

Sidings Report

From the research on
**Integration of service facilities into the
capacity management process**

DRAFT version 0.5

Versioning

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0.5	Filip Zucker	30 April 2024	Review of the document and draft publication

Important notices

Disclaimer: This draft research report is a collection of evidence from railway stakeholders and independent desk research. FTE does not take any responsibility for the correctness and accuracy of the input provided by the stakeholders, especially in the conducted interviews. This document also does not represent an officially endorsed document by FTE statutory bodies, same as the indicated suggestions do not represent the opinion of all FTE members.

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Management summary

Service Facilities (SF) are currently not well integrated and aligned with the rail capacity management processes and thus pose many challenges that have far not been sufficiently tackled by the railway sector, with most of the consequences of inaction falling on Railway Undertakings (RUs). This has been recognised by EC and reflected in the proposed new Regulation 443 on the Use of Rail Infrastructure in 2023. The FTE members initiated research to map the gaps and best practices, to support the sectoral standardisation which reflects the market needs. This document is a draft report from this research (research to be continued) with a focus on storage sidings (hereafter sidings). The report highlights namely:

- Issue to exactly define what is a parking and a siding (e.g. station run-through track?),
- Missing involvement of RUs needs in the long-term sidings' availability and capacity,
- Ensuring that information about the sidings and their occupancy is up-to-date is essential. Outdated or incomplete data leads to inefficient informal communication via phones and emails for IMs and RUs. Therefore, digitalisation, effective IT tools, and the obligation to keep data updated are necessary.
- Missing link between TCRs on lines and sidings (incl. TCR in sidings), with coordination and sometimes even extra charges left on RUs' shoulders,
- Not all sidings operators can fulfil the same obligations, especially the small ones,
- Missing alignment between rail path and sidings allocation, an untransparent black-box process during the allocation which would need higher transparency, good coordination in case of conflicts and allocation principles of last resort, preferably not auctions.
- The fact that the siding is allocated (or leased) should not be a blocking point to request it. The best practice is that the IM or SF checks with the leaseholder if the siding would really be occupied at the requested time or can be sub-leased.

- Sidings should also be included in the multi-annual instruments (Framework Agreements and Rolling Planning)

Table of contents

Table of contents.....	3
1. Aim and scope of the research.....	4
2. Types of service facilities	4
3. Research report on storage sidings.....	5
3.1. Definitions and stakeholder relations.....	5
3.1.1. Definitions of sidings.....	5
3.1.2. Definition of parking.....	6
3.1.3. Usage of sidings and involved actors.....	6
3.2. Long-term planning	6
3.2.1. Ownership	6
3.2.2. Auxiliary services in sidings	7
3.2.3. Stakeholders' involvement in the IM long-term planning	7
3.2.4. Sidings and TCR planning	8
3.3. Allocation of rail paths and sidings	9
3.3.1. Categorisation of sidings	9
3.3.2. Sidings description and information for RU planning.....	9
3.3.3. Requests and allocation of sidings in annual timetable	11
3.3.4. Requests and allocation of sidings in ad-hoc.....	13
3.3.5. Allocation principles in case of conflicts	14
3.4. Operation and after-allocation processes	16
4. Recommendations	17
4.1. Suggestions for detected issues.....	17
4.2. Suggestions for further research	19
5. Annexes	
5.1. Table of abbreviations.....	20
5.2. Interviews.....	20
5.3. References	21
5.4. Use case: Germany	21

1. Aim and scope of the research

In the beginning of 2023, the FTE Working Groups Passenger and Freight encouraged the research on the service facilities, since their coordination and integration into the capacity management processes is needed for the future in order to increase the quality of rail services and their competitiveness. Service Facilities (hereafter SF) are certainly inseparable elements from the production planning and rail transport operation.

The topic of SF is a very complex one and desires long-lasting research, followed by a higher EU-wide standardisation based on the detected best practices. Higher integration of SF into the capacity management is prescribed in the proposed EU Regulation 443 on the Use of Railway Capacity. Nevertheless, the level of detail in the regulation is very low, leaving high freedom to the sector to define its own standards. This FTE research aims to contribute to the envisaged standard definition by analysing SF from different angles, detecting market needs and providing suggestions.

The first published version of the report (v0.4), is based on the desk-research and several semi-structured interviews conducted with railway stakeholders. Due to the topic's complexity, only a selected sample of RUs were interviewed, the majority of those RUs had licences in Italy, Slovenia or Germany. Furthermore, we limited the scope of this report only to storage sidings, although freight terminals were also investigated. Both are considered by stakeholders as the highest priority. Once the resources are available, the terminal report will be published, and we aim to extend the research to other SF types. You can track updates on the research development on the FTE dedicated page: <https://www.forumtraineurope.eu/services/capacity-activities/service-facilities>

2. Types of service facilities

There are numerous types of service facilities (note also alternative term rail-connected facilities), each with its own relevance for passenger and or freight undertakings. Below are listed some of the most important service facilities as defined by the European Union in the Single European Railway Area (SERA) Directive:

-  Stations
-  Freight terminals
-  Marshalling/train formation yards (including shunting facilities)
-  Storage sidings
-  Maintenance facilities
-  Technical facilities (including those for washing and cleaning)
-  Maritime port and inland facilities
-  Relief facilities
-  Refuelling facilities

Note that this report focuses solely on storage sidings for both passenger and freight trains.

3. Research report on storage sidings

3.1. Definitions and stakeholder relations

3.1.1. Definitions of sidings

The major facility of storage sidings is a track to park a train or carriage.

However, in practice, storage sidings, are used in different ways, as trains can be parked either on dedicated sidings or on station platforms. In addition, the same tracks are sometimes used for other activities, such as loading and unloading for freight transport. Because of this diversity of use, the interpretation of what exactly entails a siding differs across countries and actors, which could trouble the understanding of the concept. Storage sidings are not part of the minimum access package, the IM is not obliged to offer them with rail paths, however, they significantly influence the planning of rail transport.

IMs define sidings differently and according to different parameters, as shown below:

Definition of sidings based on time of parking	
Austria	After 24h is payable, and after 72h the charge increases.
Italy	Considered as parking in case the train stop is more than 60 minutes for passengers and 120 minutes for freight trains. The shunting service needed is not included in the payable time.
Romania	The first 6 hours of parking are not charged. There are two types of parking, short-term (charged by hour) max 24 hours, and long-term (cheaper) to be re-confirmed every 30 calendar days.
Hungary	Parking is charged after an amount of time that is equal to the limit of delay that a train can make without losing the right to the rail path (24 hours).

Definition of sidings based on location	
Slovenia	The parking is performed in the proper siding but for shorter stops (4/5 h) it is also common to park alongside the platform. If the train does not influence the running traffic, parking at the platform is allowed.
Germany	RUs must order each track for sidings for stops over 1h. Dispatch tracks can be used up to 12h for free in the run-up or post-treatment of a train journey. Standard parking sidings are chargeable in a standard way.

The definition of storage siding used in this research is the following: storage sidings are used for stable rail vehicles (motive power, wagons, and carriages) which are not in use. The vehicles may be single or formed up to make a train. In addition, auxiliary service can be mandatory to undertake the parking. For example, a train stopped at a siding due to traffic on the network is not considered a siding according to the official definition used in this research because the rolling stock is still in use.

Hereafter the word storage siding is shortened to siding.

