The Corridor Rhine-Alpine is a project to improve rail freight transportation in Europe and to encourage modal shift from road to rail.
INFRASTRUCTURE DEVELOPMENTS

PROJECTS ON RFC RHINE-ALPINE

Click the project for details

THE NETHERLANDS
1. New locomotive workshop
2. New yard at Venlo
3. Analysis of TEN-T specifications for Core Network

BELGIUM
4. Port of Zeebrugge and its hinterland connections
5. 740-m long trains on the Belgian network
6. ETCS in Belgium

SWITZERLAND
11. Current state of work in the Ceneri Base Tunnel
12. Quadrupling of Olten – Aarau
13. 4-m Corridor
14. Bellinzona – Luino upgrade
15. Upgrade Marshalling Yard San Paolo
16. Upgrade of Lötschberg Base Tunnel
17. ETCS in Switzerland

GERMANY
7. ABS/NBS Emmerich – Oberhausen
8. New developments on Karlsruhe – Basel
9. 740-m long trains on the German network
10. ETCS in Germany on RFC Rhine-Alpine

ITALY
18. Electrical substations upgrade
19. ERTMS in Italy
3,900 KM
OF CORRIDOR LINES

6 SEA PORTS
AMSTERDAM // ANTWERP // GENOA // ROTTERDAM // NORTH SEA PORT // ZEEBRUGGE

MORE THAN
100 TERMINALS

NUMBER OF FREIGHT TRAINS ON THE CORRIDOR IN 2019: MORE THAN 105,000

OUR VISION
With our services, we facilitate cross-border rail freight transport in order to create a competitive advantage over other modes of transport. The involved Infrastructure Managers and Allocation Body cooperate intensively to provide better railway services for international freight transport in Europe.

By enhancing the flexibility and quality of rail freight services on the Corridor and optimizing the utilization of scarce capacity through a high level of international cooperation, we want to foster rail freight services as a sustainable mode of transport in Europe. Jointly, we are making the shift from road to rail happen.
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Disclaimer: The sole responsibility for this publication lies with the author. The European Union is not responsible for any use that may be made of the information therein.
The EU Regulation 913/2010 concerning a European rail network for competitive freight was adopted by the European Parliament and the Council and entered into force on 9 November 2010. It defined the establishment of freight corridors with the overall purpose to increase rail freight’s competitiveness and market share on the European freight transport market. European Infrastructure Managers embrace this chance for enhanced cooperation and work together in eleven corridors running all across Europe. The Rail Freight Corridor (RFC) Rhine-Alpine has the legal form of a European Economic Interest Grouping (EEIG).

All Infrastructure Managers (IM) and the Allocation Body (AB) of the Corridor countries are members or contractors of the EEIG:
- ProRail (for the Dutch network)
- Infrabel (for the Belgian network)
- DB Netz (for the German network)
- SBB Infrastruktur (for the Swiss network)
- BLS Netz (for the Swiss network)
- Trasse Schweiz (Swiss allocation body)
- RFI (for the Italian network).

The Executive Board (ExB) represents the joint interests of the transport ministries of all involved countries and takes landmark decisions for cooperation on the Corridor. The Executive Board is chaired by Peter Hondebrink, Dutch Transport Ministry.

The Management Board (MB) is made up of high-level management representatives of the aforementioned IMs/AB and is responsible for the effective implementation of the Corridor. The MB has set up a Programme Management Office (PMO) as the permanent working organisation of the IMs. The PMO is represented by the permanent office team and one delegate of each IM/AB, the so-called Programme Implementation Managers (PIMs). They are responsible for the coordination and reporting of their national project implementation to the Corridor organisation. Furthermore, the PMO monitors the goals and actions of currently six Corridor Working Groups. These Groups were established to work efficiently on various topics for the improvement and support of cross-border rail freight services on our Corridor. The Railway Undertaking Advisory Group (RAG) and the Terminal Advisory Group (TAG) are advisory groups to the MB. They serve as exchange platforms to involve railway undertakings (RUs) and terminals as well as stakeholders of the intermodal transport chain in order to discuss the customers’ opinions and requirements for Corridor development from an external point of view.

The Corridor One-Stop-Shop (C-OSS) facilitates train path management for international rail freight. It is the single point of contact allowing applicants to request and receive answers regarding infrastructure capacity for international freight trains.

The RFC Rhine-Alpine bodies are managed and supported by the permanent office in Frankfurt.

**BODIES OF RFC RHINE-ALPINE AS THEY WERE DECIDED BY MB AND BASED ON EU REGULATION 913/2010**

- **EXECUTIVE BOARD – ExB**
  - Representatives of the transport ministries
  - Setting of general goals

- **RAILWAY UNDERTAKINGS/ TERMINAL ADVISORY GROUPS – RAG/TAG**
  - Regular meetings with railway undertakings and terminals connected to the Corridor

- **MANAGEMENT BOARD – MB**
  - Infrastructure Managers (IMs) and Allocation Body (AB)
  - Main decision board

- **CORRIDOR ONE-STOP-SHOP (C-OSS)**
  - IMs appoint C-OSS
  - Responsible for the allocation of Pre-arranged Paths (PapPs) and Reserve Capacity (RC)

- **MANAGING DIRECTOR/EEIG/PMO**
  - Joint Office of all participating IMs incl. Corridor coordinators at IMs (PIMs)
  - Management of all activities for MB

- **2 WGs for infrastructure and ERTMS**
- **WG for performance management**
- **2 WGs for path product development**
- **WG for coordination of works / TCR**
- **ICM expert group**

Six working groups with experts from all IMs of the corridor; yearly agreement on workplans
HIGHLIGHTS IN 2019

What was the overall development and progress in RFC Rhine-Alpine?

2019 was a mixed year for RFC Rhine-Alpine. The number of international freight trains on the Corridor shows a slight overall decrease compared to 2018. Only the number of trains via the border points between the Netherlands and Germany shows an increase, mostly due to hinterland traffic from Rotterdam and Antwerp. This general development also means that most traffic on RFC Rhine-Alpine has not caught up with the high figures and growth rates recorded before the Rastatt disruption. A positive effect of this development is a higher stability of operations with improved punctuality.

The international cooperation within the RFC Rhine-Alpine framework shows very positive ongoing developments. The main contributions in 2019 of RFC Rhine-Alpine to an increased competitiveness of rail freight were, among others:

- Contributing to a better understanding of performance measurement and management throughout the whole transport chain via focussed discussions on improvement measures with many stakeholders involved in the train run
- Developing first steps towards an end-to-end train performance measurement including departure/arrival in terminals
- Addressing challenges arising from national frameworks and regulations for international path construction to Transport Ministries, EU Commission and Regulatory Bodies
- Providing strong support of the development of the Temporary Capacity Restriction (TCR) tool at RNE from the RFC Rhine-Alpine pilot group
- Stabilising and further enhancing processes for International Contingency Management (ICM), e.g. with a second simulation and update of the document on re-routing scenarios
- Developing an ERTMS risk register for RFC Rhine-Alpine, which will be an important basis for discussions in the ERTMS Expert Group and ERTMS Task Force with the transport ministries

Learn about the main developments on RFC Rhine-Alpine and the activities of the Management Board and the Executive Board of RFC Rhine-Alpine. This chapter provides all necessary information at a glance.
are related to braking performance, train driver language, the institutional framework for the coordination of works, 740-m train length and so on.

The Ministers of Rail Freight Corridor Rhine-Alpine and of Rail Freight Corridor North Sea-Mediterranean had a successful meeting on 22 May 2019 during the International Transport Forum (ITF) Side Event in Leipzig. They discussed the progress achieved since the declaration of Leipzig in 2018, as well as the quality of the Rail Freight Corridor.

Indeed, with 45% of all trains having more than 30 minutes delay, quality is a priority for the Executive Board, as it has a major impact on the capacity and efficiency of the Rhine-Alpine traffic. Following the Ministers meeting, the Executive Board published a press release stating its intention to develop a Quality Charter with all stakeholders on the Corridor.

In addition, the Swiss Federal Office of Transport organised, together with the Corridor Rhine-Alpine, workshops on performance. Three workshops were organised, in May, in June and in Autumn with different stakeholders (railway undertakings, operators, terminals). A final workshop, summarising the findings and bringing together all the stakeholders will be organised in 2020.

In 2019, infrastructure projects on RFC Rhine-Alpine made good progress, with a focus on:

- Works on the Ceneri/Gotthard axis in Switzerland, including upgrading to the 4-m profile and upgrade to longer trains
- Infrastructure improvements in Northern Italy
- Studies and works for 740-m trains on the whole Corridor
- ETCS deployment including finalisation of works in Basel Bad/Weil am Rhein and Ranzo-Luino.

The main new development in 2020 will be the opening of the Ceneri Base Tunnel and related infrastructure improvements in Switzerland and Northern Italy. Train operating conditions on the southern part of RFC Rhine-Alpine will significantly improve and benefit from the possibility of running longer trains with a high profile on routes in Switzerland and Italy.

EXECUTIVE BOARD

In 2019, the Executive Board continued its work on the contingency management and the related Executive Board action plan for 2018-2019, based on the Leipzig Declaration. It also focused on the improvement of the quality on the Corridor.

Within the context of the 2018 Ministerial Declaration, the Rail Freight Corridor Rhine-Alpine published its rerouting overviews in December 2018. In 2019, Railway Undertakings at European level developed a first draft of the contingency handbook for railway undertakings.

