



Annual Report
2022



Oslo

Stockholm

Malmö

Padborg

Hamburg

München

Brennero

Ancona

Roma

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Contents

0. FOREWORD	5
1. MANAGEMENT SUMMARY	6
2. SCANMED RFC'S PERFORMANCE	8
2.1 CAPACITY DEVELOPMENTS	8
2.2 PAP OFFER: DETAILED OVERVIEW	9
2.3 PUNCTUALITY TRENDS	12
2.4 CUSTOMER RESPONSE	13
3. IMPLEMENTING OUR STRATEGY	18
3.1 PRODUCT PORTFOLIO DEVELOPMENTS	18
3.2 PLANNED TCR MANAGEMENT	19
3.3 SPECIFIC TCR SOUTH ISSUES	19
3.4 WORK ON TRAIN PERFORMANCE MANAGEMENT	20
3.5 ICM SIMULATION	20
3.6 SPEED RESTRICTIONS IN ITALY FOR TRAINS WITH SILENT BRAKES	21
3.7 POCKET WAGON RESTRICTIONS IN DENMARK	22
3.8 HANDOVER BETWEEN THE MANAGING DIRECTORS	22
3.9 HANDOVER BETWEEN THE ACOS	23
4. RAG/TAG, STAKEHOLDER, AND USER COOPERATION	24
4.1 THE REGIONAL WGS	25
4.2 SPECIFIC STUDIES AND PROJECTS	25
4.3 COMMUNICATION & EVENTS	27
5. THE EU'S POLICY FRAMEWORK AND SCANMED RFC'S CHALLENGES	30
6. KEY PERFORMANCE INDICATORS	32
6.1 CAPACITY KPIS	32
6.2 OPERATIONS KPIS	32
6.3 MARKET KPIS	34
6.4 PUNCTUALITY AT BORDER STATIONS AND IMPORTANT POINTS	34

Table of figures

Figure 1 – Annual timetable: Available products	8
Figure 2 – Offered, requested, and reserved capacity for TT2022 and TT2023 (in Mio. PaP km)	9
Figure 3 – Change in requested PaP capacity in Mio. PaP km from 2017 (TT2018) to 2022 (TT2023)	9
Figure 4 – Total composition of the requested capacity for TT2023 (in Mio. PaP km)	10
Figure 5 – Comparing requests between North and South for TT2023 (% of capacity requested)	10
Figure 6 – Ratio of the C-OSS-allocated capacity and the total allocated capacity for TT2023	11
Figure 7 – Main advantages of Reserve Capacity	11
Figure 8 – Overview of the development of offered, requested, and reserved RC (in Mio. RC km)	12
Figure 9 – Satisfaction with PaP parameters	14
Figure 10 – RFC Network USS 2022	15
Figure 11 – RFC USS 2022: Satisfaction & participation	16
Figure 12 – Summary: Satisfaction rating	17
Figure 13 – Summary: Top 7 focus topics	17
Figure 14 – Status of TICO Pilot with participating terminals for TT2023	18
Figure 15 – TCR coordination	19
Figure 16 – Updated RFC KPIs	20
Figure 17 – ICM scenario simulation in Odense	21
Figure 18 – Emanuele Mastrodonato & Furio Bombardi	23
Figure 19 – Gabriele Melindo & Eva Raymond	23
Figure 20 – From left to right: RAG Speaker Andrea-Marco Penso; President Linda Thulin; Managing Director Furio Bombardi; TAG Speaker Federica Montaresi	24
Figure 21 – The RFC Network at the Connecting Europe Days	28
Figure 22 – EU Coordinator Pat Cox, President Linda Thulin, and Managing Director Emanuele Mastrodonato at the Connecting Europe Days	28
Figure 23 – Linda Thulin at the AVENIR MOBILITÉ Dialogue Event “Transalpine Freight Transport”	29
Figure 24 – Capacity KPIs	32
Figure 25 – Punctuality (30’)	33
Figure 26 – Punctuality (15’)	33
Figure 27 – Delay causes	33
Figure 28 – Number of train runs crossing the defined border points	34
Figure 29 – Punctuality at border stations and important points (traffic flows from North to South)	34
Figure 30 – Punctuality at border stations and important points (traffic flows from South to North)	35

0. Foreword

Thanks to its international perspective, ScanMed RFC adds value, ensuring that international freight transport is attractive and runs smoothly cross-border, with overall customer satisfaction of 89%.

In 2022 and forward, intensive construction works are underway to maintain and improve the infrastructure. Capacity restrictions have an impact on the amount of available capacity and overall quality. When construction works are finished, it will lead to more capacity and improved quality. In the short term, this issue causes challenges for railway stakeholders to maintain their customers and goods on rail in a long-term perspective. Last year, capacity sales decreased by 44 % and punctuality decreased from 55% to 48%.

New infrastructure brings more capacity to meet tomorrow's rail freight transport demands. The Brenner Base Tunnel and Fehmarn Belt Fixed Link, together with other investments in complete logistic flows, will strongly contribute to better services and conditions for increasing the volumes of goods on rail and for intermodal transport. In late 2022, ScanMed RFC established the Femern Belt Platform to have a join overview of the new potential for future rail traffic on the Northern section of our Corridor and use it for a common traffic forecast, so that all stakeholders can prepare ahead and make the most out of the project's opportunities.

The Corridor has also actively been exploring, testing, and implementing parts of TTR and the possibilities to run longer and heavier trains. One test concerns the "Shortening Consultation Phase" and the other regarding "Capacity Needs Announcement" jointly with RailNetEurope (RNE) and Forum Train Europe (FTE). Cross-border tests for longer and heavier trains were successfully carried out.

Railway Undertakings and Terminals Advisory Groups (RAG/TAG) joined ScanMed RFC's Management Board, further strengthening stakeholder cooperation through shared planning of the Corridor's direction and activities.

The collaboration with RNE was deepened and we thank them for their increased support. The work on the project "Fresh Train," which saw several stakeholders bringing new goods on rail, has continued, with the goal of starting the new traffic in 2024. It is a long process, and careful planning is required for end users to dare to choose rail transport. However, ScanMed RFC is determined, stubborn, persistent, and confident that it will succeed in its contribution to the shift from road to rail.

Last year, the Corridor thanked and said *arrivederci* to Emanuele Mastrodonato for his great contribution and welcomed Furio Bombardi as the new Managing Director.

ScanMed RFC has an exciting time ahead and is looking forward to contributing further to the Commission's green transition objectives for the entire transport sector and the EU's climate goals.

Linda Thulin – Chair of the Management Board



1. Management Summary

For the European rail industry, 2022 represented a transition year in which all stakeholders have been working in the perspective of the planned revision of the EU's transport regulatory framework and in the renewal and upgrade of the infrastructural network. To allow for the upgrade of the railway lines along our Corridor, last year there was a stark increase in Temporary Capacity Restrictions (TCRs), with a corresponding increase in the number of non-available days and reduction in the offered capacity.

As detailed in Chapter 2.1, the impact of upgrading works has been particularly high in the Northern part of the Corridor, especially on the stretch Maschen – Malmö where we were not able to offer PaP days during the whole summer period. To soften the effect of a capacity offer below the request, an extensive use of tailor-made, multi-corridor and feeder/outflows paths was developed and in many cases several trains were merged into longer ones, as can be seen in Figure 24. As a result, ScanMed RFC's offered capacity in 2022 corresponded to 10.1 million PaP-km, compared to the 13.7 million offered in 2021, while the requested PaPs decreased by 44% to 3.1 million PaP-km from 5.6 million in 2021. The allocated capacity, detailed in figure 26, refers only to the Corridor's Northern section. In the Southern section, as in previous years, a different tool – the so-called Brenner Catalogue – is applied by the IMs and thus no PaP was requested.

In Chapter 2.3, the punctuality trend is analyzed. An overall worsening of punctuality occurred in 2022, with a percentage of trains arriving at the destination point within 30 minutes from the planned time declining from 55% to 48%, mainly due to the construction works along the Corridor and delays in train departures, but also related to poor coordination with the terminals.

Chapter 2.4 covers the relation with customers, represented mainly by Railway Undertakings (RUs) but also including some end users and transport organizers, and the main feedback received, including the results of the User Satisfaction Survey (USS) performed as usual in cooperation with the RFC Network. Despite the worsening of offered capacity and punctuality, the satisfaction level of our customers has improved, with 89% of generally satisfied customers. The main topics pointed out in the survey are relevant to improving PaP integration with terminal slots, increasing the offered capacity, and reducing the impact of TCRs on the planned circulations.

Chapter 3 makes the point on the past year's implementation of ScanMed RFC's strategy and organization, providing updated information on several open issues. The product portfolio Terminal Integrated Capacity Offer (TICO) continues to have a central role, as the proper harmonization of these activities represents a key factor for performing and reliable rail transport, and eight terminals and ports have agreed to publish this year's integrated slots in ScanMed RFC's timetable. However, as currently TICO has not received any bookings, in the next year we will try to better understand how to improve this tool with the support of customers and partners.

In 2022, construction works on the Brenner line were intensively carried out and in July there was a significant share of rerouted trains due to the total closure of the Tarvisio line. Careful preparations with the involvement of regional authorities, Infrastructure Managers (IMs), and RU made the rerouting process a success. Moreover, ScanMed RFC's Train Performance Management (TPM) Working Group (WG) has proceeded in finetuning punctuality monitoring and defining the proper corrective actions, as well as in implementing monitoring procedures for the new Key Performance Indicators (KPIs) foreseen in RNE's Guidelines – mainly train kilometers and dwelling times per border. These new KPIs are planned to be published in 2023.

Meanwhile, the Operations (OPE) WG performed an International Contingency Management (ICM) simulation in Denmark, pointing out the critical issues to be solved, first and foremost the definition of procedures allowing for the use of a common conference tool for all Member States, as MS Teams is not supported in Sweden.

Last year, ScanMed team's organization underwent major changes. On June 30, Emanuele Mastrodonato resigned from the position of Managing Director and on July 1 Furio Bombardi was appointed as new Managing Director on behalf of Rete Ferroviaria Italiana (RFI). In October, the Administration and Communication Officer (ACO), Eva Raymond, left her position. A new Service Agreement was defined between ScanMed RFC and RNE and the latter agreed to hire a new ACO, Gabriele Melindo, for the provision of the relevant services under the guidelines of the Managing Director.