3.1.2. Definition of parking

Parking a train is considered a siding service if the train is parked for RU's commercial needs (not for IM's) and does not have a rail path assigned. For instance, to use siding, RUs need a rail path to arrive on the track and another to depart afterwards. For this reason, it is not a parking when the stop is due to circulation delays (for traffic management orders or prolonged stops at platforms).

IMs have difficulties defining, and consequently charge correctly, the usage of sidings. This was confirmed during the interviews since also interviewees had problems clearly defining a parking in a siding, including from which period it is considered a real storage of the rolling stock (e.g., 1h in Germany, but 72h in Denmark).

3.1.3. Usage of sidings and involved actors

Usage of sidings: Sidings are used by both passenger and freight RUs:

1. In passenger transport, sidings are usually required during the night or when a train is not in service. By doing so, sidings provide a safe and secure location for the rolling stock when not in use and they reduce the amount of congestion on the mainline tracks.
2. In freight transport, sidings are used less frequently, as they are perceived as a financial loss for RU's operations. Freight RUs could use storage sidings, but they strive to limit their usage. One of the typical cases where sidings are used in freight transport is, for instance, the case of a mismatch of rail path and shunting/terminal operations. In that case, the train will be parked in the sidings to wait for the available terminal slot. Therefore, freight RUs tend to request sidings only if forced by unforeseen and operational issues.

Actors arranging storage sidings: the siding planning and allocation process include:

- The service facility (SF) owner
- The applicant - The RU is the applicant for sidings. It moves the locomotive and carriages to the designed siding to park the rolling stock.
- The technological company¹ (only in Slovenia) - In some cases for passenger transport, another company plans and requests access to sidings. This is called a "technological company" and is part of the same holding group as the passenger RU. This company receives the TT issued by the RU for business purposes and organises the need for sidings, traction, maintenance, and technical assistance accordingly.

3.2. Long-term planning

3.2.1. Ownership

Sidings' ownership is mostly monopolistic since the owner of this SF is most times the main national IM. This makes the development and management of sidings centralised, which reduces competition and creates standardisations. However, in some countries, some sidings are owned by RUs. If owned by RUs, the sidings are used for the long-term stabling of rolling stock, while for short-term stabling the IMs' sidings are used.

¹ In Slovenia, a third actor called the 'technological company' oversees planning and requesting storage sidings according to the TT provided by the RU. For passenger RUs, the request for storage sidings can be submitted alongside the rail path or later during the year. Several tasks related to SFs are signed in a document between applicant and SFO (called "Technological process"), this includes for instance prerequisite for self-supply.

The IMs must provide sidings to all RUs that need them for transport. However, several RUs stated that numerous IMs discourage the use of national infrastructure to park rolling stocks. IMs do it because it is unprofitable in their perspective. As stated by one freight RU, "the reservation of a parking track, throughout one year for RU's commercial needs, is constantly less possible". This is a long-term European trend, where IMs under economic optimisation are removing sidings, which negatively affects the variety of production concepts possible on the RU side.

Building of new sidings is rather rare in Europe, and it is mostly connected with the construction of new freight terminals, or new passenger infrastructure developments.

3.2.2. Auxiliary services in sidings

Next to parking, sidings can be used for carrying out various activities which sometimes are mandatory to undertake parking. They are called auxiliary services, such as light maintenance, cleaning, energy supply, and inspection of the interior parts of the rolling stock. Some findings are included below; however, auxiliary services same as other types of service facilities should be further investigated in future research.

We may report only that more passenger RUs stated that they face significant challenges with the availability of auxiliary services. RUs are facing difficulties since IMs tend to remove auxiliary services (as well as sidings as a whole), as they are not profitable. Removal of these services is not always communicated correctly, which hampers the planning of RUs.

3.2.3. Stakeholders' involvement in the IM long-term planning

In almost all the interviews, the lack of round table discussions between the RUs and IMs regarding long-term planning (such as the removal of existing sidings) was put forward by the stakeholders. RUs and IMs only discuss this planning in the case of major works when sidings availability is affected. However, they are not always transparent or formalised correctly.

When long-term planning occurs	
Austria	<p>An RU is contacted by the IM about the possible removal of a siding and is asked whether access to this siding is still necessary. This process is, however, not transparent because:</p> <ul style="list-style-type: none"> • The bilateral dialogue with the IM is positive and can take place, but it is not clear if all RUs receive the initial information. • The RU is unsure about the influence they have on blocking the concerned removal in the case they do use it. <p>A dialogue between the parties is initiated after this contact.</p>
Italy ²	<p>There are technical listening tables organised by the IM to gather inputs from rail stakeholders (not only about SFs). They take place each year between April and May. RUs can make proposals to improve the effectiveness of the infrastructure, with a time horizon of several years. RUs have asked for more sidings in 2018/19, especially for dangerous goods.</p> <p>If the IM wants to remove a siding, it must:</p>

² This process applies to all rail SFs, not only storage sidings.

	<ol style="list-style-type: none"> 1. Prove that the siding has not been used in the past 5 years. 2. Publicly announce the plan for the removal of sidings. 3. The siding is removed if no RU protests the plan. <p>However, one freight RU stated that there are examples where the IM has intentionally hindered the efficiency of a SF, to discourage RUs from using it, which allowed the IM to remove it and convert the place to more profitable activities (such as housing).</p>
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3.2.4. Sidings and TCR planning

Temporary Capacity Restrictions (TCRs) on the railway tracks affect the production concepts. For short-term maintenance windows and TCRs, the trains have to be temporarily parked until the end of TCRs, and this requires the availability of sidings. During the long-term planned TCRs, the production concepts of passenger RUs are affected and this requires storage sidings available on both sides of the TCR.

Few RUs reported that generally compared to TCRs on the lines, the TCRs on SF are often communicated later, and not within the deadlines of Annex VII.³

TCRs and SFs	
Germany	<p>TCRs, including those in SF are presented at regional KiG-Bau (Kundeninformation Großbaumaßnahmen). They are twice per year and RUs can provide input.</p> <ul style="list-style-type: none"> • Kig-Bau 1: X-10: for TCRs from December to March • Kig-Bau 2: X-8 for TCRs from April to December • X-5 final publication, and monthly updates starting from X-3 <p>Discussing TCRs on lines and in SF simultaneously is considered as a good practice.</p> <p>IT tool BAPSI can be used to browse SF TCR, minor and late SF TCRs are announced via email: Track ID, location, type of closure, period of impact, note, and contact person for the information (see Figure 1 Annex 6.4).</p> <p>Path modifications due to TCRs in SF are charged to RUs with no refund from IMs (negative experience).</p> <p>Sidings booking modifications via IT due to TCR on lines are also charged to RUs, thus, in such situations, RUs opt to request modifications via emails. However, this is inefficient, a reply is often late (even a few days before the transport), which is a problem for the connecting path the RU must request afterwards (negative experience).</p>
Austria	<p>In Austria there is no formal process for the allocation of sidings, so TCRs can hinder the real RUs' access to sidings. For this reason, if TCRs make a siding unavailable, the RU has no right to claim it and must replan the transport. From RU's perspective, this is perceived as a significant source of uncertainty.</p>

³ Commission Delegated Decision (EU) 2017/2075

The mutual influence between siding capacity and TCRs planning of IMs could be analysed more deeply in future research.