On the action plan 2018 - 2019 of the Executive Board, much work is ongoing, for which results are expected in the near future. The tasks of the action plan are related to braking performance, train driver language, the institutional framework for the coordination of works, 740-m train length and so on.
PERFORMANCE REPORT

Which changes do traffic volume, capacity and punctuality show?

This chapter provides information about traffic developments at borders and the modal share in the ports of Antwerp, Rotterdam and Genoa as well as about the most recent KPIs on capacity management and train performance management.

TRAFFIC DEVELOPMENT

This chapter gives information on the development regarding the number of trains on RFC Rhine-Alpine and the modal split of rail. The information on the number of trains is provided by the Infrastructure Managers and is related to the border points on the Corridor. Regarding the modal split, existing information from different sources is compiled in this report.

GENERAL EVOLUTION 2019 VS. 2018

The general evolution in 2019 for the entire Corridor compared to 2018 was a decrease in traffic of -0.15%. The overall economic situation in Europe and the worldwide decline in the automotive industry are in all likelihood the main reason for this minor decrease.

BORDER CROSSINGS NL – DE

In general, at the Dutch border points, there was an increase in traffic of 4.9% compared to 2018. The increase is due to several factors: Part of the traffic that was initiated in 2018 because of the low water level of the Rhine continued to be transported by rail. There was an increase in traffic to the port of Rotterdam, especially of containers and coal. Also, RUs requested a number of trains from Belgium to Germany and vice versa via the Netherlands instead of via Montzen/Aachen.

BORDER CROSSING BE – DE

In Belgium in 2019, traffic at the Montzen border point decreased by 2.4% compared to 2018. The main reason appears to be the preference for the ‘Brabantroute’ in the Netherlands for traffic from/to Antwerp. It seems that the situation in Aachen West...

KPI OVERALL NUMBER OF TRAINS PER BORDER

Number of commercial freight trains crossing selected border points

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<tr>
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<td>10,000</td>
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<tr>
<td>20,000</td>
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<tr>
<td>30,000</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>40,000</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>50,000</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>60,000</td>
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<td></td>
</tr>
</tbody>
</table>

- AACHEN WEST
- BAD BENTHEIM, EMMERICH, VENLO
- DOMODOSSOLA, LUNO, CHIASSO
- BASEL
(shortage of shunting tracks, need for pushing locomotive and need to change front) is taking its toll on the number of trains using the border crossing BE – DE.

BORDER CROSSING DE – CH
Compared to 2018, traffic at the Basel border point decreased by 3.5% in 2019. This decrease can be explained by several developments: First, the rolling motorway between Basel Bad and Lugano was terminated at the end of 2018 (one train pair per day). Second, the Rhine had a low water level in 2018 while its water level in 2019 was normal. Due to the low water level, goods (e.g. oil and petroleum products going to the port of Birsfelden) were shifted from inland waterways to rail, leading to more trains in 2018. In 2019, those goods were mainly shipped again by inland waterways, leading to a decrease of train volume. Third, there was less transit traffic through Switzerland in 2019 compared to the previous year due to the overall economic development.

MODAL SPLIT
Modal split figures refer to 2018 as they were not yet available for 2019 at the editorial deadline of this report.

ROTTERDAM
In 2018, the total volume of transhipment in the Port of Rotterdam increased slightly by 0.3%. At the same time, the shift between commodities continued. As a consequence of this development, container volumes increased by 4.5% and bulk decreased by 1.7%. While the share of inland waterways (IWW) decreased by 0.9%, the road share increased by 1%. The share of rail traffic remains constant with a slight change of -0.2% compared to 2017.

ANTWERP
The total transhipment in the Port of Antwerp increased by 5.2% with unprecedented growth in all types of cargo, highlighted by container traffic with 6.4%. Besides the direct port business, Antwerp also represents the largest integrated chemical cluster in Europe, creating additional traffic demand. As a result of the introduction of new services in 2018, modal split of rail increased slightly to 8%. The decrease in the market share for IWW is due to the continuous low water level of the Rhine, leading to limited capacity.

In November 2019, the Port of Antwerp, Railport and Infrabel signed a cooperation agreement with, amongst others, the objective to double the modal share of rail in the transport of sea containers by 2030.

GENOA
In 2018, the rail modal share in the Port of Genoa was 12.8% (road 87.2%). The collapse of the Morandi bridge had a major impact on port business and subsequently also on rail transport. Rail access to the station of Genoa Marittima and the connected terminals was blocked for seven weeks. During this period, container traffic by rail was only possible via the Terminal Voltri in the western port area.

KPI MODAL SPLIT IN PORTS 2016 – 2018

Definition: modal split [%] of freight traffic at Port of Rotterdam, Genoa and Antwerp; the modal split is calculated for hinterland container traffic on the basis of TEUs.

BORDER CROSSINGS CH – IT
In Italy in 2019, the overall evolution compared to 2018 showed an increase in traffic of 0.1%. This stagnation is basically the result of the general economic development.

In 2018, the rail modal share in the Port of Genoa was 12.8% (road 87.2%). The collapse of the Morandi bridge had a major impact on port business and subsequently also on rail transport. Rail access to the station of Genoa Marittima and the connected terminals was blocked for seven weeks. During this period, container traffic by rail was only possible via the Terminal Voltri in the western port area.

In November 2019, the Port of Antwerp, Railport and Infrabel signed a cooperation agreement with, amongst others, the objective to double the modal share of rail in the transport of sea containers by 2030.

KPI MODAL SPLIT IN PORTS 2016 – 2018

Definition: modal split [%] of freight traffic at Port of Rotterdam, Genoa and Antwerp; the modal split is calculated for hinterland container traffic on the basis of TEUs.

ROTTERDAM
ANTWERP
GENOA

Table: Modal Split

<table>
<thead>
<tr>
<th>Year</th>
<th>Rail</th>
<th>Road</th>
<th>IWW</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>36%</td>
<td>64%</td>
<td>7%</td>
</tr>
<tr>
<td>2017</td>
<td>38%</td>
<td>56%</td>
<td>7%</td>
</tr>
<tr>
<td>2018</td>
<td>38%</td>
<td>56%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Table: Modal Split

<table>
<thead>
<tr>
<th>Year</th>
<th>Rail</th>
<th>Road</th>
<th>IWW</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>15%</td>
<td>54%</td>
<td>31%</td>
</tr>
<tr>
<td>2017</td>
<td>16%</td>
<td>55%</td>
<td>31%</td>
</tr>
<tr>
<td>2018</td>
<td>16%</td>
<td>55%</td>
<td>31%</td>
</tr>
</tbody>
</table>

Table: Modal Split

<table>
<thead>
<tr>
<th>Year</th>
<th>Rail</th>
<th>Road</th>
<th>IWW</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>11%</td>
<td>89%</td>
<td>0%</td>
</tr>
<tr>
<td>2017</td>
<td>11%</td>
<td>89%</td>
<td>0%</td>
</tr>
<tr>
<td>2018</td>
<td>11%</td>
<td>89%</td>
<td>0%</td>
</tr>
</tbody>
</table>
This chapter gives information on the development of the Pre-arranged Paths (PaPs) and Reserve Capacity (RC) offered by RFC Rhine-Alpine.

The figure on the right shows the development of offered, requested and pre-allocated PaPs from the 2016–2020 timetable (TT). Generally, the offered PaPs are planned for operation on seven days a week, yet some connections might have a lower availability (e.g. 4 or 5 running days), or a given PaP might not be available during some days throughout the year due to temporary capacity restrictions (TCRs).

In general, from TT 2019 to TT 2020, a small decrease in the amount of path-km offered as PaPs can be seen due to construction work. Further, the figure shows the volume of PaP capacity requested via the C-OSS during TT 2016 – TT 2020. Of the offered path-km, 46 % were requested. However, due to conflicts, it was not possible to allocate all the requested capacity as PaPs, but tailor-made solutions could be offered to the applicants instead. About 70 % of the requested PaPs could ultimately be pre-allocated.

In addition to the requests for PaPs, a high amount of connected feeder and outflow paths were requested. The development of the volume of requests and conflicts is shown on page 16 in terms of the number of path requests (dossiers) made by Railway Undertakings (RUs) and applicants in the Path Coordination System (PCS). For TT 2020, there was a considerable growth in the number of requests. However, this also resulted in more conflicts between PaP requests. Conflicting requests are especially related to path sections through Switzerland, where capacity is always scarce and is particularly limited due to infrastructure works in TT 2020. Some conflicting requests can also be seen on German path sections. However, the IMs were able to make alternative (tailor-made) path offers in almost all cases.

This KPI shows the volume of PaPs in the phases of PaP publication (X-11), PaP requesting (X-8) and PaP pre-allocation (X-7.5) in million path-km per year.
In addition to the PaP offer, DB Netz, SBB Infrastruktur and RFI offered very quick paths from Cologne to Gallarate via the C-OSS of RFC Rhine-Alpine, called CoGIS. This had already been done for TT 2019 and continued for TT 2020. The CoGIS paths could be requested via PCS and the allocation result was given to the customers by the C-OSS.

In TT 2020, six paths from Cologne to Gallarate were offered in each direction. The offer amounted to 3.4 million path-km, of which 1.5 million path-km were requested by RUs and other applicants.

VOLUME OF OFFERED AND REQUESTED RESERVE CAPACITY
The amount of offered Reserve Capacity (RC) was kept stable at 2.9 million path-km for TT 2020. The RC offer has not been successful, as almost no requests were received over the last several years. In this respect, RFC Rhine-Alpine is no exception, as this observation applies for most Rail Freight Corridors. RUs prefer to make ad hoc requests directly in the systems of the national IMs. Among others, this is related to the relatively long preparation phase of a maximum of 30 days required for the international RC offer on RFC Rhine-Alpine.

