



Procedures for Capacity Strategy

Complementary document (handbook) to Description of the Timetabling and Capacity Redesign Process

Version 2.0



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Version history

VERSION	RESPONSIBLE	DATE	CHANGES
0.1	Floraine Stauffer TTR Process Task Force assistant	2021-02-17	Creation of the document structure. Alignment with the “Description of the Timetabling and Capacity Redesign Process v1.02”.
0.2	Daniel Haltner TTR Process Task Force leader	2021-04-12	Inclusion of the remarks from the TTR Process Task Force.
0.3	Sebastián Čarek Senior Capacity Manager	2021-04-15	Alignment with the “Description of the Timetabling and Capacity Redesign Process v2.00” and other RNE documents. Inclusion of remarks of the TTR project leaders.
0.4	Sebastián Čarek Senior Capacity Manager	2021-05-05	Inclusion of the remarks from the TTR Process Task Force and MVP Capacity Strategy.
0.5	Sebastián Čarek Senior Capacity Manager	2021-06-14	Completion of the transitional period chapter based on the TTR NPIMs suggestions.
0.6	Ádám Kertai Head of Capacity Process Management	2021-09-28	Inclusion of the remarks from other TTR Process Task Force
0.7	Ádám Kertai Head of Capacity Process Management	2021-10-20	Inclusion of the remarks from: <ul style="list-style-type: none"> • Legal Matters Working Group • Sales and Timetabling Working Group
0.8	Ádám Kertai Head of Capacity Process Management	2021-10-27	Inclusion of the remarks from: <ul style="list-style-type: none"> • Legal Matters Working Group
1.0	RNE General Assembly	2021-12-07	Approval of the version 0.8 by the RNE General Assembly on 7 December 2021
1.1	Zsolt Ungvári Capacity Manager	2022-09-21	Novelties in connection with Annex A: <ul style="list-style-type: none"> • Principles for TCR planning • Traffic planning principles
1.2	Zsolt Ungvári Capacity Manager	2022-10-13	Inclusion of the remarks from Timetabling Working Group
2.0	Zsolt Ungvári Capacity Manager	2022-12-06	Approval of the version 1.2 by the RNE General Assembly on 6 December 2022

Disclaimer, application, and transition period

This document is intended as a handbook for the implementation of the so called Capacity Strategy of the TTR Process as described by RNE. As neither legislation nor IT-systems are currently adapted to enable all the elements of TTR, individual TTR elements can only be implemented by the infrastructure managers to a limited extent for the upcoming timetable periods, starting in December 2024. If and when the legislation and IT-systems fully enable the implementation of all the elements of TTR, the different RNE handbooks on those elements should be applied to the process. *The exact details for the transitional period will be elaborated in the Basic Requirements which would be subject to RNE GA approval in May 2022.*

Infrastructure Managers and Allocation Bodies should adapt their internal processes and the Network Statement in line with the Procedures for Capacity Strategies from X-60¹, where X denotes the first timetable referring to the complete roll-out of TTR. The deadlines defined in sub-chapter 3.2 shall be applied after the complete roll-out of the TTR Capacity Strategy.

The Basic Requirements will contain the description of the geographical scope, which might be defined differently for the first years of implementation. The Basic Requirements are planned to be approved in May 2022 by the RNE GA.

¹ Please note that the current version of the Handbook does not describe (yet) the final TTR target picture

1. Introduction and scope of this document

An essential part of the TTR process is the advanced planning, of which the first element is Capacity Strategy. In order to be able to make optimum effective use of the available infrastructure capacity in an efficient manner, it is important to have early knowledge of the capacity available for a given timetable period and the general capacity needs. The Capacity Strategy process should help to collect and organise this information and set down the general principles to be used further in the capacity planning and capacity allocation process. This knowledge has to be also shared and aligned with the concerned stakeholders.

This document describes the process by which Infrastructure Managers and Allocation Bodies (hereafter IMs) have to prepare the Capacity Strategies in line with the TTR principles. IMs shall follow these procedures and by this promote internationally harmonised capacity management processes over the single European railway area.