3.3. Allocation of rail paths and sidings

3.3.1. Categorisation of sidings

There are thousands of SF owners in Europe, some of them owning only a few tracks. In case the requirements for all of them are too high and bureaucratic, there is a high risk that they would provide outdated information (with no value) or opt for closing/removal of the sidings rather than fulfilling the obligations.⁴ On the other hand, too low scope can undermine rail competitiveness. The FTE Working Groups Freight and Passenger recommend the following categorisation for SF (including sidings).

Ownership	Category	Provides indicative info on available capacity	Cooperates on the offering of train path
IM-owned	All IM SF	Yes	Yes
Non-IM owned	Large size SF	Yes	Yes
	Middle size SF	Yes	No
	Small size SF	No	No

The threshold of how to differentiate the category of the non-IM SF is suggested not to be regulated by any EU legal instrument but left to a sector standard, e.g. decided by the European Network of Regulatory Bodies. One of the proposals was to use the long-term statistics of usage on a standard day, having a threshold of 5 (middle) and 15 (large) trains per day.

Moreover, all SF should provide up-to-date siding descriptions, this information does not change often in time.

3.3.2. Sidings description and information for RU planning

A document published in 2023 by the Independent Regulators' Group (IRG-Rail) has set guidelines for the service facility description:

- SF operators (SFO) should also note that infrastructure managers, members of RailNetEurope (RNE), have developed and published a template for SF description, which is now well spread across countries.
- Applicants, especially if working in international rail services, may also find SF description useful as they seek to clarify and underline what information can be expected from SFOs.
- The level of detail provided should allow any potential customer to make, by itself, a preliminary assessment of the compatibility of the facility regarding common needs, without contacting the SF. Minimum information should include track number and length, electrification systems, platform dimensions, key maintenance installations, water or heating supply, compatible rolling stock type, maximum train length, gauge, weight and axle load etc.
- SF description should set out all the information the SFO needs from an applicant to draw an offer. They should indicate the tool for submitting an access request, the minimum content and the format of that request or include a template for such a request.

⁴ This issue was reported for instance for Poland.

- It sets that SFs must publish the SF description on their website or a "common portal" (e.g. Rail Facilities Portal). In both cases, the link must be shared with the relevant IM to be included in the NS.
- The SF should consult with neighbouring SFs whenever interdependencies exist that need to be addressed in the SFD. In these cases, SFs are encouraged to make available mutual links to the relevant conditions in the respective SFDs.

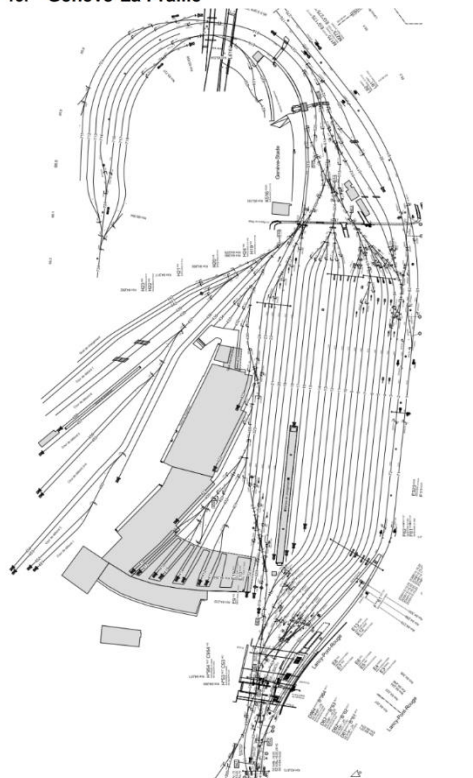
Currently, the major international IT tool regarding SFs is Rail Facility Portal. The website aims to provide a central point of reference for seamless access to essential information related to SFs across Europe. However, as stated by several rail stakeholders the portal has so far failed its scope:

- Lacking comprehensive information, cells are often devoid of content.
- Not all SFs in Europe are included, there are countries with no information at all.
- Lack of trust in applicants, a planner would never base its analysis only on the information displayed on the website, as they are perceived as not reliable.

The IT tool itself is not the cause of failure but perhaps the reliability, completeness, and updating of information (data) inserted by users.

As an alternative, the description of the IMs´ owned SF, are usually provided by the IM on its website in the form of a PDF or Excel file, which naturally requires more manual work to find the demanded information (example below from SBB I, showing the map and info about sidings).

13. Genève-La Praille



Die nachstehend aufgeführten Arten von Gleiskapazitäten stehen für länger dauernde Abstellungen nicht zur Verfügung.
 Unter Berücksichtigung dieser Ausschlüsse können für den Bahnhof Genève-La Praille keine Abstellkapazitäten ausgewiesen werden.

Longueur utile des voies pour les trains

Direction Lancy-Bachet

Voie	Signal de but (signal principal)	Signal d'origine (signal nain)	Longueur en mètres
1	H1	1B	115
1-71	H1	71B	343
2	H2	2B	116
2-72	H2	72B	344
3	H3	3B	622
4	H4	4B	621
5	H5	5B	753
6	H6	6B	752
7	H7	7B	706
8	H8	8B	677
9	H9	9B	637
10	H10	10B	675
11	H11	11B	674
12	H12	12B	640
13	H13	13B	639
19	H19	19B	594
20	H20	20B	532
21	H21	21B	453
22	H22	22B	375
23	H23	23B	140
23-323	H23	323B	378
24	H24	24B	205
24-323	H24	323B	472
53	C53	53B	43
954-44	C954	44B	220
61	F61	61B	341

Same as for the RNE Rail Facility Portal, some RUs reported that in certain countries to be on the safe side (especially if it is of high importance for production concept) is better to contact the SFO directly to check the correctness of the information. One striking example of this problem was illustrated during an interview:

A RU planned to extend a commercial service to a new station and checked on the IM website for the presence of an energy supply in the suitable siding. After completing the planning and submitting the official rail path and siding requests, the IM stated to the RU that the energy supply equipment was not available anymore, as it was removed several years before but the website was not updated yet. This was a considerable waste of RU resources and resulted in scepticism towards the IM (website).

Only RUs in some countries can plan their transport with access to sidings occupation:

Information about siding occupation	
Romania	In Romania, the IM offers an IT system in which the RUs can check the <u>regularly updated availability</u> of sidings. This website is open-access (not only for RUs) and in English. However, this process is not perfect since RU prefers to call the IM to check the correctness of the information (which might have changed since the last update), due to the lack of full trust in the IT tool (unclear how fast / often is updated).
Switzerland	Allocation Body TVS publishes on its website an Excel file showing the long-term bookings of RUs for open loading sidings.
Germany	RUs can request siding via the APN IT tool (see Figures 4-7 in Annex 6.4). The tool shows the live overview of each single track to be booked. If a siding is available, the request can be made. If it is occupied, the request could still be placed, then the IM investigate with the owner of that capacity (another RU) and ask for possible secondary use for that capacity.

Moreover, the RUs' siding planning is influenced by the possibility of leasing a track for RUs' needs, since is not possible in all countries. For instance:

Leasing of tracks for siding	
Italy	<u>RUs cannot lease a track</u> : new requests must be submitted every time an RU needs to park a rolling stock.
Slovenia Switzerland	<u>RUs can lease a track</u> : the arrangement enables the RU to hold up the right to the track for a specific period.
Germany	<u>RUs can lease a track</u> and even <u>multi-annual contracts</u> are possible: a maximum of 5 years (discount of 10%). However, in the case of SFs with critical capacity (conflicts in request from RUs) the reservation for more years is not permitted.

