overpasses in the PfA 1.1 Oberhausen are under construction and are scheduled to be completed in 2019/2020.

In November 2018, the last of twelve hearings of the Planning Commission was held.

The lawsuit of the city of Oberhausen for additional noise protection against the first planning approval decision in the PfA 1.1. was rejected on 13 December 2018 by the Federal Administrative Court.

For the PfA 3.1 Rees-Haldern, the planning documents have been publicly disclosed since 21 February 2019. Further planning approval decisions are expected for 2019.
In the Federal Transport Infrastructure Plan (BVWP) 2030, the overall project “Corridor Mittelrhein, Zielnetz I” was included under “urgent needs”. The key measure is the new line (NBS) Rhine/Main–Rhine/Neckar, which is part of the RFC Rhine-Alpine. The BVWP 2030 specifies a two-track NBS between Zeppelinheim and Mannheim Waldhof for $V_{\text{max}}$ 300 km/h. The traffic on this new line will be operated as a traffic routing variant (daytime long-distance passenger traffic, rail freight traffic at night) to relieve existing corridor lines from rail freight traffic at night. To reach this goal, links with the existing routes on the corridor Klein Gerau/Weiterstadt/Griesheim/Darmstadt are required. In addition, a single-track connecting link between the Wiesbaden and Frankfurt branches of the high-speed line Cologne-Rhine/Main (Wallauer Spange) is included.

Public involvement in the planning process began in October 2016 in the form of a participation forum. Since then, several participation forums and working group meetings have been held to ensure transparency and an open dialogue with the citizens of the region from the beginning of the planning process.

Participation forums and working group meetings will also take place in 2019, in which the route decision will be determined. The first plan law procedure (planning approval section 1, between Zeppelinheim and Nordanbindung Darmstadt) is to be initiated subsequently.

In 2018, the project Karlsruhe–Basel made further progress both in the planning approval process and in construction works. An investigation process was initiated to determine the causes for the 2017 tunnel incident in Rastatt:

- After the successful re-opening of the track in section 1 in October 2017, Deutsche Bahn and the commissioned working group agreed on a process of cause investigation and arbitration proceedings. Due to the high complexity and extent of the incident, these investigations are still ongoing in early 2019. In the meantime, construction works at the open track continue as planned.

- In section 7 the general planners continued their work on the preliminary design according to the decisions of the advisory committee. First results for Tunnel Offenburg were publicly announced in June 2018. The work on the preliminary design for the other parts of section 7 continue.

- In section 8 the approval process for PfA 8.1 continued with the evaluation of the public hearing. In PfA 8.2 the early-stage citizen participation took place in June 2018. In PfA 8.3 the approval process is ongoing. In PfA 8.4 the early citizen participation took place in May 2018. All pending sections will successively be included in the approval process during 2019/2020.

- In section 9 the Federal Administrative Court finally confirmed the official planning approval for PfA 9.0. Construction works have started. The final works and documentation in PfA 9.1 are on schedule. The construction works in PfA 9.2 are ongoing. In PfA 9.3 the planning approval process in Switzerland is ongoing.
ETCS in Germany on RFC Rhine-Alpine

In 2018 the project work focused on finalising the detailed design and the strategy development for awarding, construction and commissioning. The ETCS L1LS detailed design phase is almost completed. The civil works contract for the whole corridor has been tendered, awarded and first works have already started. In addition, the required services for site supervision have been tendered and awarded.

The ETCS L1 LS pilot project that aims to intensify competition and to speed up the industry approval process has almost completed the ETCS construction works on the pilot lines in Hilden Koblenz-Ehrenbreitstein and Ingelheim.

The construction works and the industry approval process continue in 2019. Start of operation for the pilot project is planned for December 2019.

Node Basel: Weil am Rhein (state border)–Basel Bad Bhf. (border DB Netz/SBB):

The construction works and the implementation process of the Swiss signalling system P44 are completed. P44 has been in operation since December 2018.

In 2018 the planning approval procedure in Switzerland and the ETCS construction works were finished. Trial runs were successfully completed and only few remaining works are to be finalised at the beginning of 2019 so that the Node Basel can go into service in the second half of 2019.
Projects in Switzerland

11 Current state of works Ceneri Base Tunnel

The construction works on the Ceneri Base Tunnel are ongoing and will be completed in December 2020. In January 2016 the breakthrough of the southbound west tube took place. Since July 2017 both tubes have been equipped with the tunnel and railway infrastructure systems. Currently about 70% of the railway infrastructure systems are installed and the line bars will be integrated in both tubes.

12 Improvement Basel RB

It is planned to rebuild the shunting yard at Basel Rangierbahnhof (RB). New parking areas for locos will be constructed and existing sidings will be extended up to 750m. In addition, the overall capacity will be increased. First capacity improvements are expected in 2022.

13 Quadrupling Olten–Aarau

The project aims to build a fourth track between Olten and Aarau to increase capacity and decrease travel time. The centrepiece will be the 3km long double track Eppenberg-Tunnel between Schönenwerd and Aarau. Drilling started in January 2017 and was completed in February 2018. Since then the tube has been equipped with the tunnel and railway infrastructure systems. Parallel additional tracks were built. The construction works for a fourth track with a length of 2.5km between Dulliken and Däniken started in 2015 and is still ongoing. Furthermore, the feeder tracks for the tunnel as well as a fourth track in Olten were built. The go-live of the whole project is expected in 2020.

14 4m corridor

The works on the 4m corridor are ongoing until 2020 (Figure 19). With the inauguration of the Ceneri Base Tunnel the operation of freight trains with a 4metre profile will be enabled on the Gotthard line. Along the entire Gott hard route, some 20 tunnels need to be enlarged and 80 alterations made to platforms, traction current systems, signalling installations and overpasses. The main project is the construction of the new 2.7km Bözberg tunnel between Effingen and Schinznach-Dorf. Currently the double track tube is being equipped with the tunnel and railway infrastructure systems. After completion of the Ceneri Base Tunnel, both tracks of the mountain line will be upgraded to a 4m profile by the end of 2021.
Between Bellinzona and Luino the overall capacity will be increased by a new level crossing and a partly double track upgrade. Furthermore, the quality will be improved. After the Luino closure between June and December 2017, the new double track between Contone and Quartino will be equipped with railway infrastructure by the end 2019. At the same time, the works for the 4m corridor are ongoing to be completed in 2020. Eventually, the Luino line will be suitable for 740m trains with 4m profile.