2. Reference documents

This handbook follows and is based on the principles set down in the:

- **Description of the Timetabling and Capacity Redesign Process** version 2.0,² which includes further description and glossary of terms used in this document.
- **Directive 2012/34/EU**, especially:
 - Article 7(e) on coordination mechanisms.
 - Article 7(f) on the European network of infrastructure managers.
 - Article 8, according to which 5-year strategies for railway infrastructure development shall be drawn up by EU Member States (taking into account need to cooperate with neighbouring IMs), as well as business plans of IMs to ensure optimal and efficient use, provision, and development of the infrastructure while ensuring financial balance and providing means for these objectives to be achieved.
 - Article 30 and Annex V, describing the basic principles and parameters of the multi-annual (covering at least 5 years) contractual agreements between competent authorities and IMs including all aspects of infrastructure management: maintenance and renewal of the infrastructure already in operation and construction of new infrastructure.
 - Article 50 on capacity analysis.
- **Regulation (EU) 913/2010**, especially:
 - Article 9(3) on Transport market studies,
 - Article 11 on Investment plans.

² Accessible via: <https://cms.rne.eu/ttr-documents/content/process-description-0>

3. Capacity Strategy creation process

3.1 List of involved stakeholders

Stakeholder	Roles and involvement
IM	Infrastructure Manager (or Allocation Body) in charge of the Capacity Strategy. Several IMs can agree to create a joint Capacity Strategy.
Involved IMs	Infrastructure Manager (or Allocation Body) that is or might be concerned in or affected by the particular Capacity Strategy.
Competent authority	<p>An organisation having a (delegated) power to issue and enforce regulations or instructions and/or interests in the railway capacity planning area. For instance:</p> <ul style="list-style-type: none"> • Ministry in which portfolio is transport and or infrastructure • Local and regional governments
Other involved stakeholders	<p>The organisation, which might be involved in the Capacity Strategy process:</p> <ul style="list-style-type: none"> • National and local infrastructure funds • Transport associations and transport organisers • Relevant supranational institutions
Terminal	Installation provided which has been specially arranged to allow either the loading and/or the unloading of goods onto/from freight trains, and the integration of rail freight services with the road, maritime, river, and air services, and either the forming or modification of the composition of freight trains; and, where necessary, performing border procedures at borders with non-EU countries.'
Service facility	Installation, including ground area, building, and equipment, which has been specially arranged, as a whole or in part, to allow services to be supplied to the railway undertakings, for instance, storage sidings, maintenance facilities, refuelling facilities, marshalling yards.
RU applicants	A railway undertaking (RU) or an international grouping of railway undertakings.
Non-RU applicants	Persons or legal entities with a public-service or commercial interest in procuring infrastructure capacity.
International leading entity	<p>A leading entity envisaged by TTR that:</p> <ul style="list-style-type: none"> • coordinates the exchange of information and international harmonisation of axis Capacity Strategies, • organises meetings and communicates information to stakeholders, • Monitors that the agreed Capacity Strategies are respected. <p><i>Due to ongoing activities in TTR projects in this regard, further description and involvement of this entity are out of the scope of this document. However, in the case of multi-network Capacity Strategies, the involved IMs can jointly appoint one IM or any other entity to perform the tasks of the leading entity.</i></p>

3.2 Timeline for Capacity Strategy

The following table shows the main milestones in the Capacity Strategy phase in a fully implemented TTR process.

Timeline ³	Milestone/Action
X-60	Start of the Capacity Strategy phase
X-60 to X-54	Input collection and creation of draft Capacity Strategies
X-54 to X-36	Harmonisation of Capacity Strategies
X-36	Validation and publication of Capacity Strategies

3.3 Start of Capacity Strategy phase (X-60)

With the start of the Capacity Strategy phase, the IM should define all connected geographical areas for each individual Capacity Strategy, this also includes detection of involved IMs and relevant service facilities and terminals.⁴

It is up to the IMs to define whether a single Capacity Strategy for the complete network is sufficient or whether it is more suitable to have more Capacity Strategies for various geographical areas (e.g. per corridor, per axis, per region). However, each strategy which concerns or might have an impact on other IMs must be also harmonised and validated with these IMs. Moreover, one or more IMs can decide to create a joint Capacity Strategy for a certain area covering more networks. Nevertheless, each line or line section with international relevance must be covered by one Capacity Strategy.

3.4 Input collection and creation of draft Capacity Strategy (X-60 to X-54)

Between X-60 and X-54, the IM is responsible for allowing competent authorities and other involved stakeholders to submit input to the Capacity Strategy. The IM shall also guide these parties through this phase.