3.3.3. Requests and allocation of sidings in annual timetable

When sidings are requested, passenger and freight RUs have different methods and schedules for requesting the use of sidings.

- Passenger RUs request sidings for parking trains overnight or when not in service, this is part of their overall planned production concept and thus most of the requests are submitted in ATT.

- Freight RUs request siding for unforeseen events and mainly in ad-hoc, not in the annual timetable, with some exceptions (see below).

From the perspective of freight RUs, using sidings is a financial loss. Consequently, they seek to limit their requests to sidings. Yet, in the following situations, they do request sidings:

- The terminal slot is not available at the arrival of the freight train (e.g. due to delay). The train is moved to the siding to be parked. The RU is responsible for submitting a request for siding, even if it is because of freight terminal unavailability.
- Terminals are closed (e.g. during weekends). RUs must park wagons in sidings until the opening of the terminal.
- An RU arrives at the final station to transfer rolling stock to another RU on the same track. Parking of the carriages takes place at a station track.
- Carriages are parked in sidings, to be used as backup for specific traffic planning or to prevent possible delays.
- Some specific market segments like wagonload use sidings as part of their network concept – in this case allocation in the annual timetable is preferred to safeguard the concept cost model.

National differences: During the interviews, it emerged that differences in the allocation processes of sidings occur across different countries.

Allocation alignment & dependency	
Italy	<p>Allocation of rail paths and sidings happens simultaneously. RU requests sidings in ATT, including the mandatory services (length of track, auxiliary services etc.).</p> <p>The capacity availability of sidings influences the rail path allocation by the IM since the RU provides all information about sidings (location, length of track) alongside the rail path request.</p>
Slovenia	<p>The train paths are allocated independently of the sidings. RUs are responsible for checking the alignment of rail paths with sidings before the official requests (whether RU-owned or IM-owned).</p> <p>The capacity availability of storage sidings does not influence the rail path allocation. In passenger traffic, it is the responsibility of the technological company or the RU to verify the alignment between those.</p>
Czech Republic	<p>The train paths are allocated independently and earlier than the sidings. Rail path allocation happens one month before the beginning of TT (X-1). Therefore, the IM accepts siding requests only in X-3 when a draft of assigned rail paths in ATT is available. The siding request is in a separate system, without any connection to the rail path request system.</p>
Germany	<p>The train paths are allocated independently and earlier than the sidings.</p> <p>The request for capacity in SFs between 1 July and 15 August (X-5 to X-3.5), during the ATT consultation and post-processing phases, namely:</p> <ul style="list-style-type: none"> • Beginning of July, RU provides needs for sidings and informal meetings. • Mid-July to mid-August, RUs request sidings in IT tool APN. RUs do have an overview (including TCR) of sidings but do not see who also requests

	<p>the same SF. If the request does not fit, there is a coordination procedure at the end of August.</p> <ul style="list-style-type: none"> • After the eventual coordination procedure, the offer for sidings is only around mid-October. <p>(Figures 2-3 in Annex 6.4)</p> <p><u>Feasibility studies</u> are possible to be requested (by X-12) including siding needs. The answer is at X-11, but the study does not result in an allocation, and the RU does not know if it is the only one who has an interest in the siding.</p>
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Especially for RUs operating international trains, influence on and adequate allocation of siding requests is of great importance. International trains are less flexible, as time shifts in the allocation of sidings could be cumbersome for harmonisation with train paths in other countries.

It is common practice that railway stakeholders engage in exchanges that are not formally documented or processes are not transparent for all actors in the field.

Informal exchange and lack of transparency	
Italy	<p>RUs perceive siding allocation as a 'black-box process' because:</p> <ul style="list-style-type: none"> • RU has no preliminary formal availability assessment for the request. • RU does not influence the allocation of sidings. • RU provides all information regarding sidings⁵ (e.g. location, length of track, need for auxiliary services etc.) and acquires a rail path that is compatible with sidings. However, it could be several kilometres away from the originally planned location. <p>To obtain more insight into the allocation process, three freight RUs stated that <u>they unofficially (even with a phone call) check the sidings' availability with the IM before the official request.</u></p> <p>Another problem reported is the lack of a formal legal guarantee to use the sidings (friendly agreement), the IM can anytime withdraw the allocation. It is also not possible to include sidings into the Framework Agreement, an instrument used quite often in Italy.</p>
Slovenia	<p>Especially with international trains, where the coaches' cycle is critical, RUs informally discuss the availability of siding requests with the head of the station, before rail path requests.</p>
Austria	<p>RUs perceive a lack of transparency in numerous cases:</p> <ul style="list-style-type: none"> • <u>Track capacity</u>: RU agrees unofficially on track capacity in advance (measured in track-km), yet this capacity is not officially guaranteed. • <u>Charge of track-km used</u>: RU must prove whether they used requested sidings or not. However, it is unclear if the final charge is consistent with the actual use. • <u>Absence of reservation system</u>: RUs rely on the goodwill of the IM. RUs may thus have back luck if TCR happens, or IM allocates the siding for other purposes.

3.3.4. Requests and allocation of sidings in ad-hoc

A large share of freight requests for sidings are handled in ad-hoc during the running timetable (see the reasons in the chapter about the annual timetable). Passenger RUs request short-

⁵ The siding request is performed through the facility commitment section, in Italian "Impegno Impianto".

term parking in case of special trains or TCRs because RUs cannot use all the sidings that are usually available.

When it comes to short-term requests for sidings that are arranged during the operation, RUs reported that these ad-hoc allocations are not always formalised and can be the result of a phone or email communication with the responsible IM staff.

National examples of ad-hoc sidings processes	
Romania	<ol style="list-style-type: none"> 1. RU submits the request to IM (special path request is not needed) 2. After verbal approval, RU has acquired the right to use the parking. 3. Once parked, RU must fill out a document including information on the number of carriages, date, name of RU, name of the station, and minimal parking time. 4. During parking, RU must inform the IM through an official paper every 30 days if they continue the parking or not. In case of non-acceptance of partner RUs abroad, the RU informs the IM of the parking only after that the train is parked in the siding.
Germany	Possible to request until 73 hours before transport.
Italy	Possible to request between 4 days and 3 hours prior to the parking via the IT system (PIC IF). The information about sidings occupation is not available, can be checked via phone or email. If the request for sidings is due to RU need and the IM rejects the request, there is no alternative provided. If the request is due to the IM (e.g. emergency stop, disruptions on the network), the IM prepares solutions and alternatives, however, these stops are sometimes too short for RU needs.

3.3.5. Allocation principles in case of conflicts

In the desk research, we observed the following priority criteria are usually used in SFs:

- the primary purpose of the track or installation (for example parking, loading, etc.),
- the “first come, first served” principle,
- already allocated capacity in neighbouring service facilities,
- efficiency of use,
- bidding,
- urgency (emergency) of e.g. repairs,
- longer trains before shorter trains,
- socio-economic benefits, using a common/recognized methodology, such as national conventions.