To increase the overall capacity of the node Bellinzona–San Paolo the marshalling yard Bellinzona–San Paolo is being upgraded. The existing overtaking tracks are extended up to 750m and new sidings for changes of locos are built. The implementation is expected in March 2020.
In April 2016 the project planning for the extension of the Lötschberg Base Tunnel (LBT) started. The aim of the project is to equip the centre section of the tunnel with railway technology so that two-thirds of the tunnel can then be used on two tracks. Once completed, it will be possible to run all freight trains (four per hour and direction) through the LBT instead of, as currently, partly over the Lötschberg mountain line.

The construction of the base tunnel is part of the investment plan Expansion step 2035, which also ensures financing. Parliament has yet to decide on the investment plan; the vote is scheduled for the end of 2019.

The commissioning of the partial extension is planned for the end of 2028.
Projects in Italy

3.5 Giovi Pass

In 2018 activities at the Giovi Pass were resumed quickly to overcome delays incurred in the previous year that had been caused by legal and administrative issues.

The works were tendered again, and the procedure completed by the end of 2018. The contractual handing over of the works is expected in the first quarter of 2019.

The collapse of the Morandi road bridge in August 2018 in the Campasso area, although not directly affecting the construction of the Giovi Pass, requires a substantial reorganisation of the overall building area that is still ongoing.

Completion of the works is expected by 2023. The overall project is organised in construction lots whose progress is shown below.

The biggest part of the Giovi Pass project consists of the realisation of three tunnels: Galleria Campasso (0.716km), Galleria di Valico (27.1km) and Galleria Serravalle (7.1km). That will reduce the gradient down from 35‰ to 12.5‰, comparable with the other Alps tunnels.

The excavating works are performed both in a traditional way (drilling or explosive) and with milling machines, also using excavating windows realized at intermediate points of the tunnels.
The collapse of the Morandi road bridge

On 14 August 2018 the Morandi road bridge collapsed on a vast area including three rail lines that form the connection between the Port of Genoa and the hinterland.

The lines involved were the Sussidiaria, the Sommergibile and the Bastioni lines. The interruption of the road connection had a major impact on the movements of passengers and freight in the Genoa area. Still the restoration works on the rail lines could not be started before mid-September because of the judicial and technical inspections, since the railway infrastructure is within the off-limits zone.

Thanks to very intense works it was possible to re-open operation on two of the three lines with a specific timetable project planned to accommodate the modal shift, especially for the freight transport, caused by the unavailability of the road connection. The Sussidiaria line will be worked on only after the removal of the remaining part of the bridge; that is when the whole area can be considered free of further collapse risks.

Strongly requested connections to main terminals have been included in the national ETCS implementation plan in Italy.
ERTMS

In 2018 the ERTMS projects on the Italian border sections progressed as planned.

1. Since October commercial operations with ETCS L1 LS have been possible on the border section Iselle-Domodossola/Domo II.

2. The section Domodossola–Novara is expected to be opened for commercial ETCS L1 FS operations in December 2019 (TT 2020). The request to the NSA to put ETCS into service is scheduled for April 2019. Opening for commercial ETCS operations are expected accordingly.

3. Between Ranzo and Luino ETCS L1 LS installations have been completed. The request to the NSA to put ETCS into service is scheduled for June 2019.

4. Works to upgrade the interlocking of the line Milano–Chiasso are ongoing. This upgrade is the basis for ERTMS installation that is scheduled to be completed by 2021.

In 2018 all preparation activities for the tendering of the Milano–Genova section were completed and the award of the works is planned for the first quarter of 2019.

Strongly requested connections to main terminals in, for instance, Busto Arsizio and Gallarate have been included in the national ETCS implementation plan with a target date of before 2026, which is a major step in the development of an ETCS-only network on the corridor.

Figure 23: ERTMS Implementation in Italy
4 Main Achievements of the Management Board

ICM Handbook

Based on comprehensive follow-up discussions with many market stakeholders after the Rastatt closure, RFC Rhine-Alpine together with DB Netz and SBB Infrastructure drafted new processes for international disruptions which last longer than three days, have a significant impact on international train runs and therefore require extensive re-routing of international trains. The proposed Handbook for International Contingency Management (ICM) was discussed and revised with many sector stakeholders, for example in meetings of PRIME and RU Dialogue members on invitation of the EU Commission/DG MOVE and in meetings with infrastructure managers and Rail Freight Corridors coordinated by RNE. Also, many political stakeholders provided input to the discussion and helped to finalise the document, such as the EU Commission, many Transport

Figure 24: Handbook for International Contingency Management

Figure 25: Definition of an International Disruption
Ministries and regulatory bodies. The final version of the ICM Handbook was accepted by the RNE General Assembly in May 2018 and by PRIME in June 2018. It was confirmed and supported by Transport Ministries of RFC Rhine-Alpine and RFC North Sea-Mediterranean in a special event at the ITF in Leipzig (Leipzig declaration).

ICM Handbook implementation: re-routing scenarios

Coinciding with the development of the ICM Handbook, RFC Rhine-Alpine started right in the beginning of 2018 to put together information on re-routing possibilities in case of international disruptions. The idea of the scenarios is that all involved parties can prepare for deviations and that re-routings can be established quicker than in the past whenever an international disruption may occur. With the strong and dedicated support of several working groups of RFC Rhine-Alpine, a newly established ICM expert group and timetable experts from all IM partners, re-routing scenarios were developed for corridor routes where deviations are known to be difficult and deviation capacity is scarce.

An initial version of the re-routing scenarios was sent to the RAG members for consultation. The RUs gave very valuable feedback which could be incorporated in the first edition of RFC Rhine-Alpine re-routing scenarios published in December 2018. Further and yet more detailed feedback from RUs on re-routing possibilities was given in the beginning of 2019 and the coordination on this matter will continue. From the RU feedback it becomes clearer (if not known before) that not all re-routing possibilities proposed by IMs can be used in practice by RUs. Reasons for this are loco and driver availability, infrastructure conditions and regulatory framework/requirements related to cross-border operations.

ICM Handbook implementation: new processes for conference calls on international disruptions

RFC Rhine-Alpine developed guidelines for the organisation and implementation of conference calls according to the processes described in the ICM Handbook. To ensure reachability in case the ICM process must be started, RFC

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**Figure 26: Re-routing Scenarios**
Rhine-Alpine established an internal hotline as single point of contact for IMs. The number is known to the IMs, which included it into their national processes.