3.4.1 Involvement of competent authorities and other involved stakeholders

It is essential to have a functioning connection between the political requirements of citizens and the capacity planning and management process. Through this link, the competent authorities can apply their policies for instance, in regards to the environment. It is assumed that the scope of the institutions involved in the strategy phase will differ from country to country. Generally, at least the ministry in which the portfolio of transport and infrastructure is included shall be involved. However, the involvement of competent authorities and other involved stakeholders such as municipalities, regions, transport associations, supranational institutions, and so forth is recommended to ensure broad social consensus.

The institutions are asked to provide key input to the strategy, especially:

- political requirements on future positive and negative changes in the available capacity,
- intended future development in the public service obligation (PSO) transport,
- available financial resources for future investments and maintenance.

3.4.2 Involvement of terminals and service facilities

Each terminal and service facility operator for which the particular Capacity Strategy is relevant shall have the opportunity to provide input to the strategy and comment on it.

³ X - #: a deadline referring to the annual timetable change (X) and the number of months (#) in advance of this deadline.

⁴ It can be assumed that after the first Capacity Strategies are created for TT2025, the effort for this geographical and stakeholder definition is minimised (only update of existing strategies).

3.4.3 Drafting Capacity Strategy

Based on the ongoing input and own internal needs, the IM drafts the strategy. The strategy is a document describing the main principles of capacity management including all types of capacity needs for the assigned geographical area. The main focus is on:

Expected capacity of infrastructure	The aim is to describe the expected available positive (additional) capacity and also the expected negative non-TCR related capacity (for instance, track removal).
TCRs	The aim is to describe the principles for capacity allocation for regular TCR windows and the planning of TCRs (for instance selection of lines where due to not sufficient re-routing capacity only partial closure will be planned).
Traffic flows	The aim is to describe the main principles to be used in the planning of elements in the future Capacity Models (for instance, long-distance passenger train paths, regional passenger paths, bandwidths, ad hoc only as an unplanned capacity, etc.)

The complete overview of the expected structure and the standardised template is in Annex A.

3.5 Harmonisation of Capacity Strategy (X-54 to X-36)

At X-54, the IM actively approaches other involved IMs and shares the draft of the Capacity Strategy. The strategy should be considered only as a draft, negotiation, and harmonisation between the IM and involved IMs takes place. This phase might consist of several iterations, and also competent authorities, other involved stakeholders, terminals, and service facilities might be again invited to further discussion, especially, if there are conflicting or unharmonised expectations on international lines. All parties should seek the compromises and best solutions.

During this phase, interested RU and Non-RU applicants should be informed about the state of the document and may give feedback to the mature content of the draft strategy to be accessible for them sufficient time before the final publication.

3.6 Validation and publication of Capacity Strategy (X-36)

At X-36, the final Capacity Strategy shall be published in the standardised format (see Annex A). Every Capacity Strategy is validated by the IM itself, but also the other involved IMs take note of it by signing it. The signed Capacity Strategies will be published.

Wherever the language of the document is not English, it should be accompanied by the English translation.⁵ This applies not only to the final version of the document (X-36) but already to the draft, to allow wider and smoother harmonisation and involvement of the relevant international audience.

⁵ Specifically from the perspective of the market opening.