National examples of allocation rules	
Germany	<p><u>In the annual timetable</u>: The allocation of sidings is a transparent and formal process, but quite time-consuming.</p> <p>Coordination procedure</p> <ol style="list-style-type: none"> 1. If a conflict in the allocation of capacity arises, there is a first meeting with IM and conflicting RUs. It is a consultation about alternatives (other tracks, different locations), link order with real usage (=higher priority)

	<p>2. If a second round is needed, it is under the supervision of RB, and RU must prove good arguments for the use of sidings (and overrun of the train is not enough and priority criteria are essential).</p> <p>3. If this is not successful, priority criteria are applied.</p> <p>Priority criteria:</p> <ol style="list-style-type: none"> 1. Siding booking as a necessary consequence of a rail path agreed upon in the first phase of the ATT. I.e., to applicants who have a rail path requested in on-time ATT. Applicants should demonstrate that the capacity in SFs is a direct consequence of the contracted path.⁶ 2. Applicants with a valid Framework Agreement. 3. Applicants who have no available viable alternatives. 4. Auction: the highest bid takes the SF capacity (very rare and RUs do maximum to avoid it). <p><u>In ad-hoc</u>, the IM uses a first-come-first-served principle. However, there are some capacity tracks ("Kapazitätsgleise" or so-called "AnDi tracks"),⁷ which have a facility coordinator. The following sequence applies to the disposition of ad-hoc traffic use (priority) by the facility dispatcher:</p> <ol style="list-style-type: none"> 1. Allocated tracks which are free (not contracted) 2. Uses in capacity tracks, provided that the track is free. 3. Tracks that are contractually allocated to someone (main user), but not used at that moment, so another applicant can temporarily use them, but under the condition that this is coordinated with the main user. 4. Allocate usage to the disposition tracks (tracks that are used only for short-term parking, up to 12 hours). 5. Allocate usage to the AnDi tracks (tracks available only via the AnDi interface).
Czech Republic	<p><u>In the annual timetable</u>: the RU that has a connected path is the one that gets the siding allocated. If both RUs have paths, then the RU that requests longer parking time gets access.</p> <p><u>In ad-hoc</u>, the IM uses a first-come-first-served principle.</p>
Italy	<p><u>In the annual timetable</u>:</p> <ol style="list-style-type: none"> 1. Conclusion of a Framework Agreement. 2. Priority service of the requested asset. 3. Priority criteria of the train paths related to the service. 4. Maximisation of asset use. <p><u>In ad-hoc</u>: first-come-first-served principle.</p>
Switzerland	<p><u>In the annual timetable</u>:</p> <p>If no mutually agreed solution can be reached in the conflict resolution round, TVS (AB) will group the stationary periods on the siding in the time window affected by such conflicts into 15-minute units based on the train path application.</p>

⁶ In Germany and Sweden there are some terminals or loading tracks that may be used for parking but only if there is no need for loading; in that case the main function must be listed transparently in the SF description (Independent Regulators' Group – Rail, 2023).

⁷ These are sidings and marshalling yards of 6 Service Facilities in Germany. As of 2023: Aachen west, Duisburg- Ruhrort Hafen (port), Köln-Eifeltor, Köln-Kalk nord, Oberhausen West, and Passau Main Station

	<p>If it is not possible to resolve all the conflicts within a group, the TVS will conduct a bidding process, no stationary periods will be allocated to unsuccessful applicants. The winner will pay a maximum of CHF 1,000 more than the second-highest bid. The bid price must also be paid even if the additional service allocated as a result of the bidding process is not taken up or is subsequently cancelled.</p>
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Concerned RUs stated that an auction (bidding) system is considered to be a bad practice. Firstly, the RUs running multi-annual concepts have already fixed revenues/compensations and bidding leads to unexpected extra costs that reduce the profit or make the service not profitable. Secondly, the system only increases the revenues for the IM for the residual and decreases the number of available sidings. The aim should be to incentivise their expansion in case they become bottlenecks. One RU stated that the auction system may stay active, but only in case that repetitive auctions will result in a sidings expansion program to remove the bottleneck. One RU suggested as a solution that the IMs shall offer for losers an alternative siding, and if this means a longer route, the original track access charge is payable, by this approach the IM will get an economic incentive to keep sufficient sidings on places where the market needs them.

FTE Working Groups also commented on the usage of priority criteria based on request data, since there is a chance that certain market players might place the request in a way to win, but later the criteria are not met in real operation. Examples were given from RFC PaPs, where the criteria is the t-km*running days, with the risk that the winner later cancels some of the running days.

3.4. Operation and after-allocation processes

Some of the topics concerning the operation and post-allocation were already mentioned in the previous chapters where it fitted the story logic. The following additional topic was raised in the interviews.

Parking by partner RUs: Parking of international freight trains often leads to problems in planning. If a train is changed to a different RU abroad, and due to any reason the train needs to be parked in the meantime, this RU is often not willing to take responsibility for the parking of the train.

International trains are supervised by different RUs depending on the country they are in. At the borders, there is usually a shift between RUs, which involves changing the locomotives and personnel. To support this issue, a freight RU stated the following example:

1. RU A is the transport leader and RU B oversees its national section.
2. RU A transports a train with high-value goods (e.g. new cars).
3. RU A handles the carriages at the border to the RU B operating in that country.
4. For any reason (e.g. incompatibility with terminal slot) RU B is required to park the carriages.
5. RU B transports back the coaches to the boundary to handle them back to RU A, instead of taking the responsibility of parking in RU B country.

This issue leads to inefficiency, as RUs' planning capabilities are hindered since they are aware that parking trains by partner RUs are troublesome and not guaranteed. This issue is not a matter of processes or contracts, but of what happens between RUs in international rail

freight transport. The entire transport chain is international, but train operating RUs thinking is still national-based.

4. Recommendations

4.1. Suggestions for detected issues

The preliminary suggestions for international standards are listed in this chapter. Note that some of them would require more discussion within the dedicated working groups and/or further research.

Long-term planning	
Problem	Suggestion
Absence of structured moments of exchange about long-term planning for sidings.	The necessity of structured long-term planning RU-IM dialogue on sidings availability. The necessity of structured mid-term planning dialogue every year, preferably before the FTE A conference in January.
In long-term discussions, RU's negotiating power might be limited (hard to influence the planning).	An entity above all actors overseeing SF planning to ensure fairness and transparency, for instance a Regulatory Body, ensuring that RU voice is not neglected.
TCRs in sidings are not planned ahead and simultaneously with TCRs on lines.	Harmonised TCR process for sidings and TCRs on the lines.

There are no long-term discussions regarding sidings, and when they do occur, they are not transparent or formalized. The long-term planning of sidings often results only in informing of their removal. Suggestions from a comprehensive point of view:

- The IM must foster a formalised long-term planning which informs all stakeholders about the removal of sidings while taking input for the necessity of additional sidings whilst guaranteeing the practical possibility for RUs to utilise sidings if necessary.
- The IM must consider in the long-term planning also the needs specifically for auxiliary services since they have a long building process and are crucial for certain types of rolling stock.
- The IM must ensure that all RUs, including those with limited commercial power, are allowed to offer input for long-term planning purposes.

After analysing the contributions of the interviewed actors, effective long-term planning must incorporate formalised feedback and take special account of SF needs, to better align with the RUs' commercial requirements.

Capacity Request and Production Planning	
Problem	Suggestion
IM does not allow the feasibility of sidings to be checked before the request, only informally.	Possibility to have a formal and transparent exchange and assessment before the siding request (e.g. feasibility study).