Chapter 4 outlines the cooperation performed by ScanMed RFC with users and stakeholders. In 2022, the Management Board and the Executive Board decided to co-opt RAG/TAG speakers, which became Board Members with the goal of establishing a permanent and stronger coordination with stakeholders. In addition to the RAG/TAG meetings, representing as usual effective and stimulating opportunities for a common coordination and confrontation on the main challenges to be faced along the Corridor, very important activities were carried out within the Regional Working Groups.

The Regional WG South, also known as the Brenner WG, proceeded and increased its activities on the Brenner line, establishing an effective cooperation among the three IMs (RFI, ÖBB Infra, and DB Netz) and with other key stakeholders in managing daily operational issues and unplanned events and ICMs. Simultaneously, the Brenner Corridor Platform (BCP) proved very active in 2022. Under the supervision of EU Coordinator Pat Cox, and with the strong involvement of the Ministries of Transport of the countries involved as well as the European Commission, the BCP produced significant improvements within the Infrastructure and the Operations & Interoperability WGs, supporting the development of an effective harmonization along the Brenner line.

On the Corridor's Northern section, after a temporary period of inactivity, the end of 2022 witnessed the decision to "re-vitalize" the Regional WG North under the leadership of DB Netz. Moreover, in autumn there were some first steps in the establishment of the Femern Belt Platform (FBP), a new cooperation platform relevant to the implementation of the Femern Belt Fixed Link – a key infrastructural project along the Corridor based on the building of a submarine tunnel connecting Germany and Denmark. Inspired by the BCP, despite all differences between the two regional contexts, the FBP will also be supervised by Pat Cox. While the first plenary session was held in September, the Platform's consolidation will be performed next year.

In 2022, many important events took place with the involvement of our Corridor. The main one occurred in June and consisted of the Connecting Europe Days in Lyon, where our participation was organized in cooperation with the RFC Network, and which witnessed the participation of EU representatives, national officials, and rail industry representatives. The main goal of the meeting was to discuss with all stakeholders the role that transport and mobility can have in achieving the ambitious climate goals set out in the European Green Deal.

In chapter 5, the challenges that ScanMed RFC will face in the following years are outlined together with the main issues currently in progress and the Corridor's strategy. Finally, the last section collects the Corridor's KPIs for 2022 and compares them with 2021 values. The KPIs are clustered in four groups (capacity; punctuality at border points; and market development; and operations KPIs) and are complemented with comments and observations so to support a better evaluation.

2. ScanMed RFC's performance

2.1 Capacity developments

ScanMed RFC continues to offer its Corridor products to all Applicants. These consist of Pre-Arranged Paths (PaPs) for the annual request for rail freight capacity. For recurrent business needs we offer so-called Reserve Capacity (RC). Capacity is freely available to all interested parties, be them RU or non-RU applicants. PaPs were published via the online tool Path Coordination System (PCS) on the second Monday of January. Between mid-January (X-11) until mid-April (X-8), the Corridor team, particularly the Corridor One-Stop-Shop (C-OSS) Manager, promoted the PaPs. Reserve Capacity was published at X-2.

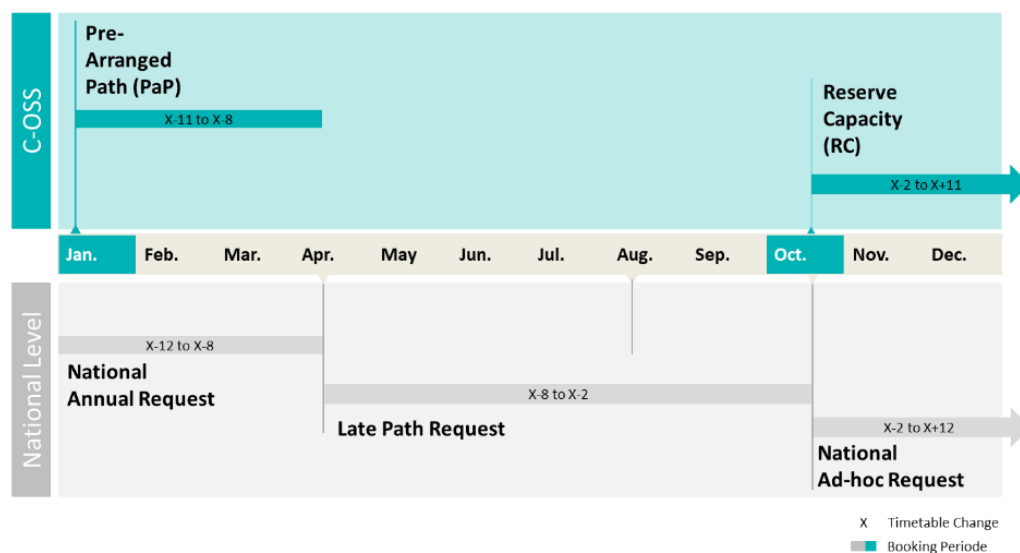


Figure 1 – Annual timetable: Available products

Due to the large number of TCRs, in 2022 the number of non-available days – i.e., days which cannot be offered as PaP days – increased. These days were cut out on the stretch Maschen – Malmö. Therefore, we witnessed a decrease in capacity requests by our Applicants. Moreover, on that same stretch the conflict rates – i.e., those cases where one Applicant applies for the same PaP – remained high. In such cases, we offered our Applicants market-oriented and tailor-made capacity which was constructed as close as possible to the original PaP requests. In figures, the conflict rate between Maschen and Padborg corresponded to 130%.

For TT2023, the trend observed for TT2022 continued. During both timetabling periods, Applicants used PaPs for safeguarding attractive pre-planned capacity between Maschen and Malmö. This line was requested as so-called feeder/outflow paths. In addition, the connecting PaP, alternatively called Harmonized Path Offer (HaP), was requested between ScanMed RFC and RFC North Sea-Baltic. This connection allows seamless capacity requests between Sweden and the Benelux countries.

2.2 PaP Offer: detailed overview

Pre-arranged Paths (PaPs)

For the timetabling period, PaP sales rates decreased by 44%, mostly due to the amount of TCRs between Maschen and Malmö. In practice, we were unable to offer PaP days during the summer period. The economic effect of merging several trains into one only played a minor role.

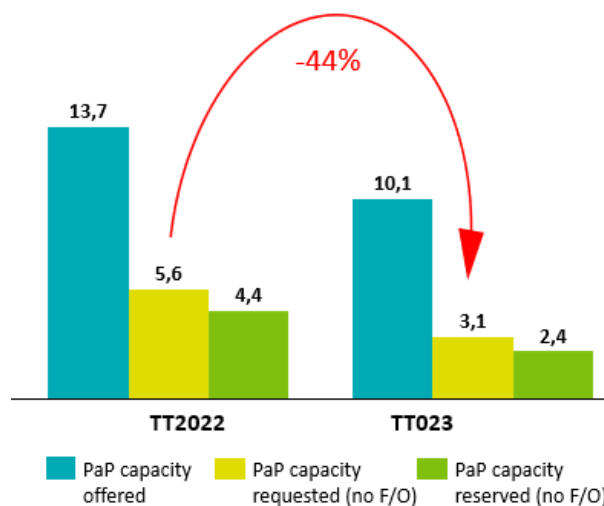


Figure 2 – Offered, requested, and reserved capacity for TT2022 and TT2023 (in Mio. PaP km)

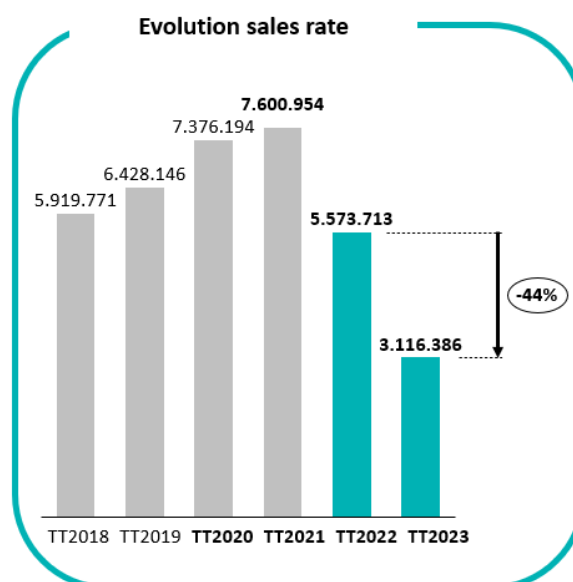


Figure 3 – Change in requested PaP capacity in Mio. PaP km from 2017 (TT2018) to 2022 (TT2023)

The Framework of Capacity Allocation (FCA) describes the rules for allocating capacity. These rules are also written in our Customer Information Document (CID). 78% of the requested capacity was allocated as a PaP, while the remaining 22% was allocated as tailor made. This means that even with numerous TCRs, we could offer and allocate market-oriented capacity. In total, 44 dossiers were requested, half of which did not present any conflict and the other half conflicted with other requests. Additionally, almost 16% of the total pre-booked capacity via the C-OSS was requested as feeders and outflows.

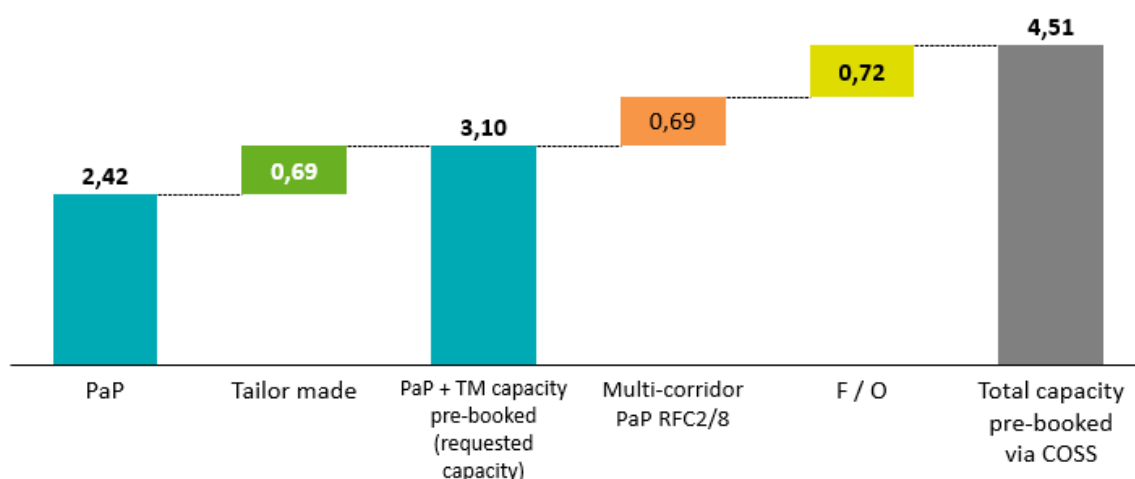


Figure 4 – Total composition of the requested capacity for TT2023 (in Mio. PaP km)

All requests involved the Northern part of the Corridor. South of Maschen, no PaPs were requested.