Annex A: Standardised template

Chapter 0:	<p><u>Geographical area</u> Describe and/or visualize the geographical area for which this Capacity Strategy is applicable and list all involved IMs, terminals, and service facilities.</p>												
Chapter 1:	<p><u>Expected capacity of infrastructure in TT20xx</u> This chapter should include any available information on the expected usable permanent positive (additional) and also the expected permanent negative capacity impact.</p> <p>Additional available capacity: Provide a list of projects with a positive impact on the infrastructure, which will have an impact on the capacity in the concerned timetable period (until X). Furthermore, add a description of the intended benefits (e.g. increase of capacity, increase of speed, more parking capacity). Then summarise the maturity and certainty of the projects in the overview:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th style="text-align: left;">Project name</th> <th style="text-align: left;">Project proposal defined</th> <th style="text-align: left;">Project approved by the IM's management</th> <th style="text-align: left;">Financing secured</th> </tr> </thead> <tbody> <tr> <td>Project 1</td> <td>Yes / No</td> <td>Yes / No</td> <td>Yes / No</td> </tr> <tr> <td>Project 2</td> <td>Yes / No</td> <td>Yes / No</td> <td>Yes / No</td> </tr> </tbody> </table> <p>Reduced available capacity: Provide information on expected negative non-TCR-related capacity (for instance, intended permanent track/siding removal).</p>	Project name	Project proposal defined	Project approved by the IM's management	Financing secured	Project 1	Yes / No	Yes / No	Yes / No	Project 2	Yes / No	Yes / No	Yes / No
Project name	Project proposal defined	Project approved by the IM's management	Financing secured										
Project 1	Yes / No	Yes / No	Yes / No										
Project 2	Yes / No	Yes / No	Yes / No										
Chapter 2:	<p><u>Temporary Capacity Restrictions (TCRs):</u></p> <p style="text-align: center;">1) Principles for TCR planning</p> <p>Describe the principles and typology for the planning of TCRs. The below listed aspects have to be considered in this chapter:</p> <ul style="list-style-type: none"> • Clustering of TCRs to minimize the gravity of impact and duration • Description of connected areas where TCRs due to shortage of capacity shall not be planned simultaneously • Description of the periods when TCRs will be executed if their nature makes it possible (nights, weekends) • Description of the periods when regular TCR windows will be planned (nights, weekends) • Description of how the TCR allocation process will look like, how the coordination and consultation will be ensured, in particular: <ul style="list-style-type: none"> ○ How the consultation process will be conducted for each Major and High impact TCR ○ How and until when can the Applicants ask for two alternatives concerning Major impact TCRs • Description of currently existing (national, bi-, trilateral) escalation process(es) in case of disagreement of the involved stakeholders 												

	<p>2) Expected Major impact TCRs</p> <p>Describe available information about the expected crucial major impact TCRs (lasting several months or whole timetable period) and summarise the maturity and certainty of the TCRs in the overview:</p> <table border="1" data-bbox="343 432 1305 589"> <thead> <tr> <th>TCR</th> <th>Project proposal defined</th> <th>Project approved by the IM's management</th> <th>Financing secured</th> <th>Comments/ explanations</th> </tr> </thead> <tbody> <tr> <td>TCR 1</td> <td>Yes / No</td> <td>Yes / No</td> <td>Yes / No</td> <td></td> </tr> <tr> <td>TCR 2</td> <td>Yes / No</td> <td>Yes / No</td> <td>Yes / No</td> <td></td> </tr> </tbody> </table>	TCR	Project proposal defined	Project approved by the IM's management	Financing secured	Comments/ explanations	TCR 1	Yes / No	Yes / No	Yes / No		TCR 2	Yes / No	Yes / No	Yes / No	
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TCR 1	Yes / No	Yes / No	Yes / No													
TCR 2	Yes / No	Yes / No	Yes / No													
<p>Chapter 3:</p>	<p><u>Traffic planning principles and traffic flows:</u></p> <p>1) Traffic planning principles</p> <p>Describe the main principles for each railway line, which will be used later in the planning of elements in the Capacity Models (X-30 – X-11) and the Capacity Supplies (X-18 – X+12). The IMs should also specify which of them is responsible for the creation of the cross-border Capacity Model and Capacity Supply. The International Leading Entity and the relevant IT tool should facilitate this process.</p> <p>This Chapter describes also how the consultation process of Capacity Model variants for TCR periods will be conducted (e.g. which tool will be used etc.).</p> <p>In the Capacity Strategy, the parameters of the basic categories and parameters which will be used in the Capacity Model should be defined according to the Procedures for Capacity Model.</p> <p>Basic categories for passenger trains:</p> <ul style="list-style-type: none"> » high-speed trains » long-distance trains » express regional trains » regional trains <p>Basic categories for freight trains:</p> <ul style="list-style-type: none"> » wagonload trains » block trains » combined transport trains <p>The IMs should keep only the above-mentioned categories, however with the help of the basic parameters it is possible to define additional groups within one category (e.g. 4 subgroups within the high-speed train category).</p> <p>Basic parameters for passenger trains:</p> <ul style="list-style-type: none"> » stopping pattern (according to point 6.1.2 of Capacity Model Handbook) » Acceleration (m/s²) » planned speed » maximum train length <p>Basic parameters for freight trains:</p> <ul style="list-style-type: none"> » average maximum standard train weight, » average maximum standard train length, 															

- » expected speed⁶,
- » dangerous goods or extraordinary consignments (allowed or not),
- » profile.