To distinguish the development of the average travel time for a relation, the RNE RFC KPI Working Group introduced a new KPI in 2018.

The figure on the right shows the average net travel speed (without dwell times) in km/h. It is calculated by examining the average running time of all PaP sections that are part of the considered relation. To determine the travel speed, the distance of the respective relation is then divided by the previously calculated running time. This is done for both directions, north-south and south-north, and the numbers are very similar. Hence, the directions are averaged to calculate an overall travel speed. The information is retrieved from the PaP Catalogue, which is published every second Monday of January for each TT year.

When comparing TT 2020 and TT 2021, it can be seen that for most relations the average travel speed increased slightly. The mean of the average speed of all considered relations from north to south is, at 59.63 km/h, slightly less than the value for the direction from south to north with 60.53 km/h. Further, no difference in running time can be distinguished between short PaPs and long PaPs. In fact, it varies widely due to the geography and infrastructure parameters associated to the specific PaP.

This KPI shows the number of conflicting and clean dossiers (multiple path requests placed in PCS that referred to the same PaP on RFC Rhine-Alpine).

In TT 2020, six paths from Cologne to Gallarate were offered in each direction. The offer amounted to 3.4 million path-km, of which 1.5 million path-km were requested by RUs and other applicants.

VOLUME OF REQUESTS INCLUDING NUMBER OF CONFLICTS AT X-8

This KPI shows the average of the planned commercial speed of the PaPs in km/h for selected connections.

<table>
<thead>
<tr>
<th>Relation</th>
<th>2020</th>
<th>2021</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maasvlakte</td>
<td>62.14 km/h</td>
<td>62.7 km/h</td>
<td>60.01 km/h</td>
<td>54.64 km/h</td>
</tr>
<tr>
<td>Troisdorf</td>
<td>54.64 km/h</td>
<td>55.84 km/h</td>
<td>63.73 km/h</td>
<td>59.78 km/h</td>
</tr>
<tr>
<td>Basel SBB HB D (via Brig)</td>
<td>228.09 km</td>
<td>1156.78 km</td>
<td>211.257 km</td>
<td>339.2 KM</td>
</tr>
<tr>
<td>Basel Bad BF</td>
<td>503.85 km</td>
<td>359.2 km</td>
<td>339.2 KM</td>
<td>527.21 KM</td>
</tr>
<tr>
<td>Karlsruhe GBF</td>
<td>527.21 KM</td>
<td>339.2 km</td>
<td>59.78 km/h</td>
<td>59.78 km/h</td>
</tr>
<tr>
<td>Novara B. TO</td>
<td>62.14 km/h</td>
<td>63.73 km/h</td>
<td>62.14 km/h</td>
<td>63.73 km/h</td>
</tr>
</tbody>
</table>
TRAIN PERFORMANCE MANAGEMENT

This chapter gives detailed information on the level of punctual and delayed trains and the related delay reasons.

Train punctuality is measured by comparing the timetable delivered by the IMs to the Train Information System (TIS) and the running time in operations at defined measuring points. The punctuality is calculated from the TIS and shown in different reports. These can be general and meant for publication or can deliver additional figures for intermediate and border stations, weak points with high delays and critical trains affecting overall performance.

On the Customer Information Platform (CIP), RFC Rhine-Alpine publishes three reports on a monthly basis:

- The punctuality development management summary, with punctuality figures, number of trains and distribution of delay reasons
- The punctuality overview report with different delay thresholds
- The punctuality development report on RFC Rhine-Alpine lines and at relevant points and borders.

RFCs agreed on measuring punctuality within 30 minutes but other international working groups set a 15-minute threshold. For this reason, both figures are shown as an overall punctuality KPI for RFC entry and RFC exit. Trains with international train numbers which cross at least two predefined points and national trains properly linked at borders are included in the statistics. However, about 10% of international train runs on RFC Rhine-Alpine are still not indicated in TIS because they run with national train numbers and are not linked to each other. To understand the graphs correctly, it is necessary to know that RFC Entry is defined as the location where the train first enters an RFC line (first point of the train run belonging to the RFC). RFC Exit is the location where the train exits the RFC line the last time (last point of the train run belonging to RFC).

Delay minutes and responsible for the delay shown on page 20 are taken out of TIS, which is fed by national information including delay codes agreed by all IMs via UIC. Those codes are applied slightly differently at each IM, especially concerning the handling of secondary delays. Distribution of delay reasons is assigned according to UIC leaflet 450-2 and presented in the main delay reason groups:

- IM1: UIC code groups 10–49, encompassing all IM reasons, such as timetable planning, dispatching errors, infrastructure failures, temporary capacity restrictions (as far as not considered in timetables), unplanned works.
- RU2: UIC code groups 50–79, encompassing 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 or other parties 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, encompassing 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.

- Code 40/41 delays caused by previous/next IM/RU are not considered in the calculation, as otherwise delays would be counted twice in international context.
- Code 70/71 delays caused by previous/next IM/RU are not considered in the calculation, as otherwise delays would be counted twice in international context.
EXTERNAL REASONS:
UIC code groups 80–89, encompassing delays which are out of the influence of IM and RUs, such as weather conditions, natural events, authorities.

FACTORS AFFECTING PUNCTUALITY IN 2019:

THE NETHERLANDS:
Since 13 September 2019, it is prohibited to shunt freight trains with dangerous goods at the Waalhaven Zuid yard because the fire extinguishing water facilities do not fulfil the safety requirements of the local authorities. Waalhaven is a crucial yard for the transport of containers, tank containers, trailers and swap bodies that come in and out of the Port of Rotterdam. The shunting activities need to be relocated to other yards including Kijfhoek and Per- nis. As additional capacity at those yards is limited, diversions and delays appear regularly.

BELGIUM:
No specific delays linked to works were reported in 2019 for the lines concerning the RFC Rhine-Alpine. The main reasons for rail freight traffic delays are the following:

- Accidents involving persons: 24,263 minutes
- Delays attributed to the breakdown of electric locomotives: 18,674 minutes
- Breakdown of wagons: 13,505 minutes
- Damaged tracks: 10,412 minutes of delay
- Exceptional weather: 10,323 minutes in total with bad weather on 5 and 6 June causing 5,555 minutes of delay

GERMANY:
Construction work:
- Ongoing construction for expansion of the Betuwe line with various closures between Oberhausen and the Emmerich border (whole year)
- Refurbishment of the bank/bed/chamber of the tunnel near St. Goar between Cologne and Mainz: total closure between 4 January 2019 and 29 March 2019 every Friday from 10:45 p.m. to Monday 5:00 a.m.
- Track and switch renewal in Graben-Neudorf: total closure and single-track operation with large capacity restrictions from 13 September 2019 to 28 October 2019
- Various works on Offenburg - HaItingen (Baden) - Basel: total closure from 14 September 2019 to 3 November 2019 and ongoing refurbishments in autumn 2019 (including works for signal boxes at Bad Krotzingen, level crossing at Haltingen, construction of the Denzlingen expansion towards Freiburg)

- Vehicle fire in Unkel on 6/7 February 2019 (Rhine valley)
- Storm „Eberhard“ caused failures and disruptions all over North Rhine-Westfalia on 9–11 March 2019, line restrictions due to fallen trees
- Storm „Yap“ on 6 August 2019 in Baden-Württemberg led to blocks and closures between Karlsruhe and Rastatt (both lines blocked)

SWITZERLAND:
- Indirect impact of works in the Basel Bad area (several time windows from April to November)
- Major works in the Aaretal in April and the delayed traffic due to works on Simplon south side hampered traffic on the Lőtschberg axis of the Corridor

ITALY:
- Major operational restrictions in March between Varza and Preglia due to defective tracks and urgent infrastructure restoring measures. Speed restrictions, single track operations and temporary line closures hampered traffic flows and caused major delays (direct impact about 30,000 delay minutes in March 2019)
- Major works in Domodossola FM during May and Domodossola-Liselle section during the whole year led to restricted capacity and delays for some traffic flows as the RoLa
- P/C 80 profile upgrade on Gallarate-Luino line: total line closure (June–September) due to infrastructure works
- P/C 80 profile upgrade in Milan hub: capacity restrictions (August) in Rho-Certosa and Monza-Sesto sections due to infrastructure works

TOTAL AMOUNT OF DELAY MINUTES REPORTED TO TIS – BOTH DIRECTIONS

SUM OF DELAY MINUTES

<table>
<thead>
<tr>
<th>in k minutes</th>
<th>IM</th>
<th>RU / OTHERS</th>
<th>SECONDARY</th>
<th>EXTERNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/19</td>
<td></td>
<td>889.7</td>
<td>1123.6</td>
<td>1144.3</td>
</tr>
<tr>
<td>02/19</td>
<td></td>
<td>806.5</td>
<td>1127.1</td>
<td>1127.3</td>
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<tr>
<td>03/19</td>
<td></td>
<td>855.7</td>
<td>943.7</td>
<td>988.5</td>
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<tr>
<td>04/19</td>
<td></td>
<td>806.5</td>
<td>708.0</td>
<td>988.5</td>
</tr>
<tr>
<td>05/19</td>
<td></td>
<td>855.7</td>
<td>864.1</td>
<td>988.5</td>
</tr>
<tr>
<td>06/19</td>
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<td>855.7</td>
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<td>1127.1</td>
<td>1127.3</td>
</tr>
</tbody>
</table>
This chapter reports on investment projects that made significant progress or were completed during 2019. These projects are part of the Implementation Plan of RFC Rhine-Alpine and contribute to a higher quality, more flexible and more reliable international capacity.