Templates for agendas and minutes for conference calls with both Incident and Communication Managers have been prepared with the support of SBB Infrastructure and provided to other RFCs and to RNE. A technical verification took place in July as a precondition to carry out a simulation in September 2018. Based on an incident scenario prepared by DB Netz and SBB Infrastructure, the exercise simulated disruptions on the sections Cologne–Siegen and Cologne–Mainz. The aim was to test the organisation and implementation of the conference calls. An expert group supervised the simulation and prepared a report, which confirmed the adherence to the process stipulated in the ICM Handbook and recommended an annual simulation to firmly establish the procedure.

RFC Rhine-Alpine, together with DB Netz and SBB Infrastructure drafted new processes for international disruptions which last longer than 3 days.

Figure 27: Disruption Management Process

The handbook describes two processes for better coordination and communication during disruptions.

### Disruption management process

<table>
<thead>
<tr>
<th>ASAP</th>
<th>Max. 12 h</th>
<th>Max. 12 h</th>
<th>Max. 24 h</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Restore safety (daily international cooperation)</td>
<td>2</td>
<td>Contact RFC</td>
<td>3</td>
</tr>
</tbody>
</table>

### Communication process

<table>
<thead>
<tr>
<th>ASAP</th>
<th>Max. 24 h</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Organisation of conference call</td>
<td>2</td>
</tr>
</tbody>
</table>

Responsible for process step: 🟠 Leading IM 🟡 Leading RFC 🟢 Leading and allocated IMs
Park or Run tool

The Park or Run tool is an IT tool which complements TIS in coordinating train runs in case of incidents. It was successfully tested/used and highly appreciated by traffic management colleagues on RFC Rhine-Alpine in 2018. The next pilot phase in 2019 will involve all IMs on the corridor and will also involve several RUs. The Park or Run tool strongly supports the international coordination of all disruptions.

RAG

The Railway Undertaking Advisory Group (RAG) had two meetings in 2018 with the Management Board and other RFC Rhine-Alpine stakeholders. Progress in between meetings was coordinated via several conference calls.

In the beginning of 2018 the RU members in the RAG had developed an updated view on their focus topics in the discussions with the IMs of RFC Rhine-Alpine. This was the main point of the RAG meeting in March 2018. As a result, the WG TCR of RFC Rhine-Alpine, for example, analysed the maintenance windows on the corridor, information was exchanged on the bottleneck analysis of RFC Rhine-Alpine and the topic of cancellation fees for international paths in case of re-routings was taken to PRIME as the relevant organisation to discuss this topic.

During the RAG meeting in October 2018 there was an in-depth discussion of the draft re-routing scenarios of RFC Rhine-Alpine. Also, first experiences with the tail signal pilot in Italy were exchanged that had started in the beginning of 2018 [see information below]. RFI also informed participants about the ongoing study on increased train weight and emphasised that RUs can ask for the authorisation of higher train weight already.

Pilot on rear end train lights

The possibility to use reflecting plates as signal for the rear end of the train instead of lights has been one of the requests of the Railway Undertaking Advisory Group as one more element of interoperability. The type of rear end signal depends on the applicable EU regulations on interoperability, but also strongly on national operational rules, on the technical equipment of the line and on safety and...
regulatory standards of the operation, including the national rules for the safe management of the temporary capacity restrictions. Preparatory works for the pilot were already done at the end of 2017. Several cross-border lines were selected along the Italian borders. For RFC Rhine-Alpine the line Domodossola–Novara/Novara Boschetto via Borgomanero was chosen.

The pilot is highly welcomed by the RUs on the line. They reported very good experiences with it in the RAG. First results of the measurements at RFI were available in mid-2018. The results showed that there is actually an impact on the traffic regularity due to the necessity of train staff to check the train rear end signals. The dimension of the mentioned impact needs to be clarified in more detail. For this reason, the pilot has been prolonged for one more year.

**TAG**

The Terminal Advisory Group (TAG) met twice in 2018. The first meeting was in March in Zeebrugge, where the participants also had the chance to visit the port. The second meeting took place in Frankfurt in September.

The TAG was informed on ongoing activities related to the ELETA project, which aims at the electronic delivery of reliable data on the estimated time of arrival (ETA). Also, the latest improvements on the Train Information System (TIS) were presented to the group, especially the new feature which allows data collection at the so called "last mile" from the handover point to the terminal. Terminals interested in this new possibility can ask RNE to implement the feature.

As a consequence of the implementing act 2177/2017, the terminals as rail-related service facility providers are obliged to provide information on their infrastructure and services. To facilitate this task, RNE prepared a common template which was presented to the group.

The TAG was informed on the results of the User Satisfaction Survey, the new set up of the WG Train Performance Management, the impact of the new directive proposal on combined transport and the new features in CIP. The ICM Handbook and the re-routing scenarios were also presented.
Topics related to ERTMS deployment

Besides the established monitoring and reporting on ETCS deployment to the Executive Board, the WG ERTMS expert platform in 2018 also successfully focused on:

1. the identification of issues that could hamper smooth ERTMS operations in the future,
2. an update of the ERTMS chapter in the implementation plan,
3. exchange with experts/stakeholders and the observation of market developments.

ERTMS consists of several subcomponents in the areas of infrastructure, vehicle equipment and radio technology, related to different baselines and software versions. In addition to a reliable deployment of the infrastructure components, the WG ERTMS expert platform identified several topics as relevant to achieving a fully workable interoperable ERTMS system and proper preparation of baseline 3 OBUs for ERTMS-only operations (e.g. harmonised approach regarding the security of the onboard/trackside communication or information on the national radio technology strategies). A letter on critical issues addressed to DG MOVE, Karel Vinck, was answered with the commitment to pick up and pursue some of the topics.

The revised ERTMS chapter of the 2018 implementation plan update gives a short but comprehensive overview of the ERTMS deployment in RFC Rhine-Alpine member states which was appreciated by several stakeholders. This overview includes a set of maps illustrating the general rollout as well as specific border situations. With this implementation plan, the Infrastructure Managers in general confirm a much stronger approach in the direction of ERTMS. While the Swiss network is already fully equipped, Germany and Italy are expected to make big steps between 2021 and 2026, and in Belgium ERTMS will become mandatory by the end of 2025. Planning for the further deployment in the Netherlands will be decided in 2019.

At the end of 2018 commissioning on the border sections CH–DE and CH–IT began with putting package 44 protocols into operation. Full ETCS L1 LS is expected in 2019 on all border sections.

To better understand the strategies of the Railway Undertakings in regard to equipping their vehicles with onboard units (OBU) the EEIG took various actions: a visit at the Innotrans fair in Berlin, participation in the RU platform meetings organised by the ERTMS users group and a survey on OBU deployment with several RUs and leasing companies. Evaluation and discussion with stakeholders is anticipated for 2019.

