TTR Fact Sheets

Complementary information document to Description of the Timetabling and Capacity Redesign Process

Version 3.0

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Developed under the TTR Programme

Funded by the European Union

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Version history

VERSION	RESPONSIBLE	DATE	CHANGES
0.1	Zsolt Ungvári Capacity Manager	2021-08-12	Creation of the initial version based on the: • Fact Sheet “Capacity Strategy” (V0.3) • Fact Sheet “Capacity Model with Capacity Partitioning” (V0.2) • Fact Sheet “Capacity Supply” (V0.4) • Fact Sheet “Feasibility Studies” (V0.3) • Fact Sheet “Annual Timetable” (V0.3) • Fact Sheet “Rolling Planning” (V0.3) • Fact Sheet “Ad hoc” (V0.2) • Fact Sheet: Changes after Path Allocation (Path Modification – PM / Alteration – PA / Optimisation - PO / Cancellation - PC) (V0.3)
0.2	Daniel Haltner	2021-08-27	Revision by the TTR Process Group
0.3	Ádám Kertai	2021-09-17	Inclusion of Fact Sheet for Temporary Capacity Restrictions
0.4	Ádám Kertai	2021-10-11	Inclusion of remarks agreed on the executive alignment between RNE and FTE
0.5	Ádám Kertai	2021-10-20	Inclusion of remarks concerning the TTR HBs agreed on the Sales and Timetabling Working Group
0.6	Ádám Kertai	2021-10-27	Inclusion of remarks from the Legal Matters Working Group
1.0	RNE General Assembly	2021-12-07	Approval of the version 0.6 by the RNE General Assembly on 7 December 2021
1.1	Ádám Kertai	2022-03-10	Deletion of the “TT25 Minimum Scope” column from the document
2.0	RNE General Assembly	2022-05-31	Approval of the version 1.1 by the RNE General Assembly on 31 May 2022
2.1	Alessandro Bianchi Timetabling Manager	2024-09-11	Added reference to RNE Handbooks
3.0	RNE General Assembly	2024-12-10	Approval of the version 3.0 by the RNE General Assembly on 10 December 2024

0. Preliminary note

This document is intended as a complementary information document to Description of the Timetabling and Capacity Redesign Process (TTR) as described by RNE. As neither legislation nor IT-systems are currently fully 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 documents 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 of RNE GA approval in May 2022.

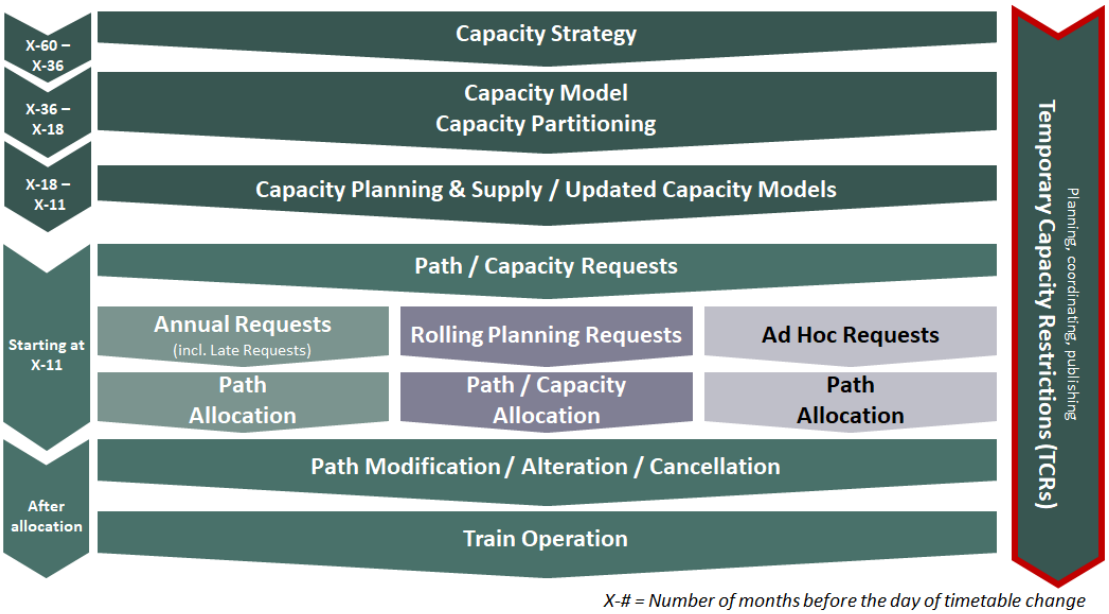
This document provides the target vision of the TTR process and its elements. For detailed and up-to-date procedures reflecting the current maturity of the project, please refer to the relevant RNE handbooks available at https://rne.eu/downloads/ under 'Capacity Management. Note that the process described in the Handbook does not yet fully reflect the targeted TTR elements.
The Proposal for a Regulation of the European Parliament and of the Council on the use of railway infrastructure capacity in the single European railway area builds to a good extent upon the TTR Project. Therefore, once the regulation will be in force, all the related TTR documents may be adjusted accordingly.