Lack of a reliable and extensive sidings overview for RUs.	An IT tool with up-to-date and reliable technical information, including real-time and scheduled occupancy.
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IT tool

RUs stressed the need for an IT tool offered by the IM that enables them to have an overview of the sidings available. The IT tool must include scheduled occupation of siding (e.g. occupation for the next two months), as well as a real-time occupation so RUs can check autonomously if a siding is available at the desired moment. A good example was reported APN Tool by DB Netz (see Annex 6.4). Moreover, very precise information about the sidings is necessary. In some countries, this is already available, but often this information is incomplete or unreliable and information is national-based. The essential information for RUs about sidings is:

- Information about auxiliary services
- Signalling information or only accessible with shunting
- Accessibility by lorries, useful length of loading edge,
- If the track belongs to a station or not (due to the charging system)
- Catenary system (and e.g. length of the overhead line)
- Useful length of siding. This value is crucial as for RUs the maximum length of a siding is a decisive factor in the success of freight transport.

In addition, this tool must include information regarding eventual sidings not owned by the IM, but by, for instance, RUs or local entities. Moreover, stakeholders stressed that the information presented needs to be updated regularly, to prevent RUs from resource waste due to outdated information as explained in section 3.2.2. If not updated regularly, the tool will be perceived as unreliable (as in the case of Rail Facility Portal), which will result in a return to the current state of practices (telephone calls, emails) which will slow down the process.

Capacity allocation	
Problem	Suggestion
Different timelines and interconnections between the path and sidings allocation.	Coordinate the path and the sidings slot for large and middle size service facilities operators.
In ATT, the siding allocation process in the case of several RUs is not sufficiently clear. In some countries is considered as a black-box process.	More transparent allocation rules in case of conflicting requests for siding by several RUs.
Auction system as the allocation principle in case of no agreement.	Abandonment of auctions, or at least accompany the auction system with an incentive mechanism for the IM to expand the sidings capacity to the market-demanded capacities.

The allocation of storage sidings differs per country. In Italy, storage sidings are requested alongside the rail path, and they influence the allocation of the latter. In Slovenia, Germany, the Czech Republic rail paths are allocated before checking the alignment with storage sidings. Suggestions from a comprehensive point of view:

- Passenger RUs interviewed want more decisional power in storage siding allocation. Not only providing the desired location and needs for auxiliary service but also having

formalised moments of alignment with the IM in case of issues, as it happens currently with the rail path allocation.

- The allocation of storage sidings must consider the role and importance of the rail path. The lack of capacity in sidings should in the future process not lead to automatic rail path rejection.
- Several RUs investigate the availability of storage sidings unofficially before the official request, both with the IM or the head of the station on a local base. To guarantee transparency and fairness, the IM should formalise and/or standardise this process. To guarantee that all the RUs have access to the same information.

Operational and After-allocation	
Problem	Suggestion
While the definition of spur siding is clear, it is problematic to define it in stations (to charge RUs).	A clear distinction between sidings and other stops (turnarounds) in stations, to charge RUs correctly.
Lack of a reliable and extensive sidings overview for RUs.	An IT tool (more information later) with technical information, real-time and scheduled occupancy.
RUs are responsible for changes of rail paths or sidings booking to align with changes that are caused by IMs and SFs (TCRs). In some cases, they are even charged.	No commercial conditions for RUs in case they did not trigger the change. Responsibility to coordinate and provide alternatives in case of TCRs shall be in the hands of IMs (and in some cases also respective SFs).

Miscellaneous	
Problem	Suggestion
RUs have contracts or business plans not limited to a single timetable period, their costs/production concepts are depending on the sidings availability.	Inclusion of sidings into the multi-annual capacity instruments such as Framework Agreements and Rolling Planning.
Not all sidings operators can meet the same criteria, some do not have the resources to handle the bureaucracy.	Categorisation of sidings operators based on the size and whether they are IM-owned or private.

4.2. Suggestions for further research

Here is a list of problems that can be tackled in the future:

- Release of occupied sidings - some tracks can be used for loading/unloading, but also for parking. A RU might request a siding for loading, but it is occupied for parking by another RU. Often the IM does not have a process for this issue. In case of the absence of a protocol, RUs are pushed to act upon the problem themselves, it is questionable if there should not be an effective standardised process. In Slovakia, an example was reported, where the RU had to solve the problem unconventionally: (1) RU A is parking in tracks that can also be used for loading, (2) RU B wants to use this already used track, (3) RU B finds out the identity of RU A and contacts the concerned RU, and (4) RU A and B reach a bilateral agreement.

- The passenger and some freight rail concepts are composed of the commercial rail path, the technical path to reaching siding, and storage siding parking. Next research can focus also on the role of the technical path.
- The mutual influence between sidings and TCR should be deepened since the process of TCR in sidings might differ from the one for rail paths. It shall be also investigated whether sidings should not be part of the TCR timetable solution, so far only the German case with pros and cons was explored.
- Shunting companies also book capacity from the sidings to a terminal or station. This should be considered as well, as it is a third player entering the alignment process.
- To profit from sidings, for instance in Slovakia, the IM charges RUs for long stays (>72 hours). This charging to specific RUs is, however, problematic, as the transfer of responsibility of rolling stock makes it questionable which actor should be charged for the long stay. For example, an RU transports coaches on a siding near a maintenance centre. If this centre prioritizes other rolling stock leaving the carriages parked for a longer period. Who is responsible for the long stay: the RU or the maintenance centre?
- Best practices on how RUs can express long-term wishes for sidings capacity can be investigated, for instance in Germany, there is an IT tool iTrace.

5. Annexes

5.1. Table of abbreviations

AB	Allocation Body
ATT	Annual Timetable
IM	Infrastructure Manager
NS	Network Statement
PaP	Pre-arranged path on RFC
RFC	Rail Freight Corridor
RFP	Rail Facility Portal
RNE	Rail Net Europe
RU	Railway Undertaking
SF	Service Facility
SFO	Service Facility Operator
TT	TT TimeTable

5.2. Interviews

The railway stakeholders were interviewed to gather the necessary input and experience. The table below shows the number of detailed interviews conducted per stakeholder type.

Topic	RU Freight	RU Passenger	Terminal	Logistic operator	IM	RFC
Storage Sidings	9	3	4	1	4	2

In the second step, the findings were discussed with the FTE Working Groups Freight and Passenger (29 representatives of FTE members), who provided further input.

5.3. References

- Independent Regulators’ Group – Rail (2023). *Guidelines Service Facilities Description*.
- Network Statements and website of IMs
- The Netherlands Authority for Consumers and Markets (2018). Guide regarding rail-related services and service facilities
- Facility Pricing System 2023 of DB Netz AG (available in English) - [link](#)
- Order tool for SFs, Anlagenportal-Netz (APN), German and in English - [link](#)

5.4. Use case: Germany

Sehr geehrte Damen und Herren,

hiermit informieren wir Sie über Verfügbarkeitseinschränkungen aufgrund einer Baumaßnahme.

Aktive Einschränkungen

Für die Baumaßnahme 00000197FF gelten im Gesamtzeitraum 21.10.23 23:10 (Sa.) - 22.10.23 04:10 (So.) folgende Einschränkungen:

Betriebsstelle	Regelungszeitraum	Gleise	Elektrifiziert	Anbindung	Befahrbarkeit	Ol aus	Bemerkung an Kunde
Emden (HE)	21.10.2023, 23:10 - 22.10.2023, 04:10 durchg.	142, 142, 143, 143, 144, 144	Ja	Zweiseitig	nicht erreichbar	Ja	Sperrung der Gleise 142, 143 und 144, Abschaltung der Ol Gruppe 8. Durch die Sperrung sind die Gleise 142, 143 und 144 nicht erreichbar. Gleise 143 und 144 können aber besetzt bleiben, Loks müssen nur abgebügelt abgestellt werden, da die Gleise stromlos sind

Alle Betroffenheiten können Sie auch in [Ihrem persönlichen Kundenbereich](#) des NetzCockpit (NeCo) einsehen.