INFRASTRUCTURE DEVELOPMENTS

Which infrastructure projects have made significant progress during 2019?

DEVELOPMENTS IN THE NETHERLANDS

1. NEW LOCOMOTIVE WORKSHOP
   At Maasvlakte, a new locomotive workshop has been opened. In this workshop, locomotives can be maintained, repaired and inspected on a quick service base.

2. NEW YARD AT VENLO
   Near Venlo, a new yard with 3 tracks for 740-m trains was put into service. This yard is especially built for trains with destination to the Venlo rail terminal, Trade Port Noord.

3. ANALYSIS OF TEN-T SPECIFICATIONS FOR CORE NETWORK
   ProRail has analysed which measures are needed to ensure that the main rail freight routes in the Netherlands comply with the TEN-T specifications (740-m train length, electrification, 22.5-ton axle load, speed 100 km/h) by 2030. In addition, ProRail has also investigated whether the so-called P400 loading gauge can be met. The report was sent to the Dutch Ministry of Transport (MoT) and it is now up to the MoT to decide if and when the Dutch rail network will be upgraded.

DEVELOPMENTS IN BELGIUM

4. PORT OF ZEEBRUGGE AND ITS HINTERLAND CONNECTIONS
   In February 2019, the construction of a new fan of sidings in the existing marshalling yard at Zeebrugge started. Two tracks will be able to accommodate 740-m long trains. The introduction of automatic signalisation at the siding of Ramskapelle was almost finished in 2019. Commissioning is foreseen for May 2020.

   Regarding the third track between Brugge and Dudzele, the studies and the tenders of the first phase of the renewal of the bifurcation at Dudzele were finished in 2019. Construction work started in December 2019.

   Also, construction on a third and fourth track between Gent and Brugge continued. In 2019, construction started in the following train stations: Hansbeke, Bellem, Aalter and Beernem, as well on the section between Landegem and Aalter. In Oostkamp, construction work is planned to be finished in 2020. In October 2019, at bifurcation Stuivenberg (Oostkamp – Beernem), the installation of railway sleepers,
Further planning approval decisions are expected for 2020.

**NEW DEVELOPMENTS ON KARLSRUHE – BASEL**

In 2019, the Karlsruhe – Basel project made further progress both in the planning approval process and in construction work. The investigation process to determine the causes for the 2017 tunnel incident in Rastatt is still ongoing.

Nevertheless, Deutsche Bahn and the commissioned working group have developed a plan to proceed with the second drilling machine until the end of 2020. At the same time, preparations started in 2019 to recover the damaged drilling machine.

In section 7, the general planners continued their work on the preliminary design according to the decisions of the German Parliament, inspecting the recommendations of the advisory committee. The preliminary design for the Offenburg tunnel was finished in 2019, and the other parts of section 7 will be completed in 2020. In 2020, “early public participation” for the Offenburg tunnel will begin, and the other parts will follow. In 2019/2020, all pending sub-sections in section 8 were successively brought forward in the approval process. In section 9.0, construction work started in 2019. Several bridges are under construction, and the preparations for new platforms and for building the track have begun and will be continued during 2020 and the following years. The final works and documentation in section 9.1 (in operation since 2012) are on time. The construction of new barrier-free platforms in Haltingen. In section 9.3, the planning approval process in Switzerland is ongoing and expected to be completed in 2020.

**ETCS IN BELGIUM**

ETCS deployment continued with the aim that the whole network will be equipped by 2025. ETCS will become mandatory from TT 2026 (14 December 2025).

**DEVELOPMENTS IN GERMANY**

**ABS/NBS EMMERICH – OBERHAUSEN**

In 2019, the design and approval planning for the third track continued. The entire construction project was awarded in the Oberhausen section, and construction started in November 2019. Three railway bridges in the Oberhausen section are under construction and shall be completed in 2020.

In the Dinslaken, Voerde and Rees sections, the tendering process for construction work has started. In the Rees section, preliminary building activities started in September 2019. In September and December 2019, the planning approval decision was issued for the Dinslaken and Voerde sections. Preparatory work in Voerde and Dinslaken was awarded in December 2019.

**470-m LONG TRAINS ON THE GERMAN NETWORK**

Of the nationwide 740-m programme, 6 infrastructure projects are located on RFC Rhine-Alpine. All projects have already started. The “Go-Live” will take place in stages till the 2nd half of 2020.

**PROJECT KARLSRUHE – BASEL**

Overview of works and current state of plan approval procedures (PfV) on the Rhine Valley line between Karlsruhe and Basel.

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ETCS IN GERMANY ON RFC RHINE-ALPINE

In 2019, one of the main achievements was the start of ETCS L1 LS operations in Basel Bad/Weil am Rhein. Since August, ETCS L1 LS has been available on the border section to Switzerland and the complete node of Basel. In addition, the electronic interlocking in Bad Krozingen on the southern part of the Corridor went operational in November 2019.

Furthermore, the project focused on the preparation of the tendering for the ETCS L1 LS installations in the south-west region and the Freiburg Güterbahnhof as well as the ETCS L2 installations in Darmstadt and between Basel and Offenburg. Contracting is expected in the first half of 2020. The civil works contract for ETCS L1 LS cable ducts has been tendered on the entire Corridor, and construction work is in progress. For the remaining Corridor sections, the design planning is almost completed.

The ETCS L1 LS Pilot Projects, with the aim to intensify competition between suppliers and to speed up the approval process, have been integrated in the overall ETCS L1 LS installations. On sections planned to be equipped with ETCS L2, technical deficiencies have been identified in some of the existing interlockings, which leads to the requirement to build new interlockings that fully support ETCS L2.

CURRENT STATE OF WORK IN THE CENERI BASE TUNNEL

Work on the Ceneri Base Tunnel has entered the final stage. The tunnel will be put into operation when the timetable changes in December 2020. After the breakthrough of the south-bound west tube in January 2016, both tubes were equipped with the tunnel and railway infrastructure systems between July 2017 and August 2019. Test operation will run from March 2020 until the end of August 2020.

QUADRUPLING OF OLTEN – AARAU

This project aims to build a third and fourth track between Olten and Aarau to increase capacity and decrease travel time. The centrepiece will be the 3-km long double track Eppenberg Tunnel between Schönernerd and Aarau. In 2019/2020, the tunnel is being equipped with tunnel and railway infrastructure systems. Additional tracks are being built in parallel: The fourth track in Olten was implemented in April 2019. The construction work for a fourth track between Dulliken and Däniken, a junction in Wöschau and in Gretzenbach as well as a lane change in Wöschau are ongoing and will go-live in December 2020.

4-m CORRIDOR

Work on the 4-m Corridor will be ongoing through 2020. Along the entire Gotthard route, some 20 tunnels need to be enlarged and 80 alterations are being made to platforms, traction current systems, signalling installations and overpasses. The main project is the construction of the new 2.7-km Bözberg tunnel between Effingen and Schinzach-Dorf. Equipping of the double track with a tunnel and railway infrastructure systems was finished in 2019. In 2020, the slab track, the signalling and the overhead conductor rail will be implemented. After several tests of the tracks and the railway infrastructure in the third quarter of 2020, the tunnel will be connected to the existing line in October/November 2020.

From December 2020, the operation of freight trains with a 4-metre profile will be possible on the Gotthard line.

BELLINZONA – LUINO UPGRADE

Between Bellinzona and Luino, the overall capacity will be increased by a new crossing station and a partial double track upgrade. Furthermore, the quality will be improved. The double track between Contone and Quartino was opened in 2019. In 2020, upgrading of the crossing station in Pino for 740-m freight trains is planned. Construction and go-live is expected for late 2021. In parallel, work on the 4-m Corridor is ongoing and scheduled to be completed in 2020.

UPGRADE MARSHALLING YARD SAN PAOLO

To increase the overall capacity of the Bellinzona node, the Bellinzona-San Paolo marshalling yard is being upgraded. The existing overtaking tracks are being extended up to 740-m and new sidings for loco changes are being built. To a large extent, reconstruction was completed in 2019 and final implementation is expected in 2020.

UPGRADE LÖTSCHE BASE TUNNEL

The extension of the base tunnel is part of the “Ausbauschritt 2035” investment plan, which was approved by parliament at the end of 2019. The project is expected to be approved by the Swiss Federal Office of Transport (FOT) in late 2020. Commissioning of the partial extension is planned for the end of 2028.

ETCS IN SWITZERLAND

The Swiss SBB and BLS sections of RFC Rhine-Alpine have been ready since December 2015. The ETCS connection of the Swiss rail network to the neighbouring infrastructures was successfully implemented as part of the “ETCS@Borders” programme of SBB. The commissioning of ETCS L1 LS including EuroSignum/EuroZUB in the border region is a big
success for cross-border rail traffic. This was only possible thanks to the close and good cooperation between all parties involved. From December 2017 onwards, ETCS BL3-only vehicles have been capable of being used on Swiss territory, and since December 2019 they can also be used on the cross-border lines.

With the support of SBB, RFI has commissioned ETCS L1 LS and EuroSignum/EuroZUB on the Domodossola - Iselle (end of 2018) and Ranzo - Luino (end of 2019) cross-border lines.