Finally, the EEIG supported the Executive Board in the organisation and preparation of three dedicated ERTMS task force meetings in 2018. Two meetings in 2019 are planned for this group, which will focus on the support of OBU deployment.

Train performance management

The new TPM processes were agreed by the Management Board in February 2018 and are described in the TPM Handbook for RFC Rhine-Alpine. This approach is taken up by other RFCs and is the basis for the update of the RNE Guidelines on Punctuality Management. The new setup of this working group foresees the involvement of RUs, terminals and other actors once the hot spots for low punctuality have been identified. The working group members are analysing the overall punctuality on the corridor and, based on the reports provided by RNE, identifying critical points or sections with considerable impact on punctuality along the RFC. A closer coordination with existing bilateral groups for deeper investigation on border areas was also initiated.

In line with the new setup of the RFC Rhine-Alpine performance management, a task force with terminals, CTO, RU and IMs/RFC Rhine-Alpine was set up in 2018. It was highly appreciated by all parties involved to have the corridor view on performance, but it will take some time to reach transparency in sharing information on delay causes, responsibilities and agreement of possible improvement measures to trigger and follow up.

Further steps towards greater transparency on performance management in the intermodal transport chain were also made with the bachelor thesis that RFC Rhine-Alpine initiated and strongly supported, together with Covestro. As main stakeholders in the intermodal transport chain, Covestro, Bertschi, Hupac, KTL, SBB Cargo International and RFC Rhine-Alpine participated in the thesis.

RFC Rhine-Alpine also took up the recommendations from sector representatives like Covestro and Hupac regarding better information on performance/delays, with information on several delay thresholds. A new detailed report giving information on the delay thresholds was developed together with RNE and other RFCs and is published from early 2019 on.
The User Satisfaction Survey (USS) was conducted in cooperation with all participating RFCs and RNE in September and October 2018. Representatives from 19 customers/stakeholder companies participated and gave detailed feedback on corridor-related information from the RFC, advisory groups, train performance, traffic management, the path offer, infrastructure and many more issues. The overall satisfaction increased from 3.7 in 2017 to 4.2 in 2018 (on a scale from 1 to 6, with 6 representing “very satisfied”).

Top 10 aspects of the user feedback are related to the PaP offer concept and the communication of information between RFC Rhine-Alpine and its stakeholders. Bottom 10 aspects are related to, for instance, TCR, infrastructure standards, RAG/TAG, TPM and to the allocation process in TT 2019.

We have already taken up several points in our work plans for 2019–20 but also need to clarify several issues with the RAG members. Our analysis of the USS results is discussed with both advisory groups and with the ExB. The full report is available on the Customer Information Platform (CIP).
Transport market study

A Transport Market Study with a focus on major growth drivers was completed at the end of 2018. The study was carried out by a consortium led by the Italian consultancy TRT. In addition to an update on the RFC Rhine-Alpine transport market (data for 2015), the study focused on analysing the modal shift potential related to three topics which had been selected together with Railway Undertakings: a) heavier trains (with 740m trains), b) faster trains and c) more reliable trains. Other topics could actually have a stronger growth effect (e.g. track prices, automated trains), but for this study growth drivers were chosen which could be influenced by RUs and IMs.

The transport market update for 2015 shows a high market share of rail freight of about 24% (in transported tons) in the area defined as “pure corridor demand”. Almost 50% of the rail freight tonnage is intermodal transport. The main competitor is inland waterways. A theoretical analysis of potential shift from road (based on exclusive and comprehensive demand in the whole EU) shows that the volume of rail freight could more than double.

The main part of the study was the analysis of growth potential of the selected major growth drivers. RUs were involved in the selection of growth drivers and gave a lot of input in the course of the study. Comprehensive interviews were carried out with RUs to collect market-based cost information and feedback on the three study topics. Logistics service providers, operators and end customers gave their input regarding the choice of rail freight in a stated preference analysis.

For each selected growth driver several scenarios were identified and analysed, also based on clusters of international trains. The results show that the use of heavier and longer trains, as well as a reduction in stops and delays would encourage the freight market to make the modal shift to rail transport. In terms of modal shift potential, the study estimated an additional freight demand of a minimum of 662,000 net tonnes to a maximum of 4.1 million net tonnes, depending on the scenario considered. As expected, wagon loads (including bulk and general cargo) would benefit more from the introduction of heavier and longer trains in terms of cost savings and thus entail changes in the modal split between IWW and rail, which compete on these commodity types.

Figure 31: Modal Split on RFC Rhine-Alpine

![Modal Split on RFC Rhine-Alpine](image)

<table>
<thead>
<tr>
<th>Modal split on RFC Rhine-Alpine</th>
<th>Share of goods types in rail freight</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in % of transported tons of exclusive corridor freight transport volumes 2015)</td>
<td>(in % of transported tons of exclusive corridor freight transport volumes 2015)</td>
</tr>
<tr>
<td>IWW</td>
<td>Conventional traffic 52%</td>
</tr>
<tr>
<td>road</td>
<td>I/E Germany 37%</td>
</tr>
<tr>
<td>rail</td>
<td>Intermodal traffic 48%</td>
</tr>
<tr>
<td>58.8</td>
<td>61% between DE–NL &amp; DE–BE</td>
</tr>
<tr>
<td>25.1</td>
<td>I/E Italy 75%</td>
</tr>
<tr>
<td>246.8 million net tonnes</td>
<td>I/E Import/Export</td>
</tr>
</tbody>
</table>

Source: TMS 2018 on main growth drivers
Among the three study topics, an increase in punctuality emerged as the most effective measure, considering the low boundary scenarios of each topic, to shift the modal choice in favour of rail, although its potential almost exclusively pertains to intermodal transport. An improved performance could also lead to faster trains if buffers in the timetable could be reduced.

The executive summary of the TMS study can be found on the RFC Rhine-Alpine website.

Figure 32: Focus Topics and Work Packages of the Transport Market Study

Figure 33: Modal Shift Potential on RFC Rhine-Alpine per Type of Cargo
Temporary capacity restrictions

To improve customer information on Temporary Capacity Restrictions (TCR), RNE with the support of RFC Rhine-Alpine is currently developing a new tool. It is supposed to be available by 2020. New RNE TCR guidelines were finalised in 2018, also taking into consideration the specifications of the Annex VII of directive 2012/34 for the publication of TCRs. Discussions are ongoing at RFC Rhine-Alpine to define tasks and responsibilities of a TCR coordinator on RFC level.

In 2018, the possibility of publishing maintenance windows along the corridor was investigated and is on our agenda as a regular task starting with the timetable year 2020.