Für eventuelle Rückfragen stehen wir Ihnen gerne zur Verfügung. Wir bitten um Prüfung, Berücksichtigung, und ggf. schriftliche Stellungnahme bis zum 13.10.2023.

Sollten Sie einen anderen Verteiler für die Informationen zu Verfügbarkeitseinschränkungen in Serviceeinrichtungen wünschen, wenden Sie sich bitte an die Superuser für das DB NetzCockpit Ihres Unternehmens.

Figure 1 TCR email announcement from BAPSI tool

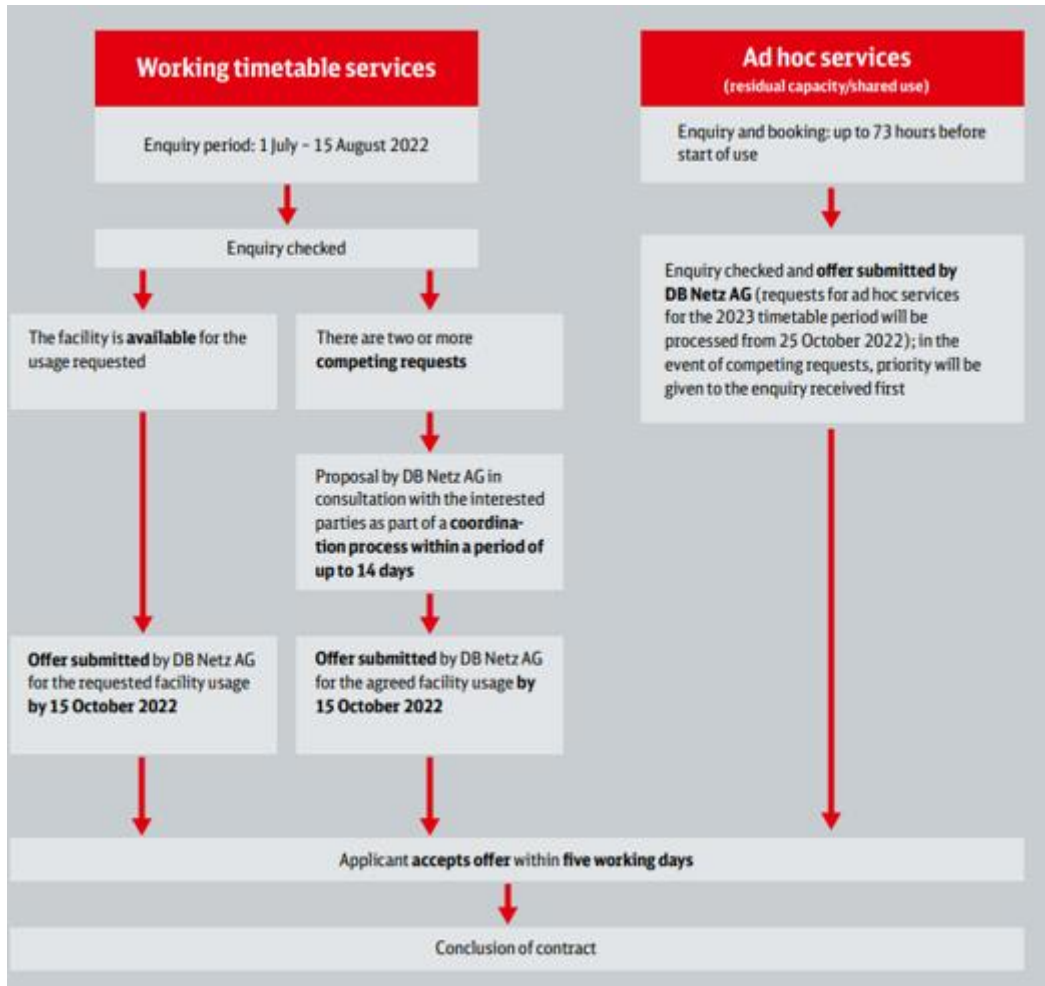


Figure 2 Ordering process for SF, source: Facility Pricing System 2023

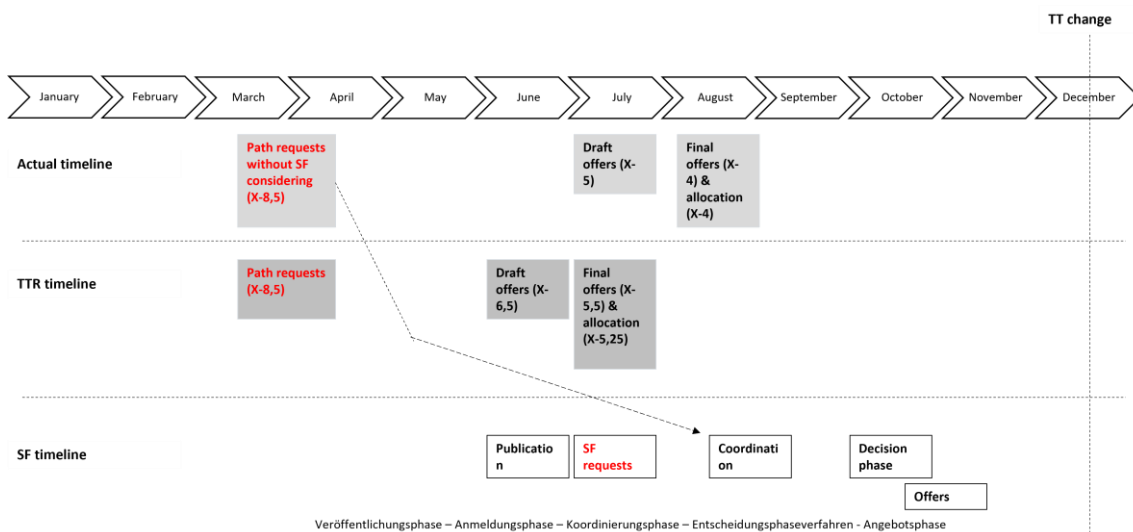


Figure 3 Timeline ordering SF in Annual TT (DB Netz)

Information about timetable phases

You are currently in the Coordination phase 2024. This period is active until 08.10.2023 23:59 Days left: 18 Days.

In your role as Gast ...

✓ ... you can search Service Facility, especially the newly published for next working timetable.

The following timetable years are already planned

Year	Veröffentlichungsphase from	Anmeldungsphase from	Koordinierungsphase from	Entscheidungsverfahren phase	Angebotsphase from	Betriebsphase from	Betriebsphase until
2023	01.06.2022	01.07.2022	16.08.2022	10.10.2022	15.10.2022	11.12.2022	09.12.2023
2024	01.06.2023	01.07.2023	16.08.2023	09.10.2023	15.10.2023	10.12.2023	14.12.2024
2025	01.06.2024	01.07.2024	16.08.2024	06.09.2024	15.10.2024	15.12.2024	13.12.2025

Description of the phases

publishing	Veröffentlichungsphase	The first phase of each network timetable is the publication. From this phase, the marketing-relevant service facilities can be searched.
requests	Anmeldungsphase	This is followed by the Anmeldephase. During this period an official application is possible for the upcoming working timetable.
coordination	Koordinierungsphase	In the Koordinierungsphase, possible conflicts between applications are resolved or coordinated in consultation with the customers.
decision	Entscheidungsverfahren phase	In the Entscheidungsverfahren, possible conflicts between applications which cannot be solved in the Anmeldephase are finalized or coordinated.
offer	Angebotsphase	In the Angebotsphase, the customer receives tenders of the conflict-free applications in the working timetable per customer number.
GLV		soon

alternatives (tracks on different locations), link order with real usage. Problem: who wins? Which criteria to use?