1. Introduction

The aim of the present document is to provide short, and easily understandable overviews on the main features of the components of the TTR process.

It is important to note that the exact process descriptions can be found in the:

- Description of the Timetabling and Capacity Redesign Process;
- Handbook on Procedures for Capacity Strategy;
- Handbooks on capacity management procedures.



Key elements of TTR Process

This document does not constitute a legal obligation for any stakeholder

2. Capacity Strategy

Short Description

An essential part of the TTR process is the advance planning, of which the first element is Capacity Strategy. The Capacity Strategy is a written document, which sets down the general principles to be used further in the capacity planning and capacity allocation process. Moreover, it includes the expected available capacity and first rough analysis of the future traffic flows.

Content of the Capacity Strategy

Geographical area
Description and/or visualisation of area for which this Capacity Strategy is applicable, and list all involved IMs, terminals, and service facilities.

Expected capacity of infrastructure in respective timetable period
Overview of available information on the expected usable permanent positive (additional) and also the expected permanent negative capacity impact.

Temporary Capacity Restrictions (TCRs)
Description of the principles and typology for the planning of TCRs along with available information about the expected crucial major impact TCRs.

Traffic planning principles and traffic flows
Description of the main principles for each line section, which will be used later in the planning of elements in the capacity models, including the principles for cooperation on capacity management[1] with terminals and service facilities. It should be accompanied with an analysis of rough demand forecast based on current traffic flows and known or possible adjustments in the future along with a common overview of the expected traffic flows at the joint border points of the IM and other IMs involved in the strategy.

Process Timeline (after Timetable period 2028 starting at 12 December 2027)
From 60 months until 36 months before the timetable change.

Process Deliverable (content and format)
At X-36, the final Capacity Strategy shall be published in the standardised format accompanied by the English translation. The English translation is already needed for the draft Capacity Strategy (harmonization with other IMs, involvement of other stakeholders). [2]

Involved stakeholders
- International leading entity
- Infrastructure Managers
- Applicants (RU & Non-RU)
- Ministries of Transport
- Region, local government, transport association, industry
- Terminal and service facility

Relevant Central IT Modules
IT not needed.