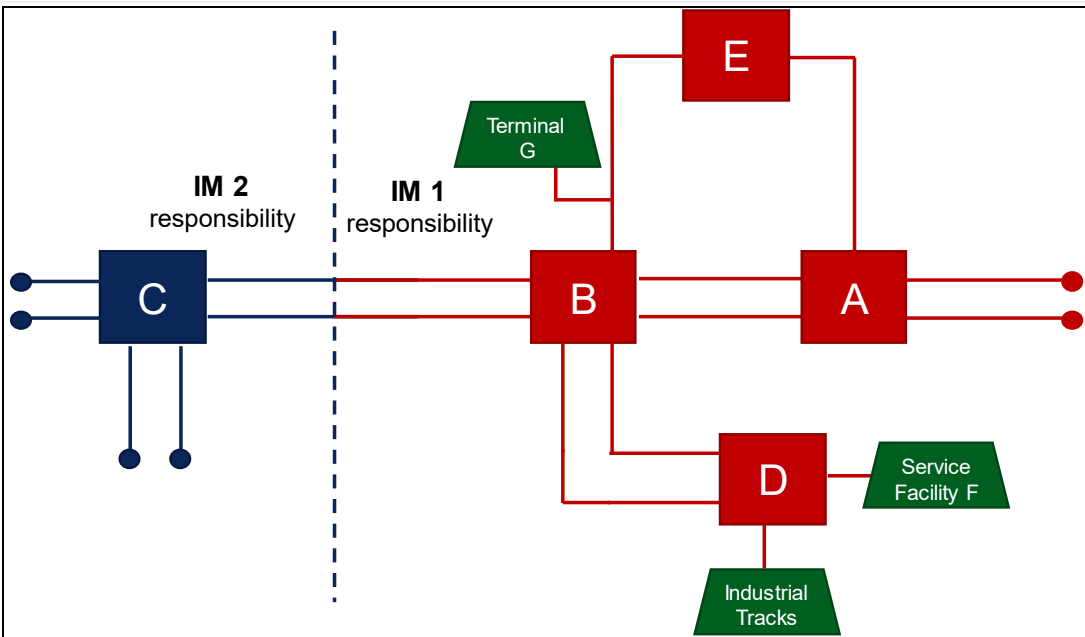
The parameters of the basic categories can vary between the different railway lines. (For example, the same volume can belong to different categories during the train run (A → B, long-distance passenger, B → C high-speed passenger).

The part should also include the principles for cooperation with terminals and service facilities same as any other strategical principles in the future timetable constructions.

Potential example:

IM		Section	Principle and elements
IM1		A↔B	International line with a high level of capacity saturation. Publication of pre-planned paths for both passenger and freight trains.
IM2		B↔C	International line with a medium level of capacity saturation. Publication of pre-planned paths for passenger trains and annual timetable freight trains. Rolling Planning and ad hoc capacity published in the form of bandwidths. Freight operation should be possible also in the peak periods and the stop duration at B for running A-B-C and vice versa should not exceed 30 mins.
IM1		D↔B	Regional line with a medium level of capacity saturation. Publication of pre-planned paths for regional passenger trains. The rest of the capacity was published as unplanned (no Rolling Planning capacity). Request for a path to access Service Facility F and capacity in service facility F should always be submitted as an ad hoc request, and allocation will be subject to confirmation of both entities.
IM1		B ↔ E ↔ A	Regional line with a low level of saturation, no pre-planning in the Capacity Supply phase needed, all capacity to be published as unplanned. Request for a path to access Terminal G and capacity in Terminal G should always be submitted as ATT or ad hoc request, and allocation will be subject to confirmation of both entities.

⁶ Defined by the IM. An applicant can submit certain parameters via CNAs, but the IM has to have the right to modify them if this would lead to better utilisation of capacity.



2) Traffic flows

Provide an analysis of rough demand forecast based on current traffic flows and known or possible adjustments in the future. A graphics with a reference timetable or based on a one/two-hour time window or frequency diagram may serve as a basis and also display the intended PSO traffic flows (see Annexe B).