DEVELOPMENTS IN ITALY

1 ELECTRICAL SUBSTATIONS UPGRADE
During 2019, RFI upgraded several electrical substations involving the Milan node and some Italian routes of RFC Rhine-Alpine. In particular, the main upgrades concerned:

- The substation protection system on the Milan-Domodossola and Milan-Chiasso lines, now equipped with intertripping, which brings about settings improvement and an increase in available power
- The complete renewal of the 3-kV DC section of the Milan Gallarate substation
- The complete renewal of the Milan Centrale substation

In 2019, RFI launched the Ternate substation upgrade on the Gallarate-Laveno line, while upgrading of the Albate-Camerlata and Voghera-Tortona substations is still ongoing.

ERTMS IN ITALY

In 2019, the ERTMS projects on the Italian border sections progressed as planned:

- The ERTMS L1 + Radio Infill has been placed in commercial operation from Villadossola to Cressa
- Completion of the Domodossola-Novara section is expected by the end of 2020. For information on the stepwise implementation, see figure on the right.

Work to upgrade the interlocking of the Milan-Chiasso line is ongoing. This upgrade is the basis for the ERTMS installation, which is scheduled to be completed by 2021.

In 2019, the ERTMS L2 over SCMT design phase on the Milan-Genoa section was completed and work was started on the on-site installation.

High-demand connections to main terminals, for instance in Busto Arsizio and Gallarate, have been included in the national ETCS implementation plan to be completed by the end of 2026. This is a major step in the development of an ETCS-only network on the Corridor.

ERTMS DEPLOYMENT OVERVIEW OF DOMODOSSOLA - NOVARA SECTION

The graph shows the ERTMS deployment on the Domodossola - Novara section. After a successful completion of phases 1 and 2 and the corresponding ERTMS activation in 2019, the remaining sections of phase 3 are currently under constructions and are expected to go into operation by the end of 2020.
In this chapter, the main activities of RFC Rhine-Alpine in 2019 related to reliability of operations, our service offer, coordination of infrastructure and ERTMS development as well as to cross-border interoperability are highlighted. Many of the points were developed together with market stakeholders and discussed in our Advisory Groups. One achievement was the initiation of the second phase of the RFI pilot on reflective plates, in which some of our Corridor lines are included.

### Achievements of the Management Board

Which goals were reached in cooperation with partners and customers?

**RELIABILITY AND OPERATIONS**

How to improve reliability and punctuality was a main focus topic of RFC Rhine-Alpine in 2019. The Management Board of RFC Rhine-Alpine confirmed the importance of performance in the railway sector by supporting several activities aiming at improving punctuality with a special focus on rail freight. In general, the objective of Train Performance Management at RFC Rhine-Alpine is to adopt an international approach to improve punctuality in cooperation with the relevant stakeholders involved in the intermodal transport chain and hence to improve customer satisfaction.

The current status of performance measurement in the intermodal transport chain was analysed by RFC Rhine-Alpine with the support of Covestro, Bertschi, Hupac, SBB Cargo International and KTL. The study published on the RFC Rhine-Alpine website shows the challenges of a coordinated performance measurement and management. In cooperation with the Swiss Federal Office of Transport (FOT), RFC Rhine-Alpine organised a sequence of three workshops with the involvement of stakeholders along the logistics chain: RUs, intermodal operators and terminal operators.

**Main Developments on RFC Rhine-Alpine in 2019**

<table>
<thead>
<tr>
<th>Service Offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project for Improved Capacity Offer started, with focus on all international train paths: pre-coordination of capacity and path standardisation</td>
</tr>
<tr>
<td>Pilot of RNE TCR tool and comprehensive information on TCRs</td>
</tr>
<tr>
<td>Results from transport market study with focus on major growth drivers discussed with RFC Rhine-Alpine stakeholders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Harmonisation and Cross-Border Interoperability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint workplan with RAG mostly fulfilled, e.g. regarding facilitation of language requirements</td>
</tr>
<tr>
<td>Tests ongoing to improve and harmonise operational conditions on Italian network, e.g., regarding signals and train weight</td>
</tr>
<tr>
<td>Development of new international braking scheme (RLUs), with support of RFC Rhine-Alpine</td>
</tr>
</tbody>
</table>

**RFC Rhine-Alpine Contributions to the Development of International Rail Freight in 2019**

<table>
<thead>
<tr>
<th>Reliability and Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study of performance measurement in the intermodal transport chain</td>
</tr>
<tr>
<td>Stakeholder performance workshops with RUs, operators and terminals organised together with Swiss MoT</td>
</tr>
<tr>
<td>Specific task forces with stakeholders to improve punctuality</td>
</tr>
<tr>
<td>Second simulation for new processes for International Contingency Management, update of re-routing scenarios</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure and ERTMS</th>
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<tbody>
<tr>
<td>International coordination of ERTMS deployment with ExB</td>
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<tr>
<td>International risk register for ERTMS introduced and followed</td>
</tr>
<tr>
<td>Update of capacity bottleneck analysis (until 2030)</td>
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<tr>
<td>Overview of infrastructure measures on re-routing lines</td>
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</tbody>
</table>
In those discussions, it was confirmed that the high amount of traffic on the Corridor and the large number of construction projects lead to capacity bottlenecks, which are among the factors that influence performance negatively. Moreover, all stakeholders highlighted the lack of data sharing as a major obstacle and higher transparency within the chain as a key factor for reliability.

To make a step forward, the Management Board decided to apply within the CEF PSA call, coordinated by RNE, for “Enhanced real-time communication about traincomposition”. One of four activities is dedicated to a feasibility study on how to better involve the actors before and after the handover point to the IM as well as how to collect and display the information they provide. The goal is to launch the study in 2020.

RFC Rhine-Alpine coordinated a pilot task force on a specific traffic flow between Ludwigshafen (DE) and Gallarate (IT) with participation of the involved RUs, terminals, intermodal operators and IMs. Even commercially sensitive information has been shared with confidentiality for the sake of punctuality improvement. As a result, the reports show improved departure punctuality from both points. An end-to-end report on this traffic flow that takes the first and last mile (“terminal trip”) into consideration has been launched. Information on the re-routing possibilities via France have also been added and information on re-routing lines has been further improved. Information on the re-routing possibilities is also displayed on the map in the Customer Information Platform (CIP).

To improve the daily international coordination efforts by traffic management colleagues, the “Park or Run” within the CIP. RFC Rhine-Alpine was published in January 2020, re-routing possibilities via France have been added and information on re-routing lines has been further improved. Information on the re-routing possibilities is also displayed on the map of Europe in the Customer Information Platform (CIP).

To further support reliability and in order to be better prepared for major disruptions on our network with a high impact on international train runs, RFC Rhine-Alpine carried out the second International Contingency Management (ICM) simulation in November 2019. Our member ProRail developed the simulation with an incident on the Brabantroute and acted as the leading IM. A pre-developed re-routing scenario could be used by the traffic management colleagues to quickly coordinate available short-term capacity with the involved national IMs. In general, the simulation went very well, but also showed the need to further increase awareness among the IMs for the new ICM processes.

In the update of the re-routing scenarios for RFC Rhine-Alpine, which was published in January 2020, re-routing possibilities via France have been added and information on re-routing lines has been further improved. Information on the re-routing possibilities is also displayed on the map of Europe in the Customer Information Platform (CIP).

To improve the daily international coordination efforts by traffic management colleagues, the “Park or Run” tool was used and further developed by the IMs of RFC Rhine-Alpine. The tool facilitates the international coordination of train runs in case of incidents. In 2019, RUs operating on RFC Rhine-Alpine were involved in the tool’s development for the first time. In early 2020, RNE is also issuing an improved Incident Management tool, which is the successor of the “Park or Run” tool developed with the support of RFC Rhine-Alpine.

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The Management Board of RFC Rhine-Alpine started a project together with the Heads of Timetable of the IMs to largely improve the overall path offer for international rail freight in the annual timetable and the efficiency of international timetable coordination. The “Improved Capacity Offer” (ICO) project considered possible improvements in various areas of the capacity planning and allocation process. Upward compatibility with the Europe-wide introduction of the Timetabling Redesign (TTR) project for the TT year 2025 was one of the requirements.

Current coordination processes among IMs and between RUs and IMs were analysed in the Improved Capacity Offer (ICO) project. Several RU experts also gave very constructive input in a workshop. As a main outcome of the project, the challenges arising from national rules/regulations were addressed to political stakeholders, i.e. the EU Commission, ExB and regulatory bodies. Due to different national rules and regulations, it is not possible for the timeabling departments to coordinate a fully harmonised path offer at the time of the Draft and Final Timetable (DTT, FTT). The project also concluded that international pre-coordination of capacity would be an important measure to improve the capacity management and service offer on RFC Rhine-Alpine. Progress has been made in this regard for paths between Mannheim and Northern Italy.

This capacity pre-coordination will help customers in relation to their capacity requests. Further measures are in preparation. The Management Board plans to continue this development together with the Heads of Timetable on RFC Rhine-Alpine.

Regarding future TCRs, results from the regular international coordination were published twice in 2019 – in January and August. RFC Rhine-Alpine currently issues TCR information both in form of a detailed Excel sheet and in form of impact sheets that focus on major TCRs at all IMs and provide information on planned diversions and impacts on the RUs. The IM experts also coordinated the planned maintenance windows so that transparency could be ensured on this topic as agreed with the RAG.

Valuable support was given by the TCR experts on RFC Rhine-Alpine to the development of the TCR tool at RNE. They piloted the TCR tool, which included significant manual input and initial coordination of TCRs with the tool. This was done in close cooperation with the responsible staff at RNE. As further development is still required, the RFC Rhine-Alpine TCR experts agreed to be the first customers to actually use the TCR tool for their coordination efforts in 2020. The TCR Excel overview and impact sheets will, however, still be prepared and published in parallel.