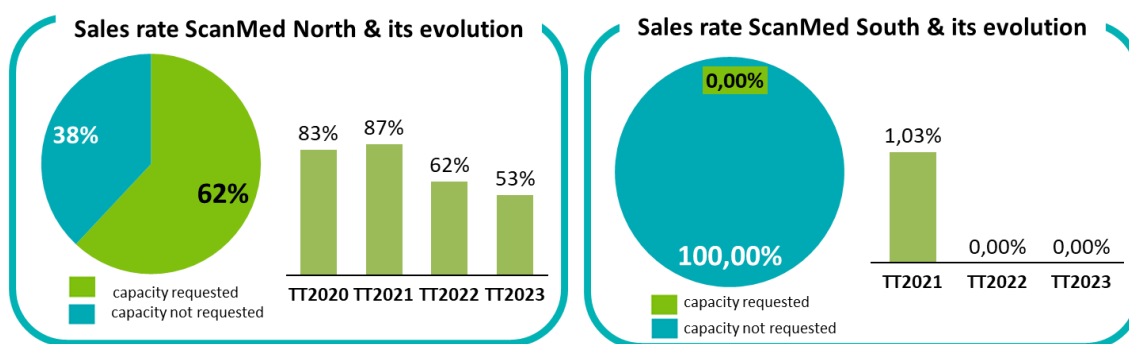


Figure 5 – Comparing requests between North and South for TT2023 (% of capacity requested)

ScanMed RFC provides the international market for rail freight capacity with attractive products. The results of the Pre-Allocation Phase must be read considering the whole requested capacity. In 2022, the C-OSS allocated approximately 50% of international freight traffic capacity via Peberholm and around 39% of the capacity via Padborg. The diagram shows that capacity was not requested via the C-OSS at the border stations Kufstein, Brenner and Kornsjö.

Number of allocated running days

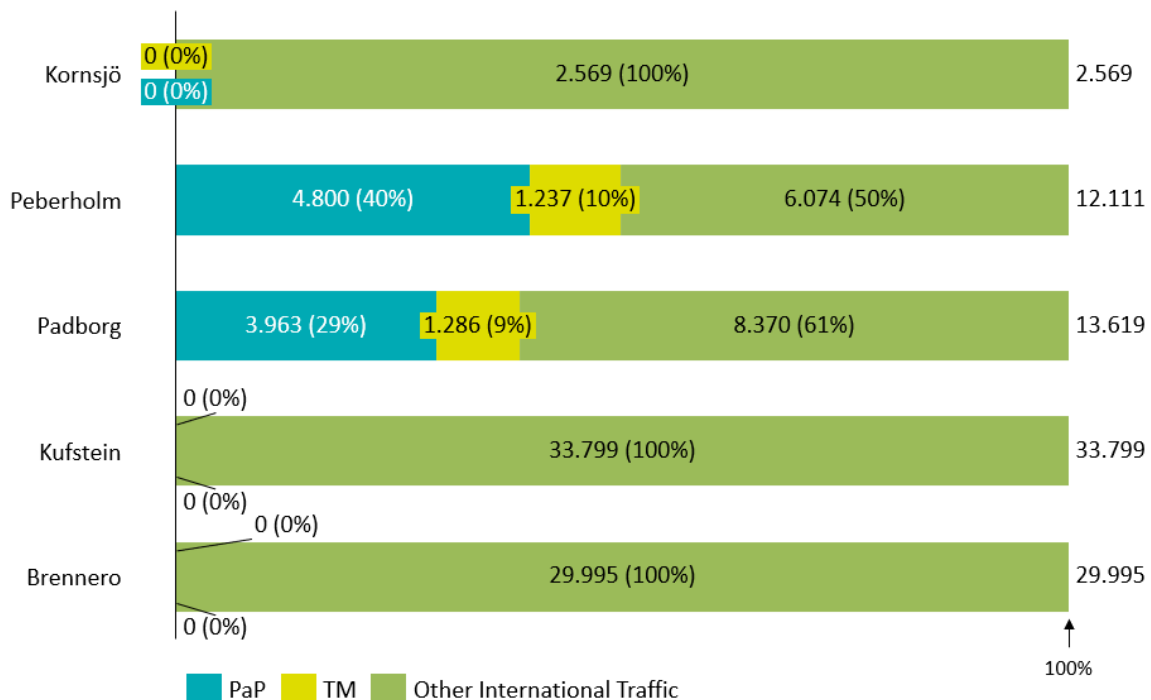


Figure 6 – Ratio of the C-OSS-allocated capacity and the total allocated capacity for TT2023

Reserve Capacity (RC) for recurrent business needs

Reserve Capacity (RC) is a product that can be requested during the running timetable period. Compared to PaPs, RC is offered as empty slots without fixed timetables. Instead, Applicants may request it according to their needs for international freight paths. This product is offered on the lines north of Domegliara. With the slots' publication, we also indicate standard running times for each section. In 2022, ScanMed RFC continued to offer one slot per day and direction. The allocation method for RC is different from PaP allocation, as the former follows the principle "first come, first served." Usually, RC presents four advantages, all visible in figure 7.

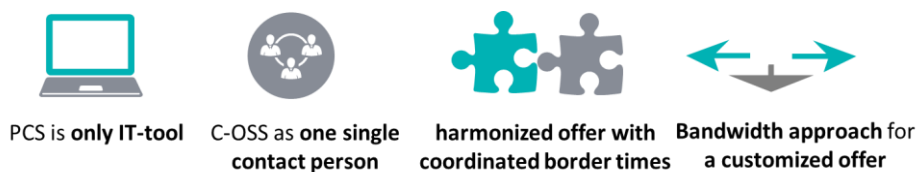


Figure 7 – Main advantages of Reserve Capacity

For TT22, two RC requests were placed, equaling one round-trip. During the construction phase, the C-OSS tracked the progress of the timetable construction in PCS. Together with the timetabling departments of the concerned IMs, he informed the Applicant about the construction results and remained in constant close contact with all involved parties. The Applicant was generally satisfied with the result, even if eventually the Applicant's end user did not need the PaP anymore. Nevertheless, we see that the product is a valuable option for Applicants and hope to witness increasing numbers in the coming years.

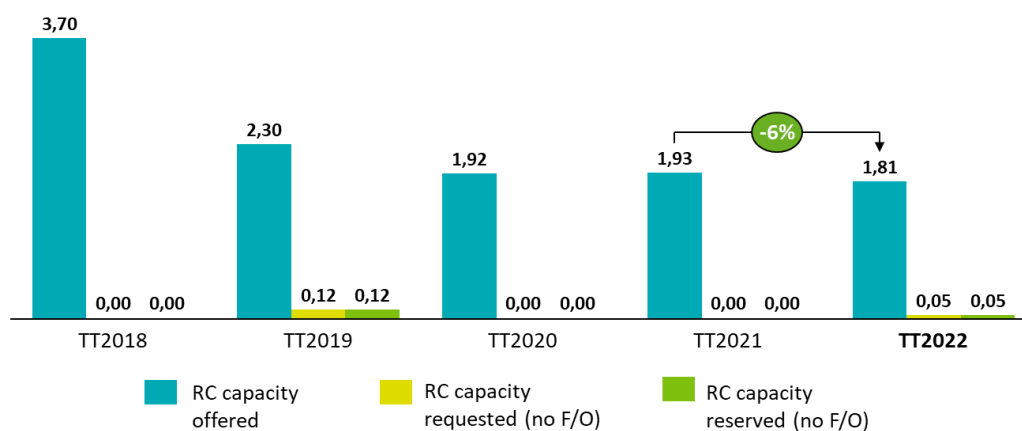


Figure 8 – Overview of the development of offered, requested, and reserved RC (in Mio. RC km)

2.3 Punctuality trends

Punctuality declined in 2022 compared to 2021. The punctuality within threshold of 30 minutes decreased from 55% to 48% at destination. Furthermore, punctuality at the origin/entry point decreased from 66% to 62%. For the Corridor's Southern section, the decreases mainly occurred in the South – North direction. Trains left Verona with a loss of 4% points compared to 2021, and until their arrival in Munich, lost a further 18% points compared to 13% points the previous year. In the Northern section, the decreases occurred in the area between Padborg and Hamburg with up to minus 11% points.

Outstanding events that have affected the quality were, among others:

- A damaged bridge near Hamburg (January – June)
- Heavy snowfall and wind at the Brenner (February)
- Several construction sites around Hamburg (March – May)
- A hacker attack on RFI's computer systems (Spring)
- Refugees injured by electric shocks on the tracks Munich – Rosenheim (May 24)
- Increased traffic volume due to a closure of the Tarvisio line and consequent rerouting of trains (July)
- Planned construction works in Denmark (Summer)
- Planned construction works on RFI and ÖBB side and simultaneous and unplanned replacement of sleepers by DB on the stretch Rosenheim – Munich (Autumn)
- Track failures line Munich – Kufstein (September – December)
- Several suicides
- Change of cranes at Alnabru

Departure figures at Munich and Maschen were negatively influenced by trains arriving from other parts of Germany, the Netherlands, and Belgium. The punctuality of these trains was significantly lower than the average.

Delays were identified to be 15% (N-S) / 13% (S-N) caused by IMs and 53% (N-S) / 49% (S-N) by RUs, while 30% / 36% (both ways) related to "secondary causes," i.e., causes not clearly attributable to either IMs or RUs. Finally, 32% (both ways) of causes were external, such as weather conditions, accident on the line, etc. Compared to 2021, the number of secondary delays and those caused by the IMs have risen.

Considering the specific delay reasons, especially the following codes showed an increase to the year before:

- Construction work (especially Germany, Austria, Italy)
- Train preparation and formation
- Change of drivers
- Track occupation

The most important aspect for improving quality is in collaboration with the customers, analysing representative samples of “critical trains”. In the year 2022 on the Brenner axis several of them were analysed together with the Rus. This process will be continued in 2023.