[1] *Capacity management (TT & TCR) is a business field in railways to ultimately balance capacity supply against capacity demand*
[2] *Specifically, from the perspective of the market opening.*

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g., different deadlines)
Geographical area	Description and/or visualisation of the geographical area for which this Capacity Strategy is applicable.	(At least one) Capacity Strategy covers each part of the complete network	Missing involvement of other IMs, relevant terminals, and service facilities.
Expected capacity of infrastructure in TT20xx	Available information on the expected usable permanent positive and negative capacity impacts.	(At least one) Capacity Strategy covers each part of the complete network	
Temporary Capacity Restrictions (TCRs)	Description of the principles and typology for the planning of TCRs along with available information about the expected crucial major impact TCRs.	(At least one) Capacity Strategy covers each part of the complete network	Different timelines for TCR planning. Different standards for TCR data. Unharmonised TCR principles on the cross-border lines and international re-routings.
Traffic planning principles and traffic flows	Description of the main principles for each railway line or section, which will be used later in the planning of elements in the capacity models and overview of the expected traffic flows in the network and at the common border points of the IMs.	(At least one) Capacity Strategy covers each part of the complete network	Unharmonised traffic planning principles and expected traffic flows on the cross-border lines.

3. Capacity Model with Capacity Partitioning

Short Description

Based on the principles defined in the Capacity Strategy, the IMs continue in the consolidation of all known and expected capacity volumes, the output of this work is visualised in Capacity Model. The aim of the Capacity Model is to show, harmonise and discuss more in detail the expected volume of capacity consumed by each market segment (commercial needs) and TCRs. Consequently, the Capacity Model consists of two parts:

- Traffic part - 24-hour overview reflecting market needs
- TCR part - overview of the capacity consumed by TCRs

Traffic part

IMs need to calculate the expected demand for capacity in the various market segments and display it in form of volumes in a 24-hour overview. The input for the Capacity Model can come from:

- information provided by the competent authorities in the capacity strategy phase,
- placed multi-annual Rolling Planning requests,
- data about train services operated in the current or previous year,
- estimation and own hypothesis of future market developments,
- capacity needs announcements,
- framework agreements.

It is advisable to start with only a 1-hour overview, which can be expanded to a 24-hour overview during the development of the capacity model.

TCR part

Notwithstanding Annex VII of Directive 2012/34/EU the, Capacity Model variants should be prepared for major and high impact TCR periods. Furthermore, the IM should publish and iteratively update the TCR duration overview from X-21 until X+12.

Capacity partitioning

After international harmonisation, the published final version of the capacity model serves for the so-called capacity partitioning. By applying this capacity partitioning procedure, the capacity of a origin/destination connection is set aside in the Capacity Model for dedicated purposes. As a minimum requirement, the capacity partitioning should be set for:

- passenger traffic
- freight traffic
- other
- TCR

It is also possible that the IMs prepare the portioning in a more detailed way, taking into consideration the product types:

- Annual requests for both passenger and freight (stable traffic)
- Rolling Planning requests
- Ad hoc requests

This will be the input for the Capacity Supply.

Process Timeline (after full implementation)

Starting 36 months before the timetable change after the capacity strategy phase, with intermediate steps and ending 11 months before the timetable change with the capacity planning phase"

Process Deliverable (content and format)

The following items should be included in a central system (currently ECMT, future capacity hub):

- Pressure points and bottlenecks are identified early with alternatives being provided
- 24-hour overviews of traffic volumes (at least standard non-TCR day)
- Information on Major, High impact TCRs
- Estimated volumes of capacity to be consumed by other TCRs and TCR Windows (over complete TT period)

Involved stakeholders

- International leading entity
- Infrastructure Managers
- Applicants (RU & non-RU)
- Ministries of Transport
- Region, local government, transport association, industry
- Terminal and service facility

Relevant Central IT Modules

- TCR
  To manage the coordination and inclusion of TCRs in the Capacity Model as capacity volumes
- Capacity Hub (ECMT)
  To collect and display the capacity volumes
- Messaging Module
  To connect the afore mentioned modules with each other, with national (legacy) IT and with central databases