Achievements of the Management Board

The year 2019 brought a major change to RFC Rhine-Alpine’s Service Offer. The C-OSS manager Martin Ruiz dedicated himself to new professional challenges and was replaced by Stephanie Boscheid. We thank Martin for his appreciated contribution to our Corridor, and we welcome Stephanie warmly in our team.

As shown in chapter 2, the PaP offer for TT 2020 stayed on the same level as in previous years. In addition, fast paths from Cologne to Gallarate were offered for the second time.

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This capacity pre-coordination will help customers in relation to their capacity requests. Further measures are in preparation. The Management Board plans to continue this development together with the Heads of Timetable on RFC Rhine-Alpine.

Regarding future TCRs, results from the regular international coordination were published twice in 2019 – in January and August. RFC Rhine-Alpine currently issues TCR information both in form of a detailed Excel sheet and in form of impact sheets that focus on major TCRs at all IMs and provide information on planned diversions and impacts on the RUs. The IM experts also coordinated the planned maintenance windows so that transparency could be ensured on this topic as agreed with the RAG.

Valuable support was given by the TCR experts on RFC Rhine-Alpine to the development of the TCR tool at RNE. They piloted the TCR tool, which included significant manual input and initial coordination of TCRs with the tool. This was done in close cooperation with the responsible staff at RNE. As further development is still required, the RFC Rhine-Alpine TCR experts agreed to be the first customers to actually use the TCR tool for their coordination efforts in 2020. The TCR Excel overview and impact sheets will, however, still be prepared and published in parallel.
JOINT PROGRESS ON ERTMS DEPLOYMENT AND ENHANCED COOPERATION ON CROSS-BORDER HARMONISATION ARE KEY TO STRENGTHENING RAIL FREIGHT’S COMPETITIVENESS

ERTMS DEPLOYMENT

Focus topics of the ERTMS Expert Platform of RFC Rhine-Alpine with main achievements were:

- Monitoring of ETCS deployment on the Corridor and provision of this information to different stakeholders.
- The implementation of an ERTMS risk reporting process for topics that could hamper smooth future ERTMS operations (including the critical issues already addressed to the European ERTMS coordinator in 2018).
- Discussion and addressing of topics related to a future radio strategy like bandwidth for railway applications, signal strength and the introduction of the future railway mobile communication system to replace GSM-R (ongoing).
- Support of the DG Move study on ERTMS trackside and on-board strategies by providing the requested information and data to the consultant.
- Support of RNE and the participating RFCs in the update of the data concept for railway mobile communication systems.

HARMONISATION AND CROSS-BORDER INTEROPERABILITY

For the first time in 2019, a joint workplan was defined together with the RUs in the RAG. Main activities were related to the simplification of language requirements, the definition of a joint approach regarding braking rules (RFC Rhine-Alpine is participating in an RU project) and the cooperation on ICM and capacity topics.

Two pilots/studies to facilitate cross-border interoperability on the Italian network were ongoing in 2019 and the text below gives an update on the state of play.

PILOT ON REFLECTIVE PLATES:

The EEU again supported the Executive Board in the organisation and preparation of two dedicated ERTMS Task Force meetings in 2019, where the representatives of the MoTs, for example, agreed on an initiative to develop harmonised funding schemes for equipping rolling stock with on-board units (OBU). The better understanding of RU strategies to equip their vehicles with OBUs is another ongoing topic in 2020.

The pilot was greatly welcomed by the RUs. The first results were available mid-2018, showing an impact on traffic regularity.

In March 2019, the second phase of the project with the involvement of the RFI staff for the train rear end check was initiated by RFI on a more extended set of lines (on RFC Rhine-Alpine including Domodossola-Bivio Toce-Bivio Valle-Premosello; Domodossola-Bivio Toce-Domo 2 and Domo 2-Bivio Valle-Vagogna-Premosello).

No major problems were detected in this phase. The third phase of the pilot, additionally involving other RFC Rhine-Alpine lines, will start by the end of January 2020. The final assessment of this pilot will be made available by RFI.

HEAVIER TRAIN STUDY:

In 2019, following specific studies carried out on power supply systems and operational safety conditions, RFI issued a disposition allowing RUs to run freight trains up to 2,500 t.

Most of the Italian routings of RFC Rhine-Alpine are involved.

The new procedure is different from the previous process, which required a specific RFI authorisation allowing RUs to run trains heavier than 1,600 t after checking the compliance with electricity consumption limits as well as safety requirements.

According to the above-mentioned disposition, the rail freight weight limit has been extended to 2,500 t on selected line sections with adherence to certain operational limitations, but without requesting authorisation from RFI.

This disposition, which was supposed to enter into force in March 2020, will be postponed until September to allow for the extension of the aforementioned study on specific operational rules requested by some RUs that operate on those lines.

MARKETING AND CUSTOMER RELATION

ADVISORY GROUPS

In the Railway Undertaking Advisory Group (RAG) and Terminal Advisory Group (TAG), customers and stakeholders receive information on current activities and news on RFC Rhine-Alpine and have the chance to get involved and give input to the Corridor business.

The TAG met twice in 2019. Information on RFC Rhine-Alpine developments were shared with RUs and feedback was received from RUs. The customers were briefed on MB and ExB decisions and updated on operational topics (e.g. tail signals, language, weight and length of trains), infrastructure developments (e.g. projects regarding the 740-m train length) and capacity offer developments, including TT 2020 and TT 2021. Moreover, the ICM RU handbook as well as the further development of the RFC Rhine-Alpine document on re-routing scenarios were discussed. The list of topics also included further recent activities such as the Transport Market Study 2018, the User Satisfaction Survey 2018 and updates on TCR coordination processes.

The TAG also met twice in 2019. Some of the topics discussed with representatives of terminals and ports were EU regulatory issues, the project on implementation and use of the TiS interface for first/last mile, traffic development and feasibility of 740-m trains. The Transport Market Study 2018 and the User Satisfaction Survey 2018 were evaluated and approaches to Train Performance Management and International Contingency Management were discussed.

If you are interested in participating in our Advisory Groups, please contact the RFC Rhine-Alpine office.
MARKETING AND PROMOTION ACTIVITIES
The Corridor website (www.corridor-rhine-alpine.eu) was updated and restructured to make the achievements and work of our Corridor and the resulting publications more easily accessible. Through our NewsAbo and the newly established LinkedIn account, RFC Rhine-Alpine increased awareness not only for the Corridor activities but also for the necessity to support a modal shift to rail at different levels of action. The Customer Information Platform (CIP) was further developed and improved in 2019 and is gradually shared by all RFCs. Currently, nine RFCs benefit from the joint data platform. A highlight for us was the RFC representation at the transport logistic fair in Munich, which is one of the world’s biggest fairs for mobility and logistics. The joint stand with RFC Scandinavian-Mediterranean, RFC Mediterranean and RFC North Sea-Baltic attracted many visitors, including customers, stakeholders and colleagues. A good representation emphasizing the role of rail freight corridors in the modal shift and many good discussions at our stand made the fair a successful network event for RFC Rhine-Alpine.

The much-anticipated Ceneri Base Tunnel will open in September 2020.

RESULTS OF RFC RHINE-ALPINE IN THE USER SATISFACTION SURVEY 2019

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocation process by C-OSS</td>
<td>5.0</td>
</tr>
<tr>
<td>Conflict solving procedure by C-OSS</td>
<td>5.0</td>
</tr>
<tr>
<td>Information on RFC website</td>
<td>5.0</td>
</tr>
<tr>
<td>Annual Report by RFC</td>
<td>4.8</td>
</tr>
<tr>
<td>Structure of capacity wish list</td>
<td>4.7</td>
</tr>
<tr>
<td>Information on terminals in CID</td>
<td>4.4</td>
</tr>
<tr>
<td>CID overall (structure/contents)</td>
<td>4.4</td>
</tr>
<tr>
<td>Origin/destinations and intermediate stops in PaPs</td>
<td>4.3</td>
</tr>
<tr>
<td>Speed of PaPs</td>
<td>4.3</td>
</tr>
<tr>
<td>Information at RAG/TAG meetings</td>
<td>4.2</td>
</tr>
<tr>
<td>Implementation of re-routing scenarios</td>
<td>3.9</td>
</tr>
<tr>
<td>Regular performance reports</td>
<td>3.8</td>
</tr>
<tr>
<td>PaP parameters</td>
<td>3.8</td>
</tr>
<tr>
<td>Adequacy of times</td>
<td>3.7</td>
</tr>
<tr>
<td>PaP offer capacity management on overlapping sections</td>
<td>3.7</td>
</tr>
<tr>
<td>Helpfulness of &amp; information from traffic management</td>
<td>3.6</td>
</tr>
<tr>
<td>RU Advisory Group/terminal Advisory Group</td>
<td>3.5</td>
</tr>
<tr>
<td>PaP schedule (adequate travel/dep/arrival times)</td>
<td>3.4</td>
</tr>
<tr>
<td>Measures to improve punctuality</td>
<td>3.4</td>
</tr>
<tr>
<td>Communication with &amp; information by management board</td>
<td>3.4</td>
</tr>
<tr>
<td>Infrastructure standards</td>
<td>3.3</td>
</tr>
<tr>
<td>Quality of international path offer</td>
<td>3.3</td>
</tr>
<tr>
<td>Amount of PaPs (number of paths)</td>
<td>3.0</td>
</tr>
<tr>
<td>Business know-how of C-OSS</td>
<td>3.0</td>
</tr>
<tr>
<td>Quality of PaP reserve capacity</td>
<td>2.9</td>
</tr>
<tr>
<td>Quality/level of detail of information in list of temporary capacity restrictions</td>
<td>2.8</td>
</tr>
<tr>
<td>Availability of C-OSS</td>
<td>2.8</td>
</tr>
<tr>
<td>PCS overall</td>
<td>2.8</td>
</tr>
<tr>
<td>Measures to improve infrastructure standards</td>
<td>2.7</td>
</tr>
<tr>
<td>Involvement of RU in relevant processes</td>
<td>2.6</td>
</tr>
<tr>
<td>Result/quality of coordination of temporary capacity restrictions</td>
<td>2.6</td>
</tr>
</tbody>
</table>
ACHIEVEMENTS OF THE MANAGEMENT BOARD