2.4 Customer response

In 2022, ScanMed RFC also conducted a User Satisfaction Survey (USS) to collect feedback regarding its work on the corridor. On top of that, the RFC Network also sent out a USS for all RFCs.

Feedback collected during virtual customer visits

2022 started with the annual publication of the PaP catalogue. Afterward, the C-OSS promoted the new PaPs and conducted customer visits. For that a special presentation was prepared and individualized for each customer. These promoting activities were used to highlight the new features of the newly published capacity offer and all linked ongoing projects, initiatives, and pilots at the corridor level. During the virtual visits and MS Teams calls, the C-OSS, together with experts from the IMs (timetabling and customer relationship departments) collected customers’ expectations and wishes for improvement. Moreover, in February the Corridor and many of its customers participated in virtual PCS training days together with RNE in February.

Users’ feedback

Seventeen Corridor users were asked to participate in our ScanMed RFC-specific USS in 2022, whereas five users responded, leading to a response rate of 30%. The survey asked specific quantitative questions as well as some open questions allowing users to provide qualitative feedback. Users appreciated the fact that the questionnaire was digitalized. Some RUs answered as a group on behalf of their respective umbrella company.

Customers rated the following aspects as positive:

- Increasing involvement in Corridor activities, including participation in the Regional WGs, more accurate information, and good communication channels
- Increasing satisfaction regarding the information provided
- Increasing interest in Corridor advertising
- Reliability of PaPs, specifically cutting out days affected by TCRs
- Good TCR coordination in the Brenner WG
- Opening opportunities for efficient rail freight users
- User friendliness of PCS

Conversely, customers expressed wishes for improvement on the following aspects:

- Increasing PaP offers in the North
- Improving cross-border TCR coordination

- Evaluating ways to increase parameter flexibility
- Evaluating the use of TICO for more short-term requests
- Postponing the period of capacity needs collection

Each year, the C-OSS tries to include in the PaPs' construction the train parameters indicated in the wish list. However, satisfaction levels on the issue decreased compared to previous USSs. Positively, HaPs were evaluated much better than in previous years. Dwell times at borders and stop patterns of PaPs were evaluated high again. Conversely, the speed of PaPs has to be improved.

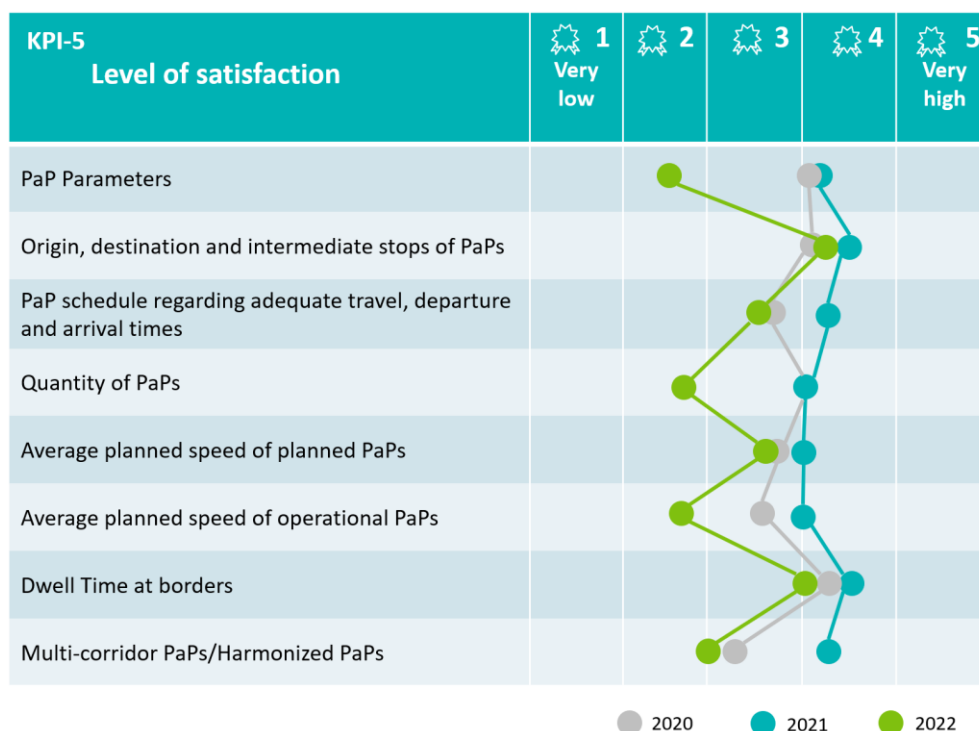


Figure 9 – Satisfaction with PaP parameters

Customers' visits: examples from our sales activities

Compared to 2021, 2022 presented us with a more positive situation regarding customer activities. The first week of January we conducted a marketing meeting with Collicare, looking into their forecast to include the start of a new train from Italy to Sweden and their planned second train from Italy to Norway. In February, we made a mini customer tour in Sweden starting with a visit to Gothenburg and the partners involved in the "Fishtrain" to discuss the pilot of the project. The next two days we moved on to the Port of Norrköping and Raillog's terminal, where a "Climate Declaration" was signed. Finally, we traveled to Hallsberg to discuss business with both Hectorrail and Green Cargo.

Additionally, ScanMed RFC joined Europe's Rail innovation program in Scandinavia, which also involves the Norwegian Railway Directorate, Bane NOR, and Trafikverket. The IP5 vision for future rail freight, which follows a holistic approach integrated in the logistic value chain, ensures value creation for customers, the rail operating community, and society through optimization and re-engineering. This work points toward digitalization,

automation, and sustainability. Cost competitiveness and the reliability of rail freight services contribute to delivering integrated freight services to meet client expectations.

During the past year, we continued meeting several stakeholders with an interest in our Corridor. We organized a customer meeting at the Brenner which allowed for a guided tour of the Brenner Base Tunnel. In June, Denmark's largest railway days (RAILcph) witnessed a presentation of ScanMed RFC by the Managing Director. In Denmark, we also visited the two biggest ports in Jutland, namely those of Aalborg and Hirtshals, with the aim of including them in our Corridor. Finally, we participated in the kick-off of the "Green Jutland Corridor," where the Managing Director signed a letter of support committing us to actively participate in the project.

In September, we had our kickoff meeting with Femern AS, the company in charge of designing, constructing, and operating the Femern Belt Fixed Link. Forty participants joined us during the first meeting in Copenhagen, all coming from IMs, RUs, freight forwarders, and end users interested in the Femern Belt project. The meeting's objective was to highlight the importance of the Fixed Link and to extend cooperation to all stakeholders.

RFC Network User Satisfaction Survey

For the third consecutive year, RNE, in cooperation with the eleven RFCs, conducted the RFC Network USS 2022. The field phase of the study started on September 19 and ended on November 10. Concerning ScanMed RFC, the number of invitations sent was twenty-eight. With nine respondents, plus DB Cargo, which agreed to perform an interview for all RFCs bringing the total number of evaluations to ten, the response rate was better than the previous year, going up to 36% (+17%).



Figure 10 – RFC Network USS 2022

The seven RUs/non-RUs and three terminals and ports which answered the survey expressed an overall satisfaction rate of 89% (+4%). Nevertheless, the users still expressed their wishes for improvement in several areas. For infrastructure, ScanMed RFC should focus on improving infrastructure capacity, parameters, and standards. Regarding TCRs, customers expressed a wish to be more involved in the process, and for the Corridor to keep improving the quality and timetable of alternative offers. Capacity requests done through the C-OSS remained constant at 67%, with users lamenting a lack of adaptability and the procedure's complexity.

SATISFACTION WITH RFC3

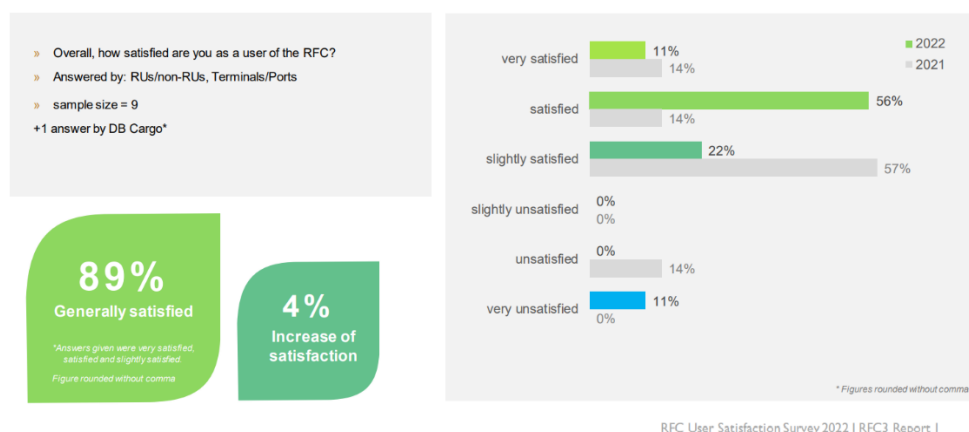


Figure 11 – RFC USS 2022: Satisfaction & participation

On the commercial offer, the answers show that ScanMed RFC needs to work on the PaP timetable, commercial speed, and parameters, as well as improving their protection vis-à-vis TCRs. TPM was considered satisfiable by only a third of respondents, a sharp drop from 2021 (-24%). Among the issues to be tackled, they listed the regular RFC monthly punctuality report, the efficiency of measures taken to improve punctuality, and RU/terminal improvement. On the bright side, half of the respondents appreciate ScanMed RFC's handling of ICMs (+17%), although they see some room for improvement on the implementation of new processes and the quality and usability of re-routing scenarios.

Moreover, overall satisfaction with the RAG/TAG remained stable at 56% (-1%). To increase this level, the Corridor should focus on the organization of meetings, the topics discussed there, and the consideration of RAG/TAG opinions at Executive Board meetings. Generally, participation at RAG/TAG meetings seem to have decreased compared to 2021, with only 44% of respondents regularly attending them (-27%).