For the purpose of multi-network harmonisation, provide an overview of the expected traffic flows at the common border points of the IM and involved IMs. A potential example is below, note that train brands or RU names shall not be used:

Network IM1	Network IM2
Border point 1	
<ul style="list-style-type: none"> Hourly long-distance passenger trains 	<ul style="list-style-type: none"> Sporadic operating national freight trains Hourly long-distance passenger trains
Border point 2	
<ul style="list-style-type: none"> Half-hourly regional service 4 Bandwidths of 3 hours for up to 6 national or international freight trains per bandwidth 	<ul style="list-style-type: none"> Hourly regional service (additional services in rush hour) 4 Bandwidths of 3 hours for up to 6 national or international freight trains per bandwidth
Border point 3	
<ul style="list-style-type: none"> Regular high-speed service (4 - 6 times a day) 2-hourly long-distance passenger trains Up to 10 international freight trains per day 	<ul style="list-style-type: none"> Regular high-speed service (4 - 6 times a day) Long-distance passenger trains operating sporadically Up to 10 international freight trains per day

In case the flows are not identical, make sure the reason is clearly explained, for instance, that a certain flow is only a national service with the destination at the border point).

Chapter 4:	<u>Validation</u> Provide the date and signatures of the higher-level representatives of the IM and all involved IMs (for instance, heads of capacity management departments) to take note of the final Capacity Strategy.
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Annex B: Examples of reference timetables and frequency diagrams