USER SATISFACTION SURVEY

The User Satisfaction Survey (USS) was conducted in cooperation with seven other RFCs and coordinated by RNE in September/October 2019. Nineteen representatives from customer companies answered the questionnaire and gave detailed feedback on RFC quality, advisory groups, performance, traffic management, path offer and many other issues. The overall satisfaction with RFC Rhine-Alpine decreased by 0.2 points to a total score of 4.0 on a scale ranging from 1 (“very unsatisfied”) to 6 (“very satisfied”). The top-rated aspects related to path allocation by C-OSS, performance management and information/communication. The lower-rated aspects related to C-OSS availability (the C-OSS position was vacant during a couple of months in 2019), TCR and infrastructure standards. An overview of the results is shown on page 37. They have been taken up in the RFC Rhine-Alpine bodies and conclusions for the work plans were drawn at the beginning of 2020. The full report is available on the RFC Rhine-Alpine website and on CIP.

www.corridor-rhine-alpine.eu
www.cip.rne.eu

CUSTOMER INFORMATION PLATFORM

The CIP stands for coordinated and harmonised information for customers of the RFCs and IMs. The user interface of CIP is continually being enhanced to further increase the experience of CIP users. To this end, the ICM re-routing options were implemented in CIP in 2019. This new feature enables CIP users to display, in an interactive map, all ICM lines along their selected RFCs together with the availability of re-routing options for individual ICM lines. For every available re-routing option, the user may obtain a geographical representation of the re-routing line along with detailed information on applicable line properties along this line.

The visualisation of ICM re-routing options in the interactive map enables RFC Rhine-Alpine to communicate to CIP users its ICM-relevant information in an interactive and user-friendly manner. Furthermore, the newly introduced ICM re-routing options are also compatible with the enhanced route-planning feature, thus enabling users to design their custom routes and download the applicable line properties.

Moreover, several technical improvements have been made to further improve user friendliness, such as simpler access to the platform.

In a joint workshop with UIC, RNE and several RFCs, user needs were identified and evaluated, particularly with regard to line property information. This will be followed up in 2020. CIP has been promoted in RFC Rhine-Alpine RAG and TAG meetings, and also during the transport logistic fair in Munich.

www.cip.rne.eu

During a short break in a joint strategy workshop in February 2019 the RFC Rhine-Alpine team (Management Board, Programme Implementation Managers, Working Group leaders and Permanent Office) enjoys the view of Lake Lucerne.
ACHIEVEMENTS OF THE EXECUTIVE BOARD

Which regulatory topics were brought forward on national and European level?

The Executive Board met three times in 2019 – in Genoa, Bern and Rome. The Executive Board was invited by the Port of Genoa with a presentation on rail developments and to meet together with the RFC Rhine-Alpine TAG.

In 2019, the work of the Executive Board focused on the implementation of its 2018/2019 action plan, based on the Leipzig Declaration. Some of the actions listed within the action plan were finalised in 2019. During the November meeting, the ExB decided to update the action plan. A new version containing new actions was therefore established for 2020/2021.

OVERVIEW OF THE RFC RHINE-ALPINE EXB ACTION PLAN 2019

1. ALLOCATION CAPACITY
   - Amendment of FCA
   - Compliance with Annex VII

2. CROSS-BORDER INTEROPERABILITY
   - Transparency for language derogation rules in cross-border sections
   - Simplification of harmonisation processes at NSAs
   - Solution for custom situation CH-EU
   - Harmonisation of the regulatory framework of the braking sheets
   - Harmonisation of tail signals on RFC Rhine-Alpine

3. INTERNATIONAL CONTINGENCY MANAGEMENT
   - Development of allocation rules for cases of international incidents
   - Enabling of more flexible operations with the NSAs

4. ETA & DIGITALISATION
   - Support of the ELETA Project
   - Facilitation of the use of TIS data by all stakeholders on RFC Rhine-Alpine

5. ERTMS
   - NIP transparency
   - Ensuring of ERTMS financing
   - Development OBU support programmes

6. INFRASTRUCTURE
   - Feasibility investigations on 740-m trains
   - Clarification of infrastructure improvements on diversionary routes

7. COORDINATION
   - Cooperation between RFCs Rhine-Alpine – North Sea-Mediterranean
   - Interoperability between RFCs Rhine-Alpine – North Sea-Mediterranean
   - Monitoring of the developments of the action points of the Leipzig Declaration
   - Key Performance Indicators

This chapter describes the main achievements of the Executive Board and introduces the topics of the new 2020/2021 action plan. Information on changes and decisions at the European level can also be found here.

The Terminal Advisory Group and the Executive Board exchange during a joint meeting in Genoa in March 2019 at the premises of the Port Authority (Palazzo San Gorgio)
The Executive Board has been stepping up its cooperation with RFC North Sea-Mediterranean and the first joint Executive Board meeting took place on 18 March 2019 in Brussels. During this meeting, information on common market analysis, bottlenecks and contingency planning was shared. The Executive Boards agreed to continue the cooperation between both rail freight corridors on an annual basis.

**PERFORMANCE**

RFC Rhine-Alpine submitted, on 2 December 2019, a proposal for a feasibility study on Collaborative Decision Making, a methodology developed in the European airport sector (Eurocontrol) to raise transparency, data sharing and quality. This proposal was made in the framework of a PSA call for proposals from the European Commission related to the interoperability issues logbook. It is part of a wider project, coordinated with sector parties including RNE and UIRR, which has the objective to further disseminate the work on digitalisation and ETA, involving wagon information and terminals.

For the first time, the Key Performance Indicators of all RFCs were presented in a harmonised way in line with the recommendation of the Network of Executive Boards (NExBo) from February 2018. One of the key findings for RFC Rhine-Alpine is the substantial arrival and departure delays on the Corridor. This major issue was further taken up in the ministers’ meeting during the ITF side event in Leipzig.

**CAPACITY AND INTERNATIONAL CONTINGENCY MANAGEMENT**

The Network of Executive Boards (NExBo) has the objective to further disseminate the work on digitalisation and ETA, involving wagon information and terminals.

Regarding the Timetable Redesign (TTR) capacity allocation project (foreseen in the Vienna Declaration by December 2024), the European Commission announced, during the Single European Transport Act (SERAC), its intention to launch an expert group meeting between the European Commission, EU Member States and the railway sector with a view of defining the TTR’s regulatory impact and facilitating its implementation.

For the NExBo, the priorities in capacity allocation are relevant; in the IOM handbook, IMs have proposed harmonising these priority rules on re-routing lines. This issue is still open due to ongoing analysis from the European Commission on the applicable legal framework.

**INVESTMENTS, ERTMS AND INTEROPERABILITY**

Following a request from the European Commission in the framework of TEN-T coordination, the Executive Board consulted the RAG on investment priorities. The RAG sent its issues to the Executive and Management Board in September 2019. In consultation with its IMs, the Executive Board responded in detail to the known and new infrastructure project list in December 2019 and expects further dialogue on this topic in 2020.

The Executive Board continued its work on ERTMS implementation and organised two Task Force meetings. One of the issues discussed was OBU financing. Moreover, critical issues regarding the implementation of ERTMS were identified.

In June 2019, the Netherlands adopted a national ERTMS strategy, with full network implementation foreseen by 2050.

The Executive Board wrote a letter to the European Commission on the Future Railway Mobile Communication System and the capacities available in the radio spectrum. In response, the European Commission invited RFC Rhine-Alpine to cooperate on the basis of the shared knowledge of IMs.
REGULATORY BODIES

As in previous years, the regulatory bodies involved in RFC Rhine-Alpine participated as an observer in the meetings of the ExB and had a dedicated meeting with the C-OSS, which enables the exchange of experiences and provides insight into current and future developments. Thus, the regulatory bodies aim at improving international cooperation, harmonisation and transparency of rules and procedures for capacity allocation in order to ensure efficient use of rail network capacity and, more specifically, efficient use of Corridor capacity.

An ex-ante control of the intended PaP provisions by the German IM is currently not envisaged, as the German Federal Network Agency has waived formal notification for the working timetable periods of 2020 to 2023. The information exchange procedure which was agreed upon by the German Federal Network Agency and DB Netz instead was implemented for the first time for TT 2020.

In 2019, IRG Rail members produced an accessible overview of current national rules and practices referring to congested infrastructure, capacity charges and priority criteria which can be retrieved on the IRG website.

In addition, the regulatory bodies have envisaged developing a uniform approach for the analysis, management and evaluation of Corridor processes by means of jointly defined KPIs.

To improve the transparency of access to the rail market and to ensure that the rail sector as a whole benefits from the harmonised information, regulators will continue to work on revising the current list of KPIs in all sectors.

NSA CORRIDOR GROUP

WORKING GROUPS

(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 in order to achieve a common ERTMS standard on RFC Rhine-Alpine. In addition, the scope of the NSA WG covers operational issues on the rail freight corridors. Issues identified by the Group which cannot be solved at the Corridor level or might have a broader impact are addressed to the ERA.