Possible criteria: purpose of use? Who pays the most?

Winner = who fulfills the most criteria.

If there is no solution, auction takes place

Problem: RU loses, but still tracks are needed → conflicts increase. In the end dispatcher (Fahrdienstleiter) decides which train can arrive.

Source: APN-Screenshot (20.09.2023)

Figure 4 Ordering SFs in Annual TT via APN tool

Search service facilities

German punctuation (ä, ö, ü)

General parameters

Operating station

Federal state

Regional unit

Track search parameters

Product category

Minimum usable length [m]

Distance [km]

Connection

Overhead line

electrification

Parameters of extra features search

All selected types are available At least 1 type available

Extra features

Parameters traffic times

Network timetable period

productive time - traffic days

VTS

Time window

Overnight stay index

Show only free SF

Parameters customer number

Search for the last application/booking for customer number(s)

Nur SE mit vorbelegter Kundennummer anzeigen

ATT or outside of ATT (Glv=Gelegenheitsverkehr)

Figure 5 Search SFs in APN tool

Ordering possible despite conflicts → sharing/renting

Suche Serviceeinrichtungen

Neue Suche Zurück Betriebsstelle: München Nord Rbf, Fahrplanperiode: 2023, VTS: 127, Zeitfenster: 00:00-23:59, Übernachtabstelligindex: 0, Nutzungszeitraum: 20.09.2023 - 09.12.2023, Trefferanzahl: 138

Anmeldedetails Direkt in Warenkorb legen

Konflikt?	Betriebsstelle	Skizze	Gleis (2)	Produktkategorie™	Nutzungsentgelt Gleis	Zusatzausstattung	Anbindung™	Oberleitung™	Nutzlänge (m)	Ladekantenlänge (m)	Kundennummer™	Infos
<input type="checkbox"/>	München Nord Rbf		101	Zugbildung 1	15.034,85 €		Zweiseitig	nein	809	0		
<input type="checkbox"/>	München Nord Rbf		102	Zugbildung 1	15.034,85 €	ET	Zweiseitig	nein	822	0		
<input type="checkbox"/>	München Nord Rbf		105	Trassengleis	8.359,20 €	ET	Zweiseitig	ja	617	0		
<input type="checkbox"/>	München Nord Rbf		106	Zugbildung 1	15.034,85 €		Zweiseitig	ja	755	0		
<input type="checkbox"/>	München Nord Rbf		107	Trassengleis	8.359,20 €		Zweiseitig	ja	755	0		
<input type="checkbox"/>	München Nord Rbf		108	Zugbildung 1	15.034,85 €		Zweiseitig	ja	755	0		
<input type="checkbox"/>	München Nord Rbf		109	Zugbildung 1	15.034,85 €		Zweiseitig	ja	755	0		
<input type="checkbox"/>	München Nord Rbf		110	Trassengleis	8.359,20 €	GW	Zweiseitig	ja	850	0		
<input type="checkbox"/>	München Nord Rbf		112	Zugbildung 1	15.034,85 €		Zweiseitig	sp	905	0		
<input type="checkbox"/>	München Nord Rbf		113	Zugbildung 1	15.034,85 €		Zweiseitig	ja	840	0		
<input type="checkbox"/>	München Nord Rbf		115	Zugbildung 1	15.034,85 €		Zweiseitig	ja	735	0		
<input type="checkbox"/>	München Nord Rbf		116	Zugbildung 1	15.034,85 €		Zweiseitig	ja	735	0		
<input type="checkbox"/>	München Nord Rbf		117	Zugbildung 1	15.034,85 €		Zweiseitig	ja	745	0		
<input type="checkbox"/>	München Nord Rbf		118	Trassengleis	8.359,20 €		Zweiseitig	ja	780	0		
<input type="checkbox"/>	München Nord Rbf		150	Zuführung - Abstellung 2	3.714,95 €		Einseitig	ja	205	0		
<input type="checkbox"/>	München Nord Rbf		155	Zugbildung 1	15.034,85 €		Einseitig	nein	30	0		
<input type="checkbox"/>	München Nord Rbf		191	Zuführung - Abstellung 2	3.714,95 €	BA	Zweiseitig	ja	65	0		

Source: APN-Screenshot (20.09.2023)

Figure 6 Result searching of SFs in APN tool

Suche Serviceeinrichtungen

Neue Suche Zurück Betriebsstelle: München Nord Rbf, Produktkategorien: Ausfahrgeleis, Abstellung, AnDi, Baugleis kurz, Etp, Ausfahrgeleis, Einfahrgeleis, ZF Kundenanschluss, Ladegleis, Ladegleis_KLV, Ladestraße, Abstellung Lokgleis, Notfallvorsorge, Fahrplanperiode: 2023, VTS: 127, Zeitfenster: 00:00-23:59, Übernachtabstelligindex: 0, Nur freie SE anzeigen, Nutzungszeitraum: 20.09.2023 - 09.12.2023, Trefferanzahl: 9

Anmeldedetails Direkt in Warenkorb legen

Konflikt?	Betriebsstelle	Skizze	Gleis (2)	Produktkategorie™	Nutzungsentgelt Gleis	Zusatzausstattung	Anbindung™	Oberleitung™	Nutzlänge (m)	Ladekantenlänge (m)	Kundennummer™	Infos
<input type="checkbox"/>	München Nord Rbf		105	Trassengleis	8.359,20 €	ET	Zweiseitig	ja	617	0		
<input type="checkbox"/>	München Nord Rbf		107	Trassengleis	8.359,20 €		Zweiseitig	ja	755	0		
<input type="checkbox"/>	München Nord Rbf		118	Trassengleis	8.359,20 €		Zweiseitig	ja	780	0		
<input type="checkbox"/>	München Nord Rbf		150	Zuführung - Abstellung 2	3.714,95 €		Einseitig	ja	205	0		
<input type="checkbox"/>	München Nord Rbf		194+1	Zuführung - Abstellung 2	3.714,95 €		Zweiseitig	ja	150	0		
<input type="checkbox"/>	München Nord Rbf		272	Zuführung - Abstellung 2	3.714,95 €		Einseitig	ja	80	0		
<input type="checkbox"/>	München Nord Rbf		900A	Abstellung 3	2.411,80 €		Einseitig	nein	59	0		
<input type="checkbox"/>	München Nord Rbf		GV105	Zuführung - Abstellung 2	3.714,95 €		Zweiseitig	sp	50	0		
<input type="checkbox"/>	München Nord Rbf		Stutz	Abstellung 3	2.411,80 €		Einseitig	nein	15	0		

1 - 9 von 9

Additional facilities electrification There are some capacity restrictions (e.g. TCRs)

Source: APN-Screenshot (20.09.2023)

Figure 7 Searching SFs filtered by only free SFs