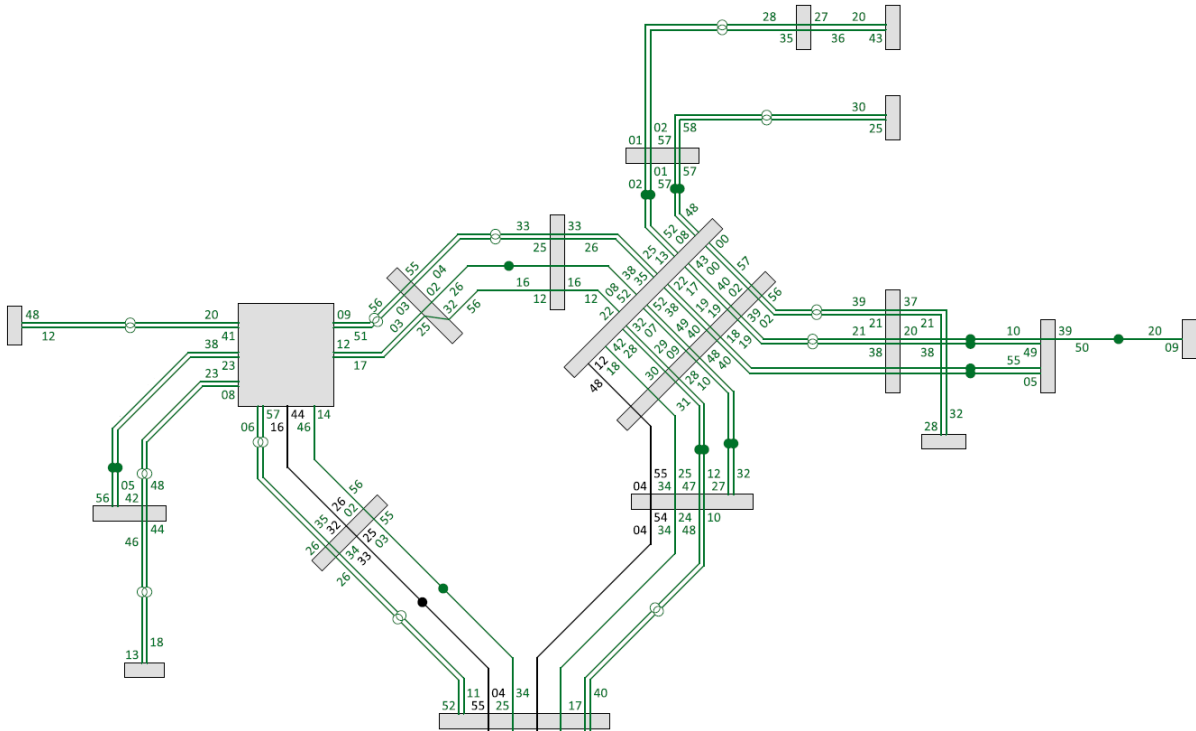


Figure 1: Example of a reference timetable – all PSO passenger traffic

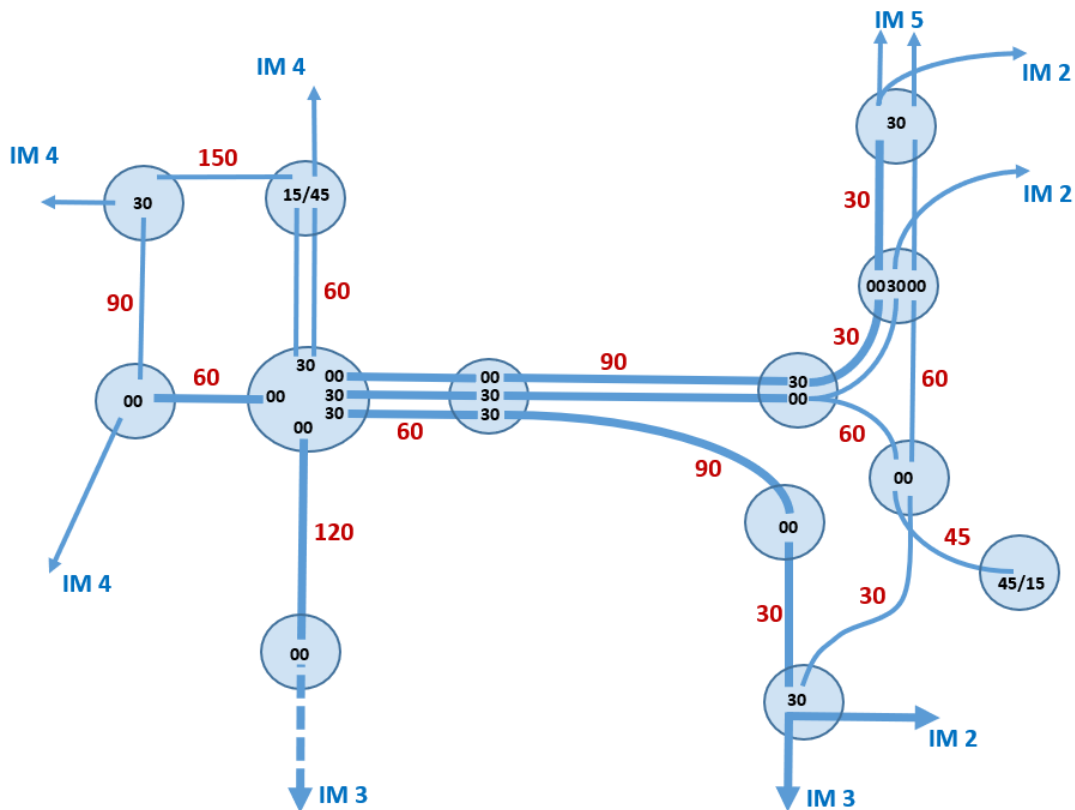


Figure 2: Example of a rough reference timetable – long-distance PSO passenger traffic