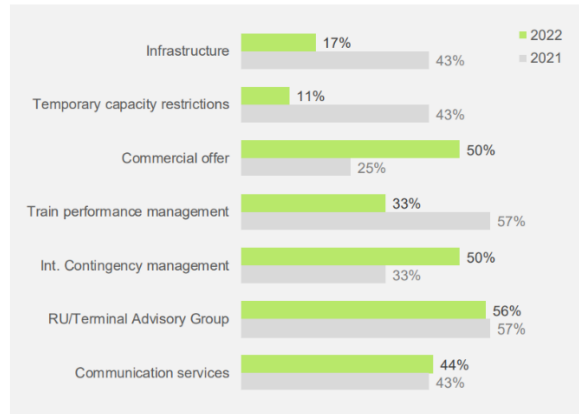
Concerning communication services, this year users expressed their wish for improvements in the information provided on the CIP. Positively, the conspicuous unsatisfaction with the information provided on the RFC website has disappeared. About the performance, compared to 2021 users stressed the need for a better TICO, better international end-to-end monitoring projects, more business opportunities, and better support of electronic data exchange (TIS) within the rail sector.

As in 2021, the USS also included three RFC-specific questions on the Brenner Axis Task Force, the Single Contract of Use (SCU), and ScanMed RFC's support during the pandemic. Generally, these issues saw most respondents expressing either no opinion (67% for the Brenner Task Force, 44% for coronavirus support, 22% for the SCU) or, worse, their ignorance on these topics (for the SCU, 44%). Hence, more communicative efforts are needed.

SUMMARY – SATISFACTION RATING

All respondents

- » General satisfaction
- » This question was not asked in all topics of the survey
- » Answered by: RUs/non-RUs, Terminals/Ports
- » Different sample sizes on every topic



RFC User Satisfaction Survey 2022 | RFC3 Report I 32

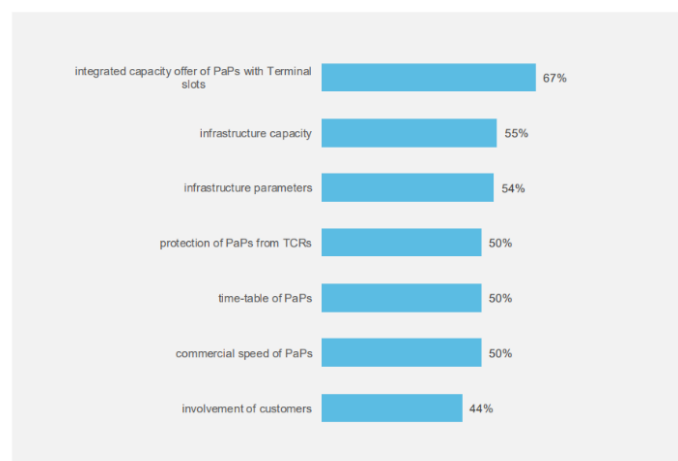
Figure 12 – Summary: Satisfaction rating

Overall, ScanMed RFC has seven key issues to tackle and improve in the future. 2/3 of users wishes to see improvements on TICO, while slightly more than 1/2 cited infrastructure capacity and parameters as top priorities. Half of respondents expressed their concerns on PaP-related issues, such as their protection from TCRs, timetable, and commercial speed. Finally, users would like to be more involved in the handling of TCRs.

SUMMARY – TOP 7 FOCUS TOPICS

All respondents

- » Focus topics chosen
- » Answered by: RUs/non-RUs, Terminals/Ports
- » Different sample sizes on every topic



RFC User Satisfaction Survey 2022 | RFC3 Report I 34

Figure 13 – Summary: Top 7 focus topics

3. Implementing our Strategy

3.1 Product portfolio developments

PaPs, RC, and TICO

TICO is an official Corridor product. It exclusively applies to PaP requests which are linked to terminal slots as part of an integrated offer. This offer consists of at least one PaP and a coordinated terminal slot via the C-OSS. In 2022, eight terminals and ports located participated in the it. The four TICO levels show the different degrees of commitment of terminals and PaPs, with TICO level 4 having the highest integration level.

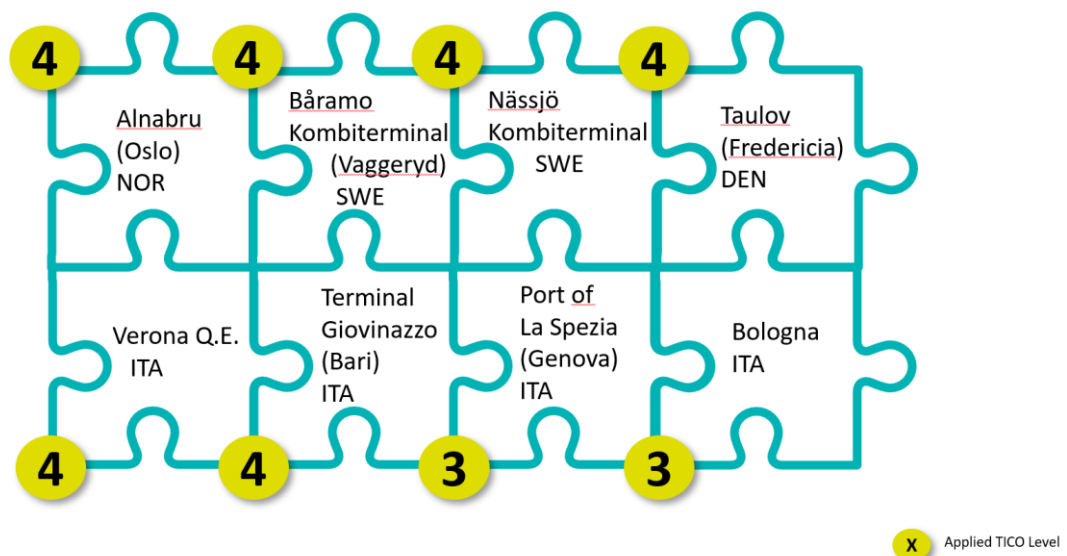


Figure 14 – Status of TICO Pilot with participating terminals for TT2023

Meeting market needs with special features

PaPs have shown a big potential to be adapted to the Applicants' needs thanks to the FlexPaP approach. Only the border times of PaPs are fixed, whereas the running times can be adopted if it stays in certain frames. Applicants consult the C-OSS asking how to adopt PaPs, for instance stop patterns and bandwidths, which allows for a higher degree of flexibility. In addition, in cooperation with RFC North-Sea Baltic, ScanMed RFC offered so called Harmonized PaPs (HaPs) that make smooth connections between the two Corridors possible while minimizing transport times, as the PaPs are harmonized also in the Netherlands and Belgium – effectively extending our Corridor's offer to the Benelux countries. For RFC North Sea-Baltic, the handover point is located in Maschen – Osnabrück, while the HaP with Corridor Rhine-Alpine has its transition point at Bologna-Piacenza. Finally, Reserve Capacity has the highest flexibility, because the Applicants determine the timetables according to its needs and the construction via the Infrastructure Managers is followed by a bandwidth approach.

3.2 Planned TCR management

Our coordination improved compared to previous years. Since the Regional WG North was not active last year, the TCR WG North decided to invite RUs immediately after its two coordination meetings and presented the Corridor's TCRs. The event gave participants the opportunity to provide input and feedback, and if there were requests for specific TCRs we tried to accommodate them.

3.3 Specific TCR South issues

In 2022, intensive construction works were carried out again on the Brenner line and on the rerouting lines via Tauern to maintain and improve the infrastructure. More than 150 relevant TCRs were discussed and coordinated between the IMs. Experts met three times during the year and subsequently presented the TCRs to customers, giving them the opportunity to give feedback on the TCRs and put forward their own proposals.

The biggest restriction on the Brenner line was its closure on August 27-29 due to works on switches between Innsbruck and Brenner. Up to sixty train paths were diverted via Salzburg, Villach, and Tarvisio on busy days. On the diversion route via Tauern, the biggest restriction was its closure between Carnia and Tarvisio-Boscoverde with simultaneous works in Villach for the entire month of July. This was preceded by extensive cooperation between regional authorities, IMs (SZ-Infrastructure, DB-Netz, RFI, und ÖBB-Infra) and RUs which had already started in 2020. Special care was taken of the different transport needs of freight and passenger train companies. On busy days, up to forty train paths were diverted via the Brenner line and up to twenty-five train paths were diverted via Villa Opicina and Slovenia.

A particular challenge was to coordinate the diversion traffic with the existing traffic on the Brenner line and in the network of SZ-Infrastructure to provide sufficient capacity. The timely preparation of the diversion timetables with all IMs and RUs involved was a great challenge due to the IMs' different planning systems and philosophies, but it was ultimately successful thanks to the good cooperation.

In 2022, Roland Pavel (ÖBB Infra) succeeded Gregor Thalhammer (DB Netz) as leader of the TCR WG South.

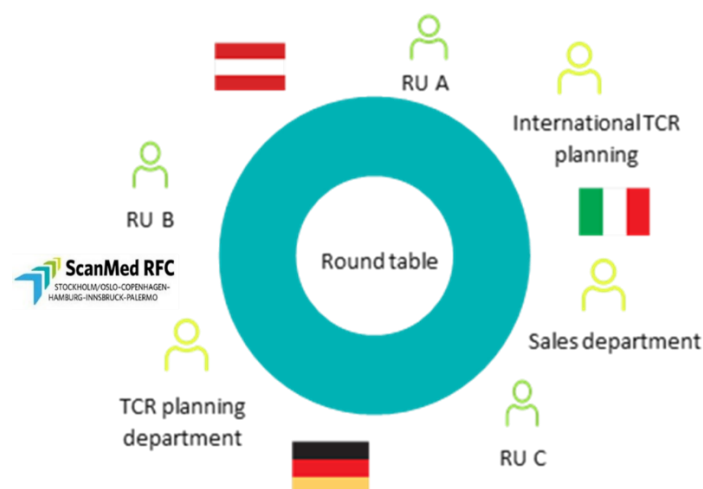


Figure 15 – TCR coordination

3.4 Work on Train Performance Management

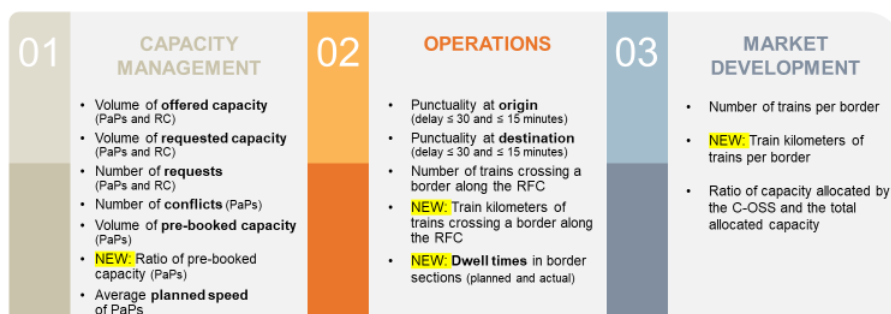
Reliability and punctuality trends

The TPM working group continued to focus on analyzing punctuality. On May 31, RNE's General Assembly approved the proposed update to RNE's Guidelines on the Key Performance Indicators (KPIs) and RNE's Handbook for Calculation of KPIs of RFCs.