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g. different deadlines)
Input for traffic part	Collect the future traffic needs from different sources in order to shape (incl. international harmonisation) the capacity partitioning according to market needs.	Possibility for applicants: • to submit their data via common forms, common portal and standardised interfaces Ability of the IMs to: • be able to receive input and exchange data via both national and international system – they are connected • detect and communicate inconsistencies in technical way	Different deadlines for CNA submission or feedback. Different standards for CNA and CNA feedback.
Input for TCR part	Collect the known capacity consumption and anticipate the not concretely known volume of capacity consumption due to TCRs in order to predict the capacity not useable for market needs. Includes international harmonisation.	Ability of the IMs to: • inform and negotiate TCRs with central TCR tool, bidirectionally (automatically) linked to national systems	Different timelines for TCR planning. Different standards for TCR data. Different grade of automatisation link between TCR tool and national IT (manual work may lead to unreliability and non-usage).
Capacity Partitioning	Evaluate the combination of future market needs and TCRs and create the capacity partitioning to allow a balance between different needs. Includes international harmonisation.	Ability of the IM to • evaluate the combined volumes of market needs and TCRs and identify bottle necks. Ability to partition the capacity at least into capacity for Annual Timetable, Rolling Planning, Ad hoc and TCR • automatically exchange with central platform (capacity hub) in both directions with automatic updates for all lines • harmonize with IMs in electronic format using central platform (capacity hub) for lines with international traffic • consult Applicants about the (preliminary) results using central platform (capacity hub) for all lines	Unharmonised capacity partitioning between different IMs (e.g. due to different grade of implementation, manual work may lead to unreliability and non-usage)

4. Capacity Supply (including capacity planning and TCR allocation)

Short Description

Based on the final Capacity Model, IMs continue in the planning of the capacity taking into account TCRs for every day of the timetable period, partitioned for dedicated purposes (volumes for passenger traffic, volumes for freight traffic and TCRs), but where needed also between various product types (Annual, Rolling Planning ad hoc). The output of this work is visualised in the Capacity Supply. The aim of the Capacity Supply is to show, harmonise between IMs and make available to Applicants the details on the useable capacity for each purpose (passenger, freight).

Commercial share (traffic part)

The supply consists of a 365-days capacity diagram, where object as pre-planned paths, system paths and or wider bandwidths with the number of available slots and/or empty space for tailor made paths are displayed. This shall also take into account which capacity is not available for booking (e.g., due to existing Framework Agreements or multi-annual RP commitments).

TCRs in Capacity Supply phase part

The aim of thorough TCR planning is to eliminate changes in the Capacity Models and minimise impact on allocated paths. Creating the Capacity Supply, all major, high and medium impact TCRs have to be included in this phase of the Capacity Supply development (X-11). As it is too early for exact details for minor impact or late TCRs, IMs can establish regular TCR Windows to be able to react. For days when the traffic will be affected by TCRs, IMs should jointly prepare harmonised sufficient Capacity Supply on diversionary lines. Alignment of the TCR Windows is also part of this harmonisation.

Updates after x-11

The Capacity Supply after its publication at X-11 shall be stable and accessible for all applicants. However, there are several triggers due to which the supply is in a certain term dynamic until X+12. As a general rule, this means that capacity which has not been used in a certain step (e.g., capacity originally foreseen for ATT but not booked until deadline for LPR) is made available to subsequent steps (e.g., to RP or ad-hoc).

Process Timeline (after full implementation)

Starting x-18 and ending x-11 (months before the timetable change) with intermediate steps, resulting into the phase Annual Timetable (ATT). Updates of the Capacity Supply remain possible.