Implementation plan update 2018

At the end of 2018 the Executive Board accepted the update of the implementation plan. It gives an up-to-date overview of the planned infrastructure and ERTMS developments on RFC Rhine-Alpine, including the state of play regarding operations of long trains on the corridor (740m trains). Also, several new connections to important terminals on RFC Rhine-Alpine were agreed.

Participation in events/fairs/conferences

At the TEN-T Days which were organised in Ljubljana in April 2018 by the EU Commission, the RFC Network was present with a joint stand. Several RFC Rhine-Alpine members
also participated in panel discussions regarding on rail freight and infrastructure development. During the TEN-T Days the RFC Network invited customers and stakeholders to a special event.

In June 2018 RFC Rhine-Alpine participated in a panel discussion at the conference of EGTC Rhine-Alpine, an organisation which specifically aims to foster the cooperation of regional planning organisations on the corridor.

For the Rail Freight Day organised in Vienna in December 2018 by the EU Commission together with Rail Net Europe (RNE), the RFC Network also organised a joint stand to inform customers and stakeholders. RFC Network members including the Managing Director and several Management Board members of RFC Rhine-Alpine shared their perspective on regarding the development of international rail freight in all panel discussions at the Rail Freight Day.

CIP (Customer Information Platform)

CIP stands for coordinated and harmonised information to customers of the RFCs and IMs. RFC Rhine-Alpine strongly supported further improvements of CIP in 2018. The main achievements are as follows:

- Integration of two additional RFCs (now eight RFCs in total)
- Extension of available customer-relevant documents (the goal is to establish CIP as the central information platform for the users)
- General improvement of the database regarding line properties and projects
- Several technical developments to improve user friendliness
- Further development of the dynamic “find a route” tool, enabling a customised collection of line parameters by the user
- Connection to RNE’s big data environment at RNE
- Preparation of a user handbook (in a first step for internal users only).

CIP has been presented and promoted at several events, e.g. the TEN-T Days in Ljubljana or RAG meetings. Public user frequency is monitored regularly and developing positively. In the framework of the RNE big data project, a connection to the RINF database is under investigation, as is the integration with other RNE applications.
The Executive Board sent a letter to the European Commission on 7 May 2018 to fulfill the requirement of article 22 of the regulation 913/2010/EU regarding the progress on the implementation of this regulation. The letter detailed lessons learned as well as an indicative outlook on the priorities for the Executive Board in 2018–2019. These priorities included the allocation of capacity, infrastructure measures and operational cross-border issues, among other things.

During the ITF Leipzig on 23 May 2018, the ministers of concerned countries of RFC Rhine-Alpine and RFC North Sea-Mediterranean, or their representatives, adopted a ministerial declaration on international contingency management.

In this ministerial declaration the Ministers welcomed the adopted RNE Handbook on international contingency management with procedures for planning and managing diversions in cases of big unexpected disturbances with high impact on international rail traffic. The ministerial declaration also stresses the importance of cooperation of the RFC Rhine-Alpine and North Sea-Mediterranean, especially regarding contingency measures.

The cooperation between the RFC Rhine-Alpine and the European coordinator for the Core Network Corridor Rhine-Alpine, Mr Pawel Wojciechowski, continued and in spring 2018 the third TEN-T core network corridor work plan was established following close coordination with the RFC Rhine-Alpine. This work plan was also relevant to the TEN-T Days in April 2018 in Ljubljana in which the RFC Rhine-Alpine participated.

The cooperation between the Railway Undertaking Advisory Group and the Executive Board was stepped up by regular participation of its speaker to (parts of) in (several of the) Executive Board meetings.

In November 2018 the Executive Board of RFC Rhine-Alpine adopted the following binding decisions:

- Amending the corridor implementation plan. This means updating the corridor description, investment planning and ERTMS rollout planning up to date. On ERTMS some delays were announced compared to the 2016 planning from the former version of the implementation plan;

- Amending the Framework capacity allocation in accordance with the adopted recommendation of the network of Executive Boards;

4 See weblink (European context) https://www.corridor-rhine-alpine.eu/downloads.html
Following the Leipzig declaration of 23 May 2018, the Executive Board decided to set up its own (internal) action plan for internal governance and monitoring purposes. The objective is to support the achievement of results in the points mentioned in the ministerial declaration with a focus on the period 2018–2019.

The tasks are closely coordinated with the Management Board; all in all, 22 measures in five subgroups were identified. For each measure, the action plan defines concrete activities, deadlines and milestones and identifies responsibilities, success criteria and risks. The action plan is regularly updated and discussed by the Executive Board. Furthermore, the Executive Board has been stepping up its cooperation with RFC North Sea-Mediterranean and the first joint Executive Board meeting has taken place on 18 March 2019 (Brussels).
European level

The European Commission launched an initiative to prioritise border crossing issues hindering international rail freight and tackling these in a systematic way: the Issues Logbook initiative. Identified priority items included the braking sheet and calculation as well as train composition.

In particular, the issue of the braking sheet and calculation is highly relevant for the RFC Rhine-Alpine. An initiative by DB Cargo was launched to investigate the potential of one harmonised braking sheet. The Dutch ministry is preparing the modification of national legislation in such a way to provide Railway Undertakings with greater flexibility to develop a corridor-acceptable braking sheet.

In its communication of April 2018 COM (2018) 189 the European Commission summarised good progress and stated that the Rotterdam declaration had created fresh momentum for the rail freight corridors. It started the first preparations for the evaluation of the rail freight corridor regulation 913/2010/EU.

On regulatory issues the implementation of the service facilities implementing act (EU)2017/2177 and the delegated act on coordinating track possessions was taken up by the sector. Furthermore, implementation of the technical pillar of the fourth railway package by June 2019 is in preparation by the ERA, NSAs and other stakeholders.

On rail noise substantial progress was reached as regards the mandatory application of TSI noise emission values for existing wagons as well. On 31 January 2019 the Railway Interoperability and Safety Committee supported the Commission’s proposal on quieter routes. The clear majority of routes of RFC Rhine-Alpine will consequently become quieter routes, which means the mandatory use of silent (TSI noise-compliant) wagons as per December 2024. The TSI noise regulation complements any potential national regulatory framework on railway noise. The new TSI will benefit citizens who live close to railway tracks of the corridor.