With this, an essential enabler for the introduction of following new commonly applicable RFC KPIs was provided:

- Under KPIs for Capacity Management:
 - ✓ Ratio of pre-booked capacity (PaPs)
- Under KPIs for Operations:
 - ✓ Train kilometers of trains crossing a border along the RFC
 - ✓ Dwell times in border sections – planned dwell
 - ✓ Dwell times in border sections – real dwell
- Under KPIs for Market Development:
 - ✓ Train kilometers of trains per border

Clustering of commonly applicable RFC KPIs – including new KPIs



Timeline: In 2022 for TT 2023
(but also retrospectively)

Timeline: In 2023 for 2022 – publication
depending on the assessment of data quality

Figure 16 – Updated RFC KPIs

3.5 ICM Simulation

Conducted by the OPE WG, the simulation had the objective to evaluate several functions within the Corridor. No real-life case has happened in the Northern section, so it was important to place the exercise in one of the three Scandinavian countries – the choice ultimately being Denmark. This was the first simulation following the procedures outlined in the updated ICM Handbook. The idea was also to fully test the Train Information System (TIS), as this had not previously been done within ScanMed RFC. The simulation was aimed at both Traffic Managers and Communication Managers. The Accessibility Manager acted as the moderator for the initial

meeting with all stakeholders since he was new in his role and had not yet participated in an actual ICM meeting. Generally, the Managing Director is the ICM coordinator, while the Accessibility Manager acts as deputy. As usual, the participants' English skills were tested. The foreseen scenario was a derailment by a local train during a shunting in Odense. The line Odense – Holmstrup was blocked during the removal of a wrecked train. Damages were extensive as the train continued to run well after derailment.

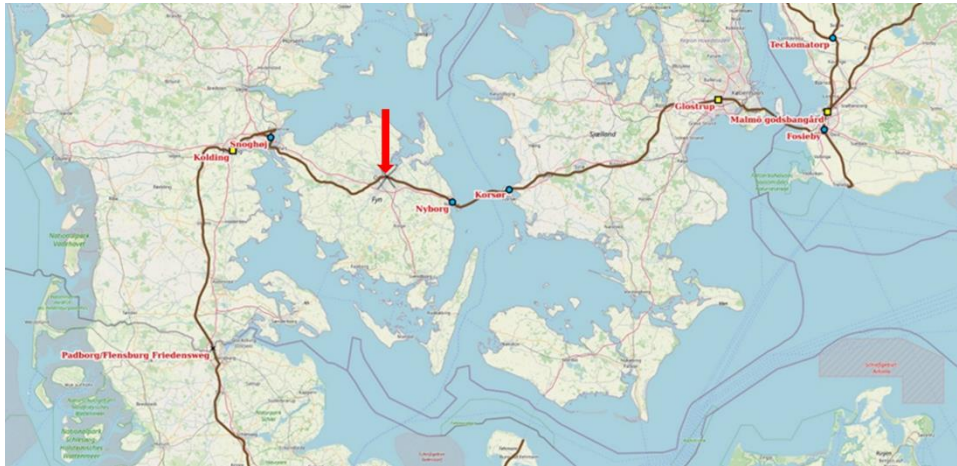


Figure 17 – ICM scenario simulation in Odense

Few of the points that was brought up afterwards within WG OPE:

- The back-up service within ScanMed RFC is having problems in performing and sending information for the first meeting, since MS Teams is not a system supported by Trafikverket. This issue created some confusions and misunderstandings during the simulation.
- The merger of the first call with both the Communication and Traffic Management departments proved good and thus a routine to keep.
- Since Banedanmark, as the leading IM, had real cases simultaneously to the simulation, the TIS system was not used and tested as intended during the exercise.

3.6 Speed restrictions in Italy for trains with silent brakes

The speed restriction imposed by the Italian road and rail infrastructure National Safety Authority (NSA) for freight trains equipped with silent brakes (IB*116 type) in November 2021 was replaced by new guidelines issued in early 2022. On February 11, the Italian NSA (ANSFISA) issued new procedures for mitigating the risk for freight trains equipped with organic low friction coefficient (LL) brake blocks (IB 116* type), as result of the activities carried out by the EU's Agency for Railways (ERA) through a JNS Urgent Procedure.

A dedicated Task Force recommended appropriate short-term risk control measures to affected rail actors as a substitute for the restrictions currently imposed by ANSFISA. RUs are required to effectively monitor the performance of brake tests and their drivers' behaviour in terms of correct brake use and compliance with speed limits. IMs are obliged to implement, at strictly necessary technical times, the lowering of alarm thresholds for the technical systems detecting the brakes' temperature, bringing it to an experimental value of 280°. They also have to prepare a program to replace these systems with more technically advanced ones. These measures will be further developed within the normal JNS procedure started in winter 2022 and still ongoing.

3.7 Pocket wagon restrictions in Denmark

Due to a previous safety incident on the Danish Great Belt Bridge (Storebæltsbroen) on January 13, 2021, where an empty trailer loaded securely on a pocket wagon moved out the hitch due to strong crosswinds while crossing the bridge, restrictions and measures have been taken since then.

Permits are mandatory during transport of pocket cars loaded with semi-trailer. They can be submitted if the following requirements are met:

1. The stool used to hold the semi-trailer must have a vertical locking force of at least 85kN.
2. The stool used to hold the semi-trailer must be permitted by the Danish Transport Agency.
3. Procedures that ensure that all semi-trailers transported by the company on the Danish railway network are transported on pocket wagons with stools that meet the previous two conditions must be incorporated into the company's safety management system.
4. The freight terminals must follow the recommendations for safe loading from ERA's Joint Networks Secretariat published on 25 April 2022. There must be an agreement between the company and the terminal operator to this effect, and documentation of such agreement must be incorporated into the company's safety management system. If the company itself is the operator of the freight terminal, the requirements may instead include operating procedures to be followed in connection with terminal operations and incorporated into the company's safety management system.

For the passing of the Great Belt Bridge an additional permit is required and can be issued if at least one or more of below requirements are met:

1. Semi-trailers must have a gross weight of at least 14 tonnes.
2. The transport must be carried out using a supplementary fastening method permitted by the Danish Transport Agency in addition to the fastening by king pin and lock. The supplementary fastening method shall be without application of king pin and lock itself could hold a blank semi-trailer on the pick-up truck in a side wind with wind speed up to 35 m/s in gusts.
3. The transport must be carried out using a supplementary control method permitted by the Danish Transport Agency. The supplementary control method must ensure that the king pin is in the pocket carriage hole and that the lock has engaged. There must be an agreement between the company and the terminal operator that the semi-trailers are weighed, and their weight is notified to the company before the train take off. The company must have documentation for contracts agreements for the freight terminals used. If the company cannot fulfil the condition in the second and third points, the company can instead have another procedure for checking that semi-trailers for transport across the Great Belt have a gross weight of at least 14 tonnes.

For the complete text of requirements you can refer to the following link: [Regulation of pocket cars transporting semi-trailers \(Danish text\)](#)

3.8 Handover between the Managing Directors

After almost four years from his appointment as Managing Director, on June 30 Emanuele Mastrodonato resigned from the position and on July 1, Furio Bombardi was appointed as new Managing Director on behalf of RFI. Furio Bombardi has a long experience in the logistics and rail industry and had been the Managing Director of the Mediterranean RFC since September 2018.



Figure 18 – Emanuele Mastrodonato & Furio Bombardi

3.9 Handover between the ACOs

In October, the Administration and Communication Officer (ACO), Eva Raymond, left his position for a new opportunity at RNE. Following a pioneering Service Agreement between ScanMed and RNE, in mid-November the latter agreed to hire a new ACO, Gabriele Melindo, on behalf of the former. Gabriele is thus an RNE employee based in Vienna and whose work is performed for ScanMed RFC under the guidelines of the Managing Director. Being based in the same office, Eva could carry out the handover and introduce Gabriele to ScanMed RFC's activities at a time of high-paced work. Indeed, the new ACO was immediately challenged with several key tasks, from writing the 2022 USS RFC3 report to attending the governance meetings in Stockholm and Vienna. Right before the end of the year, thanks to Eva's guidance, Gabriele was fully operational and the handover complete.

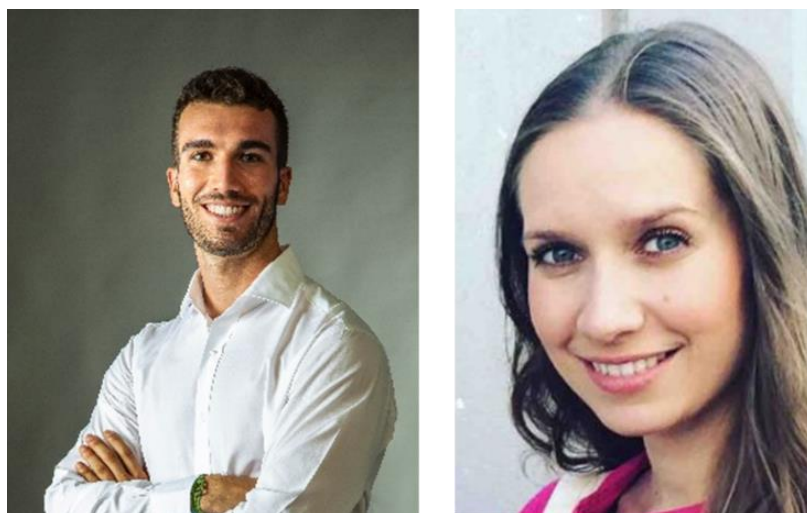


Figure 19 – Gabriele Melindo & Eva Raymond

4. RAG/TAG, stakeholder, and user cooperation

Continuous and proceeding collaboration and open exchange with users and partners is vital for the further development and administration of all Corridor activities. 2022 gave us the opportunity to meet physically again, which allowed for a tighter cooperation internally than in the previous two years. RAG/TAG involvement is important for the Corridor, as it keeps us closer to the market and gives us the chance to meet up regularly with RUs, terminals, ports, end users, Multimodal Transport Operators (MTOs), and freight forwarders.