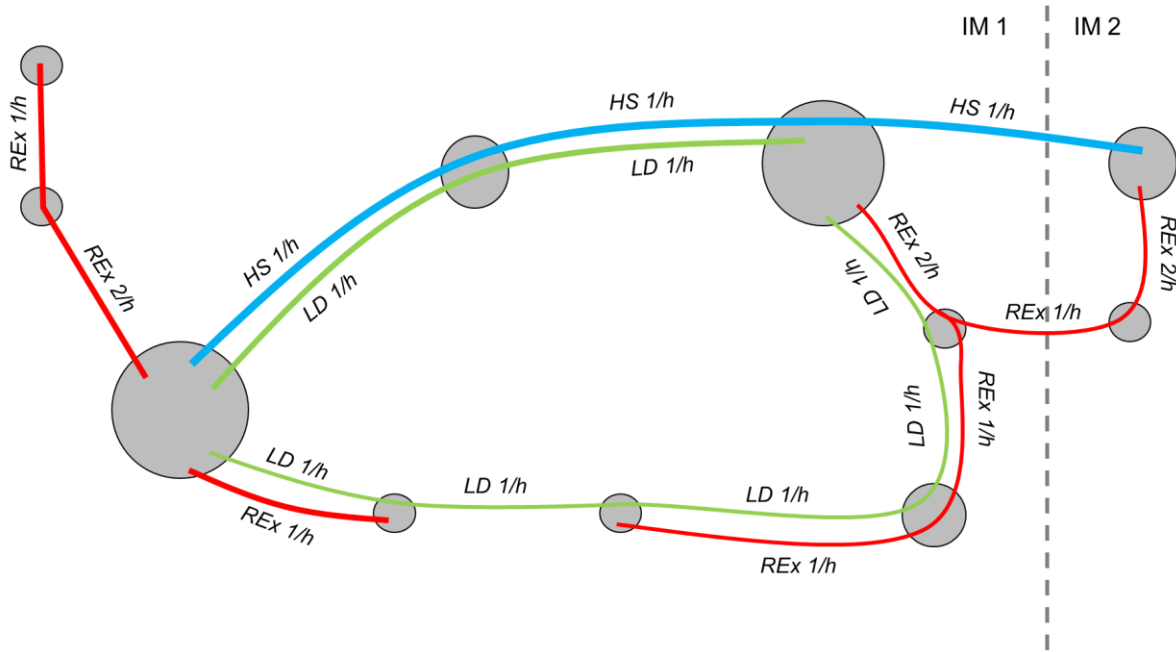


Figure 3: Example of frequency diagram – high-speed, long-distance, regional express traffic between major stations

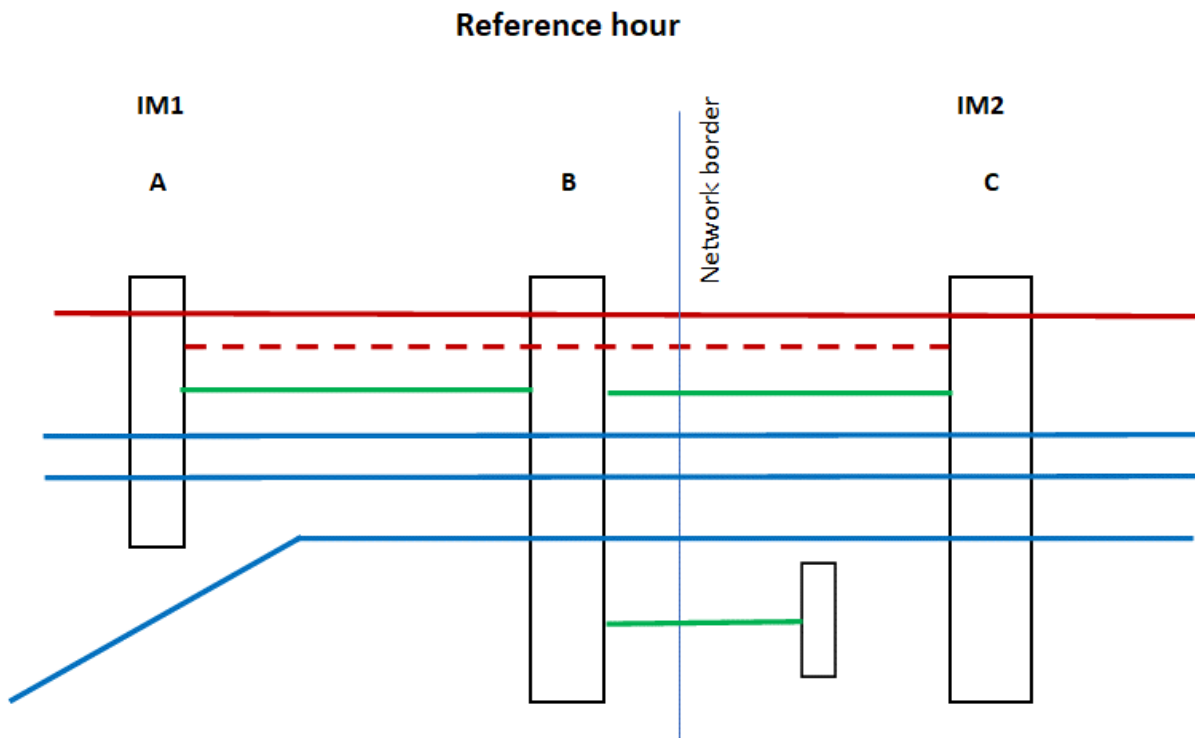


Figure 4: Example of a network graphic with a reference hour showing the regularly scheduled traffic categories