The network of RFC Executive Boards adopted 3 recommendations:
- No. 1 on ETA (7 February 2018). The recommendation urged Railway Undertakings and terminals to conclude user contracts to share tracking and tracing data and estimated times of arrival;
- No. 2 on KPIs (7 February 2018). A harmonised set of KPIs for all RFCs was agreed after in-depth consultation with Railway Undertakings and infrastructure managers;
- No. 3 on harmonised Framework Capacity Allocation managers (December 2018). The amended harmonised Framework Capacity Allocation enables the start of the timetable redesign pilot projects. In practice this means greater flexibility in demanding short-notice international rail freight paths. The RFC Rhine-Alpine is not directly included in these pilots.

Furthermore, the network started to work on the coordination of the TEN-T mandatory requirement: the facilitation of 740m trains. A workshop on this item was held in April 2018.

RFC Rhine-Alpine countries contributed substantially to the work on sharing estimated time of arrival (ETA) data by being pioneers at RNE level and by the fact that geographical relations on the corridor were included as ELETA project pilots.

At the EU Rail Freight Day in Vienna on 6 December 2018, the Austrian EU Presidency presented a ministerial declaration on the follow-up of the Rotterdam declaration, “Rail freight corridors to boost international freight”. In this declaration the progress since Rotterdam was shown and actions were identified for the continued follow-up of the Rotterdam declaration. The presidency document stated a wish for a new monitoring system by 2020. At the same time, the sector statement group presented the progress on all ten priority actions in a common progress report with an introductory statement. The sector statement group declared that progress in all ten topics. The sector statement group will continue to coordinate and monitor these.
6.1 Regulatory Bodies

Over the past year, the RFC Rhine-Alpine meetings on corridor development and activities continued and Regulatory Bodies regularly attended several meetings of the Executive Board. The Regulatory Bodies have received any formal complaints regarding the allocation of PaPs (e.g. due to a decision which is based on the priority rules for allocation).

In November 2018 the Regulatory Bodies involved in the RFC Rhine-Alpine and RFC North Sea-Baltic met with the C-OSS on the premises of DB Netz AG in Frankfurt. As in the past this regular exchange between C-OSS and Regulatory Bodies was a welcome opportunity to exchange information and discuss current and future developments on the corridors. All participants were able to address relevant access issues.

The legal requirement in Germany demands an ex ante approval of the offer of pre-arranged train paths (PaP) on the rail freight corridors crossing Germany by the Regulatory Body.

In 2018, the Ruling Chamber of the Federal Network Agency in Germany decided to waive prior notification of the intended PaP determinations for the working timetable period 2020–2023 by DB Netz AG.

The Ruling Chamber decided that the decision would only take effect based on the planned train path specifications for the 2021, 2022 or 2023 working timetable periods, if competition were not affected during that period.

The Regulatory Bodies have received no formal complaints regarding the allocation of PaPs.
Joint activities of Regulatory Bodies in the IRG-Rail group

One focus of the Independent Regulators Group (IRG)-Rail’s work in 2018 was an in-depth exchange of regulatory practices, following the implementation of directive 2012/34/EU in all member states. This exchange led to the signing of a new Memorandum of Cooperation at the fall plenary session of IRG-Rail. This MoC aims to enhance the general cooperation between the Regulatory Bodies in order to share knowledge on matters of mutual interest, to provide mutual assistance in their tasks and to develop synergies through an active exchange of information. Furthermore, the IRG-Rail MoC provides a cooperation mechanism for drafting decisions by two or more Regulatory Bodies on cross-border issues concerning international services.

The Regulatory Bodies also actively took part in SERAC meetings concerning, for example, RFCs or the revision of the RMMS regulation.

The IRG-Rail working group “Access” organised the second IRG-Rail Forum in September 2018. The meeting in The Hague focused on quality on Rail Freight Corridors. IMs and RUs were invited to share challenges with the regulators, safety authorities, the Dutch Ministry of Transport and the EU Commission. Logistics companies and RUs presented in detail their problems in accomplishing operational processes. Operational issues will be discussed at all sectoral levels and the Regulatory Bodies will address these issues intensively.

Also, in 2018, the particularities and methods of contingency management were further analysed in the national context. The Regulatory Bodies from Germany, Switzerland, the Netherlands and Belgium examined the operational processes and their interfaces in dealing with disruptions in national rail transport and presented the criteria of the nationally applied integrated plans. In order to examine the respective national characteristics of the rail infrastructure and the implemented national regulations for contingency management, common basic operational issues were first worked out and the applying European and national legal bases compared. Later, a bilateral discussion between the Regulatory Authorities and the rail infrastructure operators took place in order to substantiate and discuss operational issues. Finally, the Regulatory Authorities presented the decision-making, communication and implementation processes with possibly integrated action plans for the event of rail transport disruptions.

In addition, the Regulatory Bodies intend to develop a uniform information system for the analysis, control and evaluation of RFC processes through jointly defined KPIs. In order to create a common basis for a sustainable, market-oriented development, improvements and innovations on the corridor, the Regulatory Bodies support and accompany the establishment and advancement of informative KPIs.
6.2 Activities of the NSA Corridor Group

(1) National Safety Authority Working Group (NSA WG)

The NSA WG develops a common understanding of ERTMS technical issues such as errors, different interpretations and open points for achieving a common ERTMS standard on RFC Rhine-Alpine. In addition, the scope of the NSA WG also covers operational issues on the rail freight corridors. As in the previous year, the work of the NSA WG in 2018 was mainly dedicated to technical issues as well as the ongoing discussions concerning testing and the criteria which demand new authorisations in case of changes to the CCS sub-system. With a view to the upcoming entering into force of the fourth railway package, an update of the guideline for CCS authorisation established by the group in the past was not considered necessary. Issues identified by the group which cannot be resolved at corridor level or might have a broader impact are addressed to the European Union Agency for Railways (ERA).

In 2018, the NSA WG focused on the following topics:

- Contribution to the revision of the CCS TSI
- Track Train System Validation Tests: The NSAs continued their discussion with ERA and the sector regarding the necessity of TTSV tests and the legislative requirements within the European legal framework.
- Work on projects: The Dutch ETCS project which coordinates the upgrade/retrofit of the Dutch freight locomotive fleet to ETCS Baseline 3 advised the group on best practices, national technical rules and derogation procedures, as well as the procedures and responsibilities within the fourth railway package.
- Discussions on the future approach regarding national safety rules in the OPE TSI.

(2) Task Force Interoperability

The Task Force Interoperability (TFI) is a working group aiming at facilitating the authorisation for commissioning vehicles in the networks of Austria, Germany, Italy, the Netherlands and Switzerland; it consists of the national safety authorities and Infrastructure Managers of these countries.