In May, ScanMed RFC organized its spring RAG/TAG meeting in Hamburg. The Port of Hamburg kindly hosted the meeting and offered a guided tour of the harbour. Over fifty people attended, either physically or virtually. The discussion centred on several topics, including the improvement of interactions within RFC's governance bodies; the upgrade of terminals and last mile connections; the railway ferry Trelleborg – Rostock; capacity development in Northern Germany and Scandinavia; and the improvement of TCR planning to reduce sector costs. In October, the autumn RAG/TAG meeting was held in Milano, and the new Managing Director led the discussion on topics such as the ScanMed CNC Forum on the revision of the Trans-European Transport Network (TEN-T) and the impact of energy costs on rail transport as well as the next steps around the Femern Belt Platform.



Figure 20 – From left to right: RAG Speaker Andrea-Marco Penso; President Linda Thulin; Managing Director Furio Bombardi; TAG Speaker Federica Montaresi

4.1 The Regional WGs

The WG Brenner – Regional WG South

After the successful completion of the Brenner Task Force, a new operational format was established to continue with the implementation of joint measures among the 3 IMs and RUs involved. At the beginning of 2022, in addition to operational formats, the new "Brenner Coordination Group" of the three IMs – RFI, ÖBB Infra and DB Netz – was installed as an exchange body to continue with good cooperation and providing a supervision and integration of the activities developed within the different groups.

A regular exchange among the three IMs was settled during "weekly performance meetings." In total, there were forty-five online meetings during the year, each covering major operational issues. Special attention was dedicated to so-called critical trains that are recurrently prone to delays. These were looked at on a weekly basis and analyzed over a long period. They were an important topic in the discussions during the Corridor's quality dialogues with customers. Furthermore, the IMs considered upcoming TCRs and current operational constraints to align counter measures such as focused handling/steering of trains before track closures.

Moreover, ICM procedures were established and in use for all disruptions that are expected to last longer than six hours and negatively impact the Corridor's traffic. For instance, in case of infrastructural damage at critical locations, IMs initially coordinate internally before informing customers about the current operational situation through a conference call. In those calls, the parties agreed on measures to deal with the implications for operations and traffic to operate as many cross-border trains as possible despite disruptions. In 2022, four ICMs were declared on the Corridor with nine IM-customer conference calls taking place.

In 2022, the Brenner WG held three regular meetings. Among other things, during those meetings TCR experts informed customers on TCRs for the upcoming years – in accordance with Annex VII regulations –, including information on re-routings, train cancellations, and longer running times that RUs can thereby consider for their planning. The TCR discussions also served as a platform for a critical review of TCR planning and for agreeing on alternative concepts together with RUs to prepare end customers for the necessary traffic adjustments. Further topics subject to discussion included current issues such as controls of freight trains, winter preparations, technical adjustments to train parameters or sales topics, i.e., fees for parking trains at Brenner station.

The Regional WG North

Due to different reason, the Regional WG North has been "dormant" for most of 2022, waiting for the IMs to find the right people to lead the group forward. At the end of 2022 it was decided that DB Netz, represented by Project Implementation Manager (PIM) Daniel Skopek, will lead the Regional WG North.

4.2 Specific studies and projects

European Transport Market Study

The methodologies for previous Transport Market Studies (TMSs) of individual RFCs varied greatly, resulting in incomparable contents and varying update timelines. In 2022, these aspects have been addressed by means of a dedicated project involving RFC representatives, resulting in a feasibility study for conducting a European TMS – focusing mainly on freight transport – and a draft of dedicated RNE guidelines for updating RFCs' TMSs.

Following this project, the European Commission requested an extension of the study in 2023 to include passenger transport, with a detailed implementation plan to be provided in 2024 as part of a broader goal to conduct a complex European TMS starting in 2025. Meanwhile, the RFC Network also asked RNE for support in conducting a joint update of RFCs' TMSs in 2023-2024, a request approved by RNE's General Assembly.

Overall, the feasibility study included the following key objectives:

- Reviewing and analyzing the relevant methodologies, tools, and arrangements for stakeholder involvement, considering existing frameworks and tools as well as good practices, at European, Corridor and national level and in different modes of transport, consultation of relevant stakeholders
- Identifying and describing the use cases in various planning and marketing processes, by different stakeholder groups and in different geographical contexts
- Defining a set of options to elaborate a transport market study and compare these options, e.g., in terms of use cases covered, feasibility, costs, risks and implementation timeline
- Defining proposals for further analysis and implementation of European transport market study
- Drafting guidelines for updating RFCs' transport market studies

Last phase of the Longer and Heavier Trains Study

Last year, the Swedish Transport Administration decided that DB Cargo Scandinavia would be allowed to carry out test runs with trains up to 835m. This is an extension of previous decisions – without changes in conditions.

The decision applies under the following conditions:

- It is valid until December 31, 2023.
- Distance for granting the execution of the tests in both directions on the line Malmö freight railway station – Fosieby – Peberhol – Maschen.

The purpose of the test runs is to gain data and experience with long freight trains, particularly through tightness tests in varying temperatures. The evaluation of the last phase will continue after the test period, with the aim to contribute to climate goals, increase capacity and goods on rail, and gain more profitability for the railway.

The Femern Belt Platform

In March 2022, ScanMed RFC established a contact with Femern A/S, the company in charge of constructing and operating the Femern Belt tunnel, to arrange a meeting and start creating a communication exchange, the final aim being the creation of a cooperation platform for all rail stakeholders involved in and affected by the Femern Belt Fixed Link. The first meeting was held in Copenhagen on September 27. There was great interest in the event, and it was clear that this was something the rail industry had long wished for. The list of participants included EU officials, IMs, RUs, members of the ScanMed team, RAG/TAG speakers, and other rail specialists. They all agreed on the need for a Femern Belt Platform, and that ScanMed RFC would be a key player in establishing it with the involvement of all relevant stakeholders. A second meeting is scheduled for January 2023.

On October 11, ScanMed's Managing Director and Femern A/S representatives were invited to the European Parliament to present an assessment on the impact of the Femern Belt Fixed Link on the Northern European transport sector and its relevance for the successful implementation of the European Green Deal. The international investment in the tunnel brings opportunities to shift even more freight traffic on rail, boosting Europe's goal to double rail freight traffic by 2050.

4.3 Communication & Events

Communication

In 2022, less COVID-19 restrictions meant that the ScanMed team was able to hold and participate in physical meeting to a greater extent compared to the previous year. Moreover, we kept updating and using our website and LinkedIn account as our main communication tools, as well as, obviously, extensive e-mail communication. The LinkedIn page continued to grow, with the number of likes and shares constantly increasing and the number of followers totalling over 1000 – the highest value among RFCs.

Important events

- **In January**, the PaP Offer TT2023 was published and made accessible in PCS Path Coordination System – RNE, ready for any order by our C-OSS Manager.
- **In February**, customer meetings were held in Gothenburg, Fredriksberg, Norrköping, and Hallsberg with several stakeholders from the rail industry.
- **In March**, the change in name from “Shift2Rail to Europe’s Rail” kick off took place in Gothenburg and ScanMed took part in the workshop.
- **In May**, ScanMed RFC held its RAG/TAG meeting in the Port of Hamburg – the first physical RAG/TAG meeting since the pandemic started.
- **In June**, the European Connecting days were held in Lyon, and ScanMed participated together with the RFC Network. The event brought together EU officials, national politicians, industry representatives, and other stakeholders to discuss transport and mobility, and their role in achieving the ambitious goals set out in the European Green Deal and the Sustainable and Smart Mobility Strategy. Given that 2022 was the European Year of Youth, the event focused on young voices and views.
- **In July**, there was the handover between the former and current Managing Directors, respectively Emanuele Mastrodonato and Furio Bombardi.
- **In October**, ScanMed held its second RAG/TAG meeting in Milano. Moreover, the Managing Director participated in a meeting at the European Parliament on “The track to a successful TEN-T.”
- **In November**, members of the ScanMed team were represented at Järnvägsdagen 2022. Moreover, Linda Thulin was invited to the Dialogue Event “Transalpine Freight Transport” organized by AVENIR MOBILITÉ in Bern. There, she presented the Corridor and participated in a panel discussion on centralized traffic management for European freight transport. Finally, there was the handover between the former and current ACOs, respectively Eva Raymond and Gabriele Melindo.
- **In December**, ScanMed RFC’S Executive Board held its 38th meeting.



Figure 21 – The RFC Network at the Connecting Europe Days



Figure 22 – EU Coordinator Pat Cox, President Linda Thulin, and Managing Director Emanuele Mastrodonato at the Connecting Europe Days



Figure 23 – Linda Thulin at the AVENIR MOBILITÉ Dialogue Event “Transalpine Freight Transport”

Important events scheduled for or envisaged in 2023

- **In January**, stakeholders of the Fehmarn Belt Forum will convene in Copenhagen to kick-off the concrete set-up process for the Fehmarn Belt Platform.
- **In February**, the team will hold its first in-person meeting in Vienna to plan its work for 2023.
- **In March**, ScanMed will take part in the Jernbaneforum, the biggest rail conference in Norway.
- **In April**, ScanMed intends to reanimate the Regional WG North by holding a physical meeting in Hamburg under the leadership of PIM Daniel Skopek.
- **In May**, ScanMed will hold its RAG/TAG meeting in the Port of Trelleborg, in Sweden. Moreover, together with the RFC Network and RNE, the Corridor’s team will attend the Transport Logistic fair in Munich, one of the world’s largest events of its kind. Furthermore, the Managing Director will participate in the plenary of the Brenner Cooperation Platform in Innsbruck. Finally, the team will be present at the European Rail Transport Day in Stockholm, an event co-organized by the European Commission, the Swedish Presidency of the Council, RNE, EU Rail, and Trafikverket.
- **In June**, the team will gather once again in Milano to assess its progress during the first semester of the year and plan the next steps for the second semester.
- **In October**, ScanMed will hold its second RAG/TAG meeting as well as MaBo and ExBo meetings in Verona.
- **In December**, ScanMed will attend RNE’s General Assembly in Vienna.

5. The EU's policy framework and ScanMed RFC's challenges

2022 will go down in history as a year marked by the redefinition of the world's geopolitical landscape due to Russia's war of aggression against Ukraine and its major impacts on global markets and supply chains. The war plunged the continent in a situation without precedents since the Second World War, which translated into an increased need for better transport connections with EU neighboring countries, most notably Ukraine and Moldova, and renewed and increased efforts to shed off our dependence on Russian gas and achieve the EU's green transition as set out in the European Green Deal and the Sustainable and Smart Mobility Strategy.