In 2019, the NSA WG focused on the following topics:

- **Work on projects:** The Dutch ETCS project, which coordinates the upgrade/retrofit of the Dutch freight locomotive fleet to ETCS Baseline 3, consulted the Group on best practices, national technical rules and derogation procedures, as well as the procedures and responsibilities within the 4th railway package. The exchange between the project and the NSA WG is ongoing.

- **CCS TSI:** With the CCS TSI 2019, the concepts of ETCS System Compatibility and Radio System Compatibility (ESC/RSC) were introduced. The NSA WG worked on the practical implementation of these concepts by providing input for the revision of the application guide for the latest CCS TSI via the responsible ERA working party.

- **Key Management:** The NSA WG gathered information regarding the different approaches to ETCS Key Management in the Corridor countries. As a possible harmonisation of Key Management procedures is outside the scope of the NSA’s responsibility, the topic was brought forward to the IMs and organised in EIM, with the recommendation to take further steps towards a harmonisation of Key Management.

- **Route knowledge:** After the Rastatt incident in 2017, RIs operating on RFC Rhine-Alpine identified the route knowledge requirements as an obstacle in international traffic. This is especially the case in contingency situations when sections of the Corridor are closed and deviation routes have to be taken. However, route knowledge is considered to be necessary to ensure safe operation. The NSA WG has started to develop a joint posi-
tion paper on the issue, taking into account the current rules and regulations concerning route knowledge in each of the Member States of RFC Rhine-Alpine.

- NTR CCS: NSAs discussed the national technical rules in the CCS area relevant for vehicle authorisation in order to get a mutual understanding of these rules. Based on this work, bilateral discussions will start to explore possibilities to harmonise rules which are similar in two or more countries and to share experiences on rules which are no longer needed.

Further topics were the experiences and understandings of the new requirement of ERTMS Trackside Approval necessary for an Authorisation of Placing into Service (APIS) for ERTMS trackside equipment under the 4th railway package and also the handling of the supervision of Interoperability Constituents (IC), which has not been harmonised up to now. The focus of the NSA WG is to share experiences and to get a better understanding of how these topics can be handled efficiently and satisfactorily for the purposes of the Interoperability Directive. These topics are under ongoing discussion within the NSA WG and with the ERA.

(2) TASK FORCE INTEROPERABILITY
The Task Force Interoperability (TFI) is a working group aiming at facilitating the authorisation of vehicles in the networks of Austria, Germany, Italy, the Netherlands and Switzerland. Up until June 2019, the working group was composed of representatives of the National Safety Authorities and IMs of these countries.

In June 2019, the 4th railway package entered into force: Italy and the Netherlands transposed the directives of the technical pillar of the 4th railway package into national law on that date. Therefore, the ERA became the authorising entity for international vehicles in the Italian and Dutch networks, and hence gained an active role in the working group.

By June 2020, the remaining Member States have to transpose the Interoperability Directive (2016/797/EU) and the Safety Directive (2016/798/EU) into their national legal framework. After this date, ERA will also act as the authorising entity for international vehicles in these countries. Switzerland, a non-EU Member State, is modifying its national legislation to be compliant with the principles of the 4th railway package. In a first step, starting from 13 December 2019, Switzerland will work with a One-Stop-Shop for vehicle authorisation, and the FOT will issue, based on ERA

THE 4TH RAILWAY PACKAGE IS GRADUALLY IMPLEMENTED BY EUROPEAN MEMBER STATES AND SWITZERLAND, MAKING THE ERA THE ONLY AUTHORISING ENTITY FOR INTERNATIONAL VEHICLES.
The discussed processes related to:

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

Up until June 2019, the five NSAs used cross-acceptance procedures to facilitate first and additional authorisations of interoperable vehicles, in continuation of the activities of the previous years.

The entering into force of the 4th railway package in Italy and the Netherlands brought some changes for the TFI. As the authorising entity, the ERA has an active role in the working group and exchanges documents and information with the other authorising entities. The process of authorisation has been changed from “authorisation for placing into service” to “authorisation for placing on the market”. The One-Stop-Shop (OSS) tool shall be used to manage all the new applications.

FURTHER WORK DONE IN 2019

SHORT-DISTANCE INTEROPERABILITY

The overview table compiled by the Corridor NSAs which shows the principal regulations and agreements with regard to short-distance interoperability on RFC Rhine-Alpine is continuously updated. 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, under ‘Our Services’.

CONTRIBUTION TO ERA ERTMS WORKING GROUPS

Since the NSAs of RFC Rhine-Alpine also take part in the ERTMS working groups organised by the ERA, the NSAs coordinate their views in order to arrive, if possible and appropriate, at a common Corridor position in the respective working groups. Furthermore, ERTMS issues that occur on RFC Rhine-Alpine can be addressed to the ERA, which will be the system authority for ERTMS and an authorising entity in all Corridor countries from June 2020.

OBJECTIVES FOR 2020

At the end of 2019, the NSA WG set up a multi-annual work plan for the following years approved by the Corridor NSAs’ Steering Committee. In 2020, the NSA WG will continue to work on the agreed topics. The work plan might be adjusted or amended depending on current priorities and requests by the Executive Board of RFC Rhine-Alpine. Considering

the work plan, the principal objectives of the NSA WG for 2020 will be as follows:

- Guidance for projects
  The NSA WG intends to continue to guide CCS vehicle projects with regard to 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.

- AMOCs/OPE TSI
  The OPE TSI 2019/773 stipulates that national safety rules in certain areas will be replaced by so-called “acceptable means of compliance” (AMOCs). Being AMOCs, the respective rules will no longer be binding but they will define a reference for RUs on how to comply with the provision in the concerned area. One of the objectives for the NSA WG in the following years will be to monitor the stepwise implementation of the new provisions in the OPE TSI, including the concept of AMOCs.

- 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 under the responsibility of NSAs.

- 4th railway package issues regarding (ERTMS) vehicle authorisation (jointly with TFI after June 2019)
  When the technical pillar of the 4th railway package is transposed in all Corridor countries as of June 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 identify further needs for improvement in the TSIs.
ANNEX 1:
LIST OF ABBREVIATIONS

ABS
Ausbaustrecke (enhancing and upgrading an existing track)

APIS
Authorisation of Placing Into Service

AMDC
Acceptable Means of Compliance

DE
Belgium

SL
Baseline

SLS
Bern–Lötschberg–Simplon (Swiss IM)

CCS
Control Command and Signaling

CEF
Connecting Europe Facility

CH
Switzerland

CID
Customer Information Document

CIP
Customer Information Platform

C-1SS
Corridor One-Stop-Shop

CoGIS
Cooperation Germany-Italy-Switzerland

DB
Deutsche Bahn (German railway)

DE
Deutschland (Germany)

DG Move
Directorate-General Mobility and Transport

DIT
Draft Timetable

EC
European Commission

EEIG
European Economic Interest Grouping

EIM
European Rail Infrastructure Managers

ELETA
Electronic Exchange of Estimated Time of Arrival Information

EMU
Electric Multiple Unit

ESC
ETCS System Compatibility

ERTRA
European Rail Traffic Management System

ETA
Estimated Time of Arrival

ETCS
European Train Control System

EU
European Union

ExB
Executive Board

FCA
Framework for Capacity Allocation

FLIRT
Flinker Leichter Intercity- und Regional-Triebzug

FTT
Final Timetable

GSM-R
Global System for Mobile

IC
Interoperability Consequences

ICM
International Contingency Management

ICD
Improved Capacity Offer

IM
Infrastructure Manager

IRG
Independent Regulatory Group

IT
Italy

ITF
International Transport Forum

IWW
Inland WaterWays

km
Kilometre

KPI
Key Performance Indicator

KTL
Kombi Terminal Ludwigshafen

LV DC
160 Volt direct current

L
Level (ETCS), in combination with a number

LS
Limited Supervision (ETCS)

m
Metre

MB
Management Board

MD
Managing Director

MeT
Ministry of Transport

NBS
Neubaustrecke [new railway section]

NE-IBs
Network of ExBs

NIP
National Implementation Plans (ERTMS)

NL
The Netherlands

NSA
National Safety Authority

NTR
National Technical Rule

OBU
On-board units (ERTMS)

OPE
Operations and Traffic Management

OSS
One-Stop-Shop

PaP
Pre-arranged Path

PC
Profile code

PCS
Path Coordination System

PIV
Planfeststellungsvorfragen

PM
Programme Implementation Manager

PLP
Programmable Logic Post

PMO
Programme Management Office

PSA
Programme Support Action

RAG
Railway Undertaking Advisory Group

RFC
Rail Freight Corridor

RI
Rate Ferroviaria Italiana (Italian IM)

RNE
RailNetEurope

RoLa
Rollende Landstraße (rolling highway)

RSC
Radio System Compatibility

RU
Railway Undertaking

SBB
Schweizerische Bundesbahnen (Swiss railway)

SBB
Schweizerische Bundesbahnen (Swiss railway)

SCMT
Sistema di Controllo della Marcia del Treno (Italian Rail Traffic Management System)

SE
Secretary General

SERO
Single European Railway Agency

SCMT
Sistema di Controllo della Marcia del Treno

SEM
Single European Market

TSI
Technical Specification (for) Interoperability

TT
Timetable

TU
Technical University

UIC
Union Internationale des Chemins de fer

UIC
Union Internationale der Eisenbahnen

UM
Urban Mobility

UM
Urban Mobility

USS
User Satisfaction Survey

VW
Volume of Trade

W
Working Group