The TFI invites the representatives of vehicle manufacturers to their meetings to discuss the authorisation processes of their multi-system vehicles to be operated on RFC Rhine-Alpine and in cross-border traffic between the countries concerned.

The European Union Agency for Railways has been invited to the TFI meetings for several years as guest and observer. Since it will become an authorising entity in June 2019, it will play an active role in the processes related to the authorisation for launching railway vehicles in the market. This is reflected in the growing involvement of ERA in the TFI group.

In 2018, the TFI work primarily focused on the following projects based on cross-acceptance procedures:

- Siemens Vectron, multi-system locomotive
- Bombardier Traxx, multi-system locomotive
- Stadler FLIRT and Stadler EC250, multi-system EMUs.

The discussed processes were related to:

- New vehicles not yet authorised
- Modifications, renewal, upgrading of existing vehicles, especially for CCS/ETCS and, consequently, for the software versions

As promoted since 2017, in agreement with ERA and the involved manufacturers, these authorisation processes were also defined as learning cases.
Besides the vehicle authorisation processes, the TFI also dealt with the following topics:

- The collaboration with NSA WG regarding onboard CCS continued in 2018, in the form of a TFI representative participating in the meetings of NSA WG and vice versa for the exchange on the multitude of upgrade and renewal processes (due to the installation of ETCS equipment on existing vehicles or to the update of software releases).

- In many cases applicants ask for non-application of TSIs (former “TSIs derogations”) of their vehicles. In case of vehicles operated in international traffic, applicants often need guidance regarding the procedure for submitting the respective requests. TFI members, in collaboration with ERA representatives, worked on finding a common approach, acceptable for all the member states of the group, to manage the derogations.

- Discussions about the outcomes of ERA working parties dealing with procedures and requirements for vehicles, e.g. the amendment of LOC & PAS and WAG TSIs for the definition of the basic design characteristics necessary to decide about the need for a new authorisation for a modified vehicle and for the definition of parameters relevant to the route compatibility checks to be performed by the Railway Undertakings.

- Considering that some MS will implement the fourth railway package directives in June 2019, whereas others will make use of the possibility to postpone the inclusion of the fourth railway package in national law to June 2020, discussions started on how to manage this transition period where, referring also to the requirements of Regulation (EU) 2018/545, directives of third railway package will coexist with the new directives.

Further work done in 2018

Short-distance interoperability

After having completed the overview table in 2017 which shows the main regulations and agreements with regard to short-distance interoperability on RFC Rhine-Alpine the NSA worked on keeping it up-to-date. This document lists the relevant national laws and regulations of the involved countries as well as specific rules for every cross-border section of the corridor. It provides information on the following topics:

- Safety certification
- Authorisation of vehicles
- Driver certification
- Language requirements
- Tail signals
- Bilateral and multilateral agreements

The document is available for download on the website of RFC Rhine-Alpine.
Contribution to ERA ERTMS Working Groups

Since the NSAs of RFC Rhine-Alpine also take part in the ERTMS working groups organised by ERA, the NSAs coordinate their views to develop, if possible and appropriate, a joint corridor position in the respective working groups. Furthermore, ERTMS issues which occur on RFC Rhine-Alpine can be addressed to ERA being the system authority for ERTMS and a future authorising entity.

In 2018, the revision of the CCS TSI was a key activity of ERA together with the NSAs and the sector. The revision of the CCS TSI particularly covers the topics of route compatibility and modifications to authorised vehicles as well as a new approach to the testing of vehicles equipped with ERTMS. These topics are crucial for a smooth authorisation of rolling stock and CCS equipment on RFC Rhine-Alpine. Therefore, NSAs contributed to the working group to prevent unclear or complicated authorisation processes. The NSA WG appreciates that some of the principles of its guideline are reflected in the revised CCS TSI.

Objectives for 2019

As the Railway Interoperability and Safety Committee (RISC) voted on the revised CCS TSI in January, the NSA WG can devote itself to new tasks and activities. The NSA WG set up the following multi-annual work plan:

- **Possible harmonisation/reduction of national rules in the corridor countries related to ERTMS**
  National rules are considered as an obstacle for interoperability. However, there is usually a technical need for these rules. NSAs will take efforts to achieve a mutual understanding of national technical rules related to ERTMS in the corridor countries in order to explore possibilities for a harmonisation/reduction of national rules in the CCS area.

- **Guidance for projects**
  The NSA WG intends to guide CCS vehicle projects regarding derogation aspects concerning national rules for ERTMS and Class B systems and continues to identify and share best practices regarding CCS authorisation with the sector.

- **Cross-border interoperability issues**
  The NSA WG will tackle issues hampering cross-border traffic related to ERTMS as well as operational problems identified by the corridor which are the responsibility of NSAs.

- **Fourth Railway package together with issues regarding (ERTMS-) vehicle authorisation (joint with TFI, after June 2019)**
  When the fourth railway package enters into force in June 2019/2020, the processes for vehicle authorisation will change. The NSA WG together with the TFI can support the applicants and ERA based on their long-standing experience in authorising vehicles and CCS components and can discover further needs for improvement in the TSIs.

- **Key management of ETCS locomotives in the corridor countries**
  The periodical changes of the keys used to establish the connection between the ETCS onboard equipment and the RBC is considered as a cost driver in Switzerland. The NSA WG decided to gather information on the current national approaches regarding the key management. If feasible, a corridor approach for offline key management could be developed until the keys can be changed online.

Up to June 2019, the TFI will continue to apply the current processes for vehicle authorisation cooperating with ERA which will help ERA to gain the necessary experiences to fulfil the new tasks when the fourth railway package enters into force. This will ensure that vehicle authorisation processes are successfully managed in the meantime.

Afterwards, the main challenge for the FTI will be to handle vehicle authorisation processes in view of the different legal regimes when some corridor countries have already postponed the inclusion of the fourth railway package in national law and others have not.