Accordingly, in July the European Commission presented an amendment to its revision proposal for the TEN-T regulation which would consider this new scenario. The proposal, whose adoption and entry into force is expected by 2025, foresees a significant extension of the Core Network Corridor (CNC) – which for ScanMed entails an extension to the North of Sweden and Norway to reach Kiruna and Narvik and the inclusion of the Jutland Corridor in Denmark. Moreover, the proposal envisages a deep revision of European governance within the rail sector. The Commission plans to merge the CNCs and RFCs into European Transport Corridors (ETCs), a development that ScanMed welcomes in view of our desire for stronger cooperation between the two networks.

Likewise, we welcome and support the Commission's Sustainable and Smart Mobility Strategy. For rail transport, the EU's climate objectives are perfectly aligned with market objectives to shift more freight from road to rail and move more passengers by train, so that the competition with the other transport modes can find its perfect mix to safeguard our planet while sustainably growing our economy.

This approach will be reflected in the revision for both the TEN-T Regulation and the Rail Freight Corridors' Regulation, which will presumably be finalized by the end of 2023. Deep changes are foreseen in the revised governance framework regarding the fields currently covered by RFCs, which means that in the coming years ScanMed RFC is willing to focus on those areas where it can provide most added value to rail freight management. We will continue adapting our market approach, involving more and more RUs, terminals, and ports in our processes while also listening to the suggestions and needs of end users and transport organizers, from MTOs to freight forwarders.

We will continue supporting the development of new tools and processes for the management of European railway capacity and not simply RFCs' capacity, as well as improving Traffic Management through better communication among IMs and jointly toward users, keeping always in mind a market-oriented approach that remains ScanMed RFC's defining trait. In rail capacity planning and operations, our Corridor supports an overall supply chain approach with a strong integration with terminals and ports as a key factor. To this purpose, the TICO is planned to be extended with the involvement of all stakeholders.

We keep believing in a fruitful cooperation with the ScanMed Core CNC. After some years of less visible preparatory activities, in September 2021 the BCP published the common traffic forecast for the Southern section of the Corridor and is now producing increasingly effective contributions for harmonized freight flows along Brenner line. These contributions are developed within the Infrastructure and the Operations & Interoperability WGs in a collaborative approach and with the involvement of all rail stakeholders.

In the next years, similar model of cooperation is planned to be extended to the Corridor's Northern section through the establishment of the Femern Belt Platform, which will support the development of this important

transport infrastructure aimed at upgrading rail and road connections between continental Europe and Scandinavia. In this context, our goal is to be the market's voice, needs, and interests during the Femern Belt tunnel's construction and implementation process and establish a cooperation forum with an enlarged geographical focus and a widened stakeholder involvement.

Meanwhile, ScanMed RFC will continue supporting more operational and planning issues within its Regional WGs. In the Regional WG South, fruitful partnership has been established among the concerned IMs that also includes, when appropriate, RUs and terminals. A revision of the WG is foreseen in 2023 to expand the common management of rail traffic. Next year will also witness the revival of the Regional WG North.

Innovation within the rail sector is another important field where ScanMed RFC has always been a front runner, both in terms of technology and ICT tools and procedures. So far, we have implemented many pilot projects and we plan to continue doing so in the future. We consider RFCs as effective partners for bodies performing research and innovation development, allowing for field tests and solutions' fine tuning. Simultaneously, this partnership can allow our sector to achieve better process management and monitoring.

Overall, we strongly believe that ScanMed RFC provides added value to the rail sector by widening stakeholder participation, supporting effective rail planning and operations through the harmonization of rules and procedures, and contributing to the design and implementation of key infrastructural projects aligned with market needs. We have made it our mission to act as an integrator of international rail freight services: our sense of purpose has never been greater.

6. Key Performance Indicators

In this paragraph we report and compare our 2022 and 2021 figures regarding:

- Capacity KPIs
- Operation KPIs with punctuality at origin and destination and delay causes
- Market KPIs describing the traffic volume in terms of number of trains crossing Corridor borders
- Punctuality at border stations and at relevant points.

6.1 Capacity KPIs

			2022 (TT2023)	2021 TT2022
Offered Capacity	Volume of offered capacity (PaPs) at X-11 (in Mio. km*days)		10,1	13,7
	Volume of offered capacity (RC) at X-2 (in train km.)		3,1	1,8
Requested Capacity	Volume of requested capacity (PaPs) at X-8 (in Mio. km*days)		3,8	5,6
	Volume of requested capacity (RC) at X+12 (in Mio. km*days)		AR2023	0,05
	Volume of requests (PaPs) at X-8		44	45
	Volume of requests (RC) at X+12		AR2023	2
Pre-booked Capacity	Volume of pre-booked capacity (PaPs) at X-7,5 (in Mio. km*days)		2,4	4,4
Conflicting requests	Number of conflicts (PaPs)		22	23
TCR-affected capacity	Share of pre-booked PaPs affected by TCRs (in PaP days)		0%	0%
Response time for a corridor offer (RC)	Number of days needed by the C-OSS to deliver an RC-offer to a customer		AR2023	54
Integration of the product	Number of PaP-requests including Terminal slots (TICO)		0	0
Cross-corridor PaP-requests	Number of PaP-requests including at least one PaP-segment on another RFC (in %)		18	18%
Cancellation/Modification rate	Cancellations / modification rate of PaPs before TT change (share of not cancelled days)		73%	73%
Planned speed	Average planned speed of PaPs at X-11 (in km/h)	Alnabru-Göteborg	58	58
		Göteborg-Malmö	60	61
		Katrineholm-Malmö	65	61
		Hallsberg-Malmö	67	64
		Malmö-Maschen	65	65
		Maschen-München	59	65
		München-Verona	52	52
Ratio of capacity	Ratio of capacity allocated by the C-OSS and the total allocated capacity at TT change	Kornsjö	0%	0%
		Peberholm	50%	59%
		Padborg	39%	52%
		Kufstein	0%	0%
		Brennero	0%	0%

Figure 24 – Capacity KPIs

6.2 Operations KPIs

Punctuality

KPI	Definition	Source	2022	2021
Punctuality at origin	Percentage of trains on time (30') at origin / (RFC Entry)	TIS / OBI	62 %	66 %
Punctuality at destination	Percentage of trains on time (30') at destination / (RFC Exit)	TIS / OBI	48 %	55 %

Figure 25 – Punctuality (30')

KPI	Definition	Source	2022	2021
Punctuality at origin	Percentage of trains on time (15') at origin / (RFC Entry)	TIS / OBI	53 %	56 %
Punctuality at destination	Percentage of trains on time (15') at destination / (RFC Exit)	TIS / OBI	41 %	47 %

Figure 26 – Punctuality (15')

Delay causes

Share of delay minutes in respective group of delay causes

- Source: TIS / OBI
- Content: all international trains on the corridor which cross at least one corridor border

	2022		2021	
Delay Group	North - South	South - North	North - South	South - North
Infrastructure Manager	15 %	13 %	11 %	10 %
Railway Undertaking	53 %	49 %	58 %	59 %
Secondary	30 %	36 %	29 %	29 %
External	2 %	2 %	3 %	3 %

Figure 27 – Delay causes

Observations:

- A considerable increase of the sum of delay minutes compared with the year before mirrors the decrease in punctuality.
- The minutes of all delay reason groups increased, except external delays.
- The highest increase in delays was registered for infrastructure and secondary delays.

6.3 Market KPIs

Number of trains runs crossing border points

Border point(s)	North - South	South – North	Data source
Kornsjö	693	708	Bane NOR
Peberholm	3773	3684	TRV
Padborg / Flensburg	4656	4553	DB
Kiefersfelden / Kufstein	13122	12838	TIS
Brennero / Brenner	10258	10200	ÖBB

Figure 28 – Number of train runs crossing the defined border points

6.4 Punctuality at border stations and important points

Punctuality 0-30 minutes (%)

- Source: TIS / OBI
- Content: all international trains on the Corridor which cross at least one Corridor border

Point	Punctuality N-S	+/- 2021	Remarks
Malmö departure	83	0	
Peberholm (run through)	83	+3	
Flensburg (run through)	58	-6	
Maschen Rbf arrival	41	-11	
Munich departure	60	-2	Aggregated from different stations; incl. trains starting in other parts of Germany or NL
Kufstein arrival	59	-4	
Kufstein departure	58	-4	
Brennero / Brenner arrival	54	-6	
Brennero / Brenner departure	44	-5	
Verona QE arrival	48	-4	

Figure 29 – Punctuality at border stations and important points (traffic flows from North to South)

Point	Punctuality S-N	+ / - 2021	Remarks
Verona QE departure	61	-4	
Brennero / Brenner arrival	54	-8	
Brennero / Brenner departure	43	-7	
Kufstein arrival	48	-8	
Kufstein departure	48	-7	
Munich arrival	43	-9	Aggregated from different stations
Maschen Rbf departure	59	-7	Incl. trains starting in other parts of Germany, NL or B
Flensburg (run through)	47	-9	*
Peberholm (run through)	59	-5	*
Malmö arrival	60	-8	*

*Differences between Germany and Scandinavia are possibly in connection with data issues

Figure 30 – Punctuality at border stations and important points (traffic flows from South to North)

Observations:

- The main traffic is on the stretches Malmö – Maschen and Munich – Verona.
- There is only a small share of the trains run both on the Northern and Southern sections of the Corridor, therefore there is barely a direct connection between punctuality at Maschen and Munich (and vice versa).
- The departures figures at Maschen and Munich are especially negatively influenced by trains arriving from other parts of Germany as well as from the Benelux countries. The punctuality of these trains is significantly lower than the average.

Comments on the comparability of the data and on data quality

- Punctuality is calculated based on delta-t (delay) for defined points in TIS.
- This delta-t is delivered by the national system based on the timetable there.
- Different national processes (i.e., for train numbering, timetabling, or ad hoc trains) can lead to deviations.
- If the different train parts have different numbers, the connection gets lost in many cases. In other words, the trains result not linked.
- This problem can influence punctuality figures and the number of trains at certain points.

Scandinavian Mediterranean Rail Freight Corridor

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A cooperation between the Infrastructure Managers on the longest European Rail Freight Corridor



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