In any case, TFI meetings will continue to be a forum where NSAs and Infrastructure Managers can exchange experiences on authorisation processes. Inviting vehicle manufacturers makes it possible to discuss and resolve concrete issues that occur in vehicle project authorisation on the corridor.
## List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABS</td>
<td>Ausbaustrecke [enhancing and upgrading an existing track]</td>
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<tr>
<td>ATB</td>
<td>Automatische Trein Beïnvloeding [Automatic Train Control]</td>
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<tr>
<td>BE</td>
<td>Belgium</td>
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<tr>
<td>BVWP</td>
<td>Bundesverkehrswegeplan [Federal Transport Infrastructure Plan]</td>
</tr>
<tr>
<td>CCS</td>
<td>Control Command and Signalling</td>
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<tr>
<td>CEF</td>
<td>Connecting Europe Facility</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<tr>
<td>CH</td>
<td>Switzerland</td>
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<tr>
<td>CID</td>
<td>Corridor Information Document</td>
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<tr>
<td>CIP</td>
<td>Customer Information Platform</td>
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<tr>
<td>COGIS</td>
<td>Cologne Gallarate Improved Supply</td>
</tr>
<tr>
<td>C-ROSS</td>
<td>Corridor One-Stop-Shop</td>
</tr>
<tr>
<td>CTO</td>
<td>Combined Transport Operator</td>
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<tr>
<td>DB</td>
<td>Deutsche Bahn [German railway]</td>
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<tr>
<td>DE</td>
<td>Deutschland [Germany]</td>
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<tr>
<td>DG MOVE</td>
<td>Directorate-General Mobility and Transport</td>
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<tr>
<td>DTT</td>
<td>Draft timetable</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<tr>
<td>e.g.</td>
<td>for example</td>
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<tr>
<td>EGTC</td>
<td>European Grouping of Territorial Cooperation</td>
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<tr>
<td>ELETA</td>
<td>Electronic Exchange of Estimated Time of Arrival Information</td>
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<td>EMU</td>
<td>Electrical Multiple Unit</td>
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<tr>
<td>ERA</td>
<td>European Union Agency for Railways</td>
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<td>ERTMS</td>
<td>European Rail Traffic Management System</td>
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<tr>
<td>ETA</td>
<td>Estimated Time of Arrival</td>
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<td>ETCS</td>
<td>European Train Control System</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>ExB</td>
<td>Executive Board</td>
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<tr>
<td>FCA</td>
<td>Framwork for Capacity Allocation</td>
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<td>FTT</td>
<td>Final timetable</td>
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<tr>
<td>ICM</td>
<td>International Contingency Management</td>
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<tr>
<td>IM</td>
<td>Infrastructure manager</td>
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<tr>
<td>IRG</td>
<td>Independent Regulators Group</td>
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<td>IT</td>
<td>Italy</td>
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<tr>
<td>ITF</td>
<td>International Transport Forum</td>
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<tr>
<td>IWW</td>
<td>Inland Waterways</td>
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<tr>
<td>km</td>
<td>Kilometre</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>KTL</td>
<td>Kombi Terminal Ludwigshafen</td>
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<tr>
<td>L</td>
<td>Level (ETCS), in combination with a number</td>
</tr>
<tr>
<td>LBT</td>
<td>Lätschberg Base Tunnel</td>
</tr>
<tr>
<td>LOC&amp;PAS</td>
<td>Locomotive and Passenger Rolling Stock</td>
</tr>
<tr>
<td>LS</td>
<td>Limited Supervision (ETCS)</td>
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<tr>
<td>m</td>
<td>Metre</td>
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<tr>
<td>MB</td>
<td>Management Board</td>
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<tr>
<td>MD</td>
<td>Managing Director</td>
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<td>MoC</td>
<td>Memorandum of Cooperation</td>
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<td>MoT</td>
<td>Ministry of Transport</td>
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<tr>
<td>MoU</td>
<td>Memorandum of Understanding</td>
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<tr>
<td>MS</td>
<td>Member State</td>
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<tr>
<td>NBS</td>
<td>Neubaustrecke [new line]</td>
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<tr>
<td>NL</td>
<td>The Netherlands</td>
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<tr>
<td>NSA</td>
<td>National Safety Authority</td>
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<tr>
<td>NSM</td>
<td>North Sea–Mediterranean Rail Freight Corridor</td>
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<tr>
<td>No.</td>
<td>Number</td>
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<tr>
<td>OBUs</td>
<td>On-board units (ERTMS)</td>
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<tr>
<td>PaP</td>
<td>pre-arranged path</td>
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<tr>
<td>PCS</td>
<td>Path Coordination System</td>
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<tr>
<td>PFA</td>
<td>Planfeststellungsabschnitt [planning sections]</td>
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<tr>
<td>PRV</td>
<td>Planfeststellungsverfahren</td>
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<tr>
<td>PRIME</td>
<td>Platform of Rail Infrastructure Managers in Europe</td>
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<tr>
<td>RAG</td>
<td>Railway Undertaking Advisory Group</td>
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<tr>
<td>RC</td>
<td>Reserve capacity</td>
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<tr>
<td>RFC</td>
<td>Rail Freight Corridor</td>
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<tr>
<td>RFI</td>
<td>Rete Ferroviaria Italia [Italian IM]</td>
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<tr>
<td>RINF</td>
<td>Register of Infrastructure</td>
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<tr>
<td>RNE</td>
<td>RailNetEurope</td>
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<tr>
<td>RMMS</td>
<td>Rail Market Monitoring System</td>
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<tr>
<td>RoLa</td>
<td>Rollende Landstraße [&quot;rolling highway&quot;]</td>
</tr>
<tr>
<td>RU</td>
<td>Railway Undertaking</td>
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<tr>
<td>SBB</td>
<td>Schweizerische Bundesbahnen [Swiss railway]</td>
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<tr>
<td>ScanMed</td>
<td>Scandinavian–Mediterranean Rail Freight Corridor</td>
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<tr>
<td>SERAC</td>
<td>Single European Railway Area Committee</td>
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<td>TAG</td>
<td>Terminal Advisory Group</td>
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<td>TCR</td>
<td>Temporary Capacity Restrictions</td>
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<tr>
<td>TEN-T</td>
<td>Trans European Network (for) Transport</td>
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<tr>
<td>TEU</td>
<td>Twenty-Foot-Equivalent-Unit, a measure for container handling</td>
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<tr>
<td>TFI</td>
<td>Task Force Interoperability</td>
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<tr>
<td>TIS</td>
<td>Train Information System</td>
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<tr>
<td>TMS</td>
<td>Transport Market Study</td>
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<td>TPM</td>
<td>Train Performance Management</td>
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<tr>
<td>TSI</td>
<td>Technical Specification [for] Interoperability</td>
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<td>TTSV</td>
<td>Track Train System Validation</td>
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<td>TT</td>
<td>Timetable</td>
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<tr>
<td>TTR</td>
<td>Timetable redesign</td>
</tr>
<tr>
<td>UIC</td>
<td>International Union of Railways</td>
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<tr>
<td>USS</td>
<td>User Satisfaction Survey</td>
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<tr>
<td>Vmax</td>
<td>Maximum speed</td>
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<tr>
<td>WAG</td>
<td>Freight wagon</td>
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<tr>
<td>WG</td>
<td>Working Group</td>
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