Process Deliverable (content and format)

The following items should be included in a central system (currently ECMT, future capacity hub):

- 365-days 24-hour capacity diagrams showing paths, bandwidths, already allocated capacities, empty space and blocked space for TCRs, for every day of the timetable year
- Views on which capacity is available for which product (ATT, RP, ad-hoc)

Involved stakeholders

- International leading entity
- Infrastructure Managers
- Regulatory Bodies
- Terminal and service facility

Relevant Central IT Modules

- TCR: To manage the coordination and inclusion of TCRs in the Capacity Supply as blocks/negative capacity
- Capacity Hub (ECMT): To collect and display capacity diagrams, harmonise with other IMs
- Messaging Module: To connect the afore mentioned modules with each other, with national (legacy) IT and with central databases

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g. different deadlines)
Commercial Share	Create a 365-days – capacity diagram, where object as pre-planned paths, system paths, already allocated capacity (FA, RP) and or wider bandwidths with the number of available slots and/or empty space for tailor made paths are displayed; showing for which product (ATT, RP, ad hoc) these are available. Capacity already allocated shall not be shown as available.	Ability of the IM to: • construct the 365 days capacity diagrams in national systems. Separate the capacity according to purpose passenger and freight • safeguard high-quality capacity products for passenger and freight and make available the capacity according to product deadlines • have automated link between national systems and Capacity Hub for coordination with IMs and anytime for information on available capacity to Applicants taking into account bookings etc • consult Applications via Capacity Hub	In case of missing IT support high risk of IMs not being able to publish Capacity Supply nor to update it in a continuous flow. Very high volumes of manual input to be envisaged, and due to lack of sufficient human resources very difficult to achieve.
TCRs	All major, high and medium TCRs as well as buffer/TCR Windows for minor and late TCRs are planned and harmonized between IMs. Diversionary routes are planned where needed.	Ability of the IM to: • use automated link between national systems, TCR tool and Capacity Hub	If no automated upload of TCRs the Capacity supply will not be reliable due to high manual workload
Capacity Planning	Harmonize TCRs and available capacities amongst IMs. Construct the capacity diagrams taking into account TCRs and the commercial traffic needs. Attribute the capacity to the products (ATT, RP, ad-hoc). Notify which capacity is available for booking – taking into account already made allocations (Framework-Agreement, multiannual RP)	Ability of the IM to: • construct the 365 days capacity diagrams including TCRs. Separate according to purpose passenger and freight • safeguard capacity and make available according to product deadlines • have automated link between national systems, TCR tool and Capacity Hub for coordination with IMs and anytime for information on available capacity to applicants taking into account bookings etc.	Same remarks as above.
Updates after x-11	Update the Capacity Supply on capacity already allocated for subsequent process. Make available Capacity not used at the end of specific product deadlines to other products.	Ability of the IM to: • use automated link between national systems, TCR tool and Capacity Hub anytime for information on available capacity to applicants taking into account bookings etc.	In case of missing IT support high risk of IMs not being able to update Capacity Supply it in a continuous flow. Very high volumes of manual input to be envisaged, and due to lack of sufficient human resources very difficult to achieve.

5. Feasibility Studies

Short Description

Feasibility study is a service offered by IMs to Applicants if they wish to have a good understanding and indication on the manner how their paths could fit in the timetable before they place their official path requests. A response to a feasibility study is not binding for the IMs, therefore, feasibility study result is not a commitment to a path allocation.

Reasons for feasibility studies

Feasibility study can be requested due to various reasons:

- path study of a new traffic,
- the published Capacity Supply does not provide enough information to the Applicants,
- the published Capacity Supply does not coincide with the Applicants' demand.

Depending on the reason why the feasibility study is requested, the Applicants have the possibility to place a partwise or full feasibility requests.

The IMs may reject the feasibility study request, under the conditions defined in chapter 6.3.2 of the Feasibility Study Handbook, however, in such a case, the IMs should inform every other IM and Applicant within five calendar days from the date of the feasibility study request.

Process Timeline

From 15 months before the timetable change, until 12 months after the timetable change

Process Deliverable (content and format)

Coordinated Feasibility Study Result

Involved stakeholders

- Infrastructure Managers – incl. leading/involved IM
- Applicants (RU & non-RU) – incl. leading/involved applicant

Relevant Central IT Modules

- Capacity Hub (ECMT)
  To collect and display the capacity volumes
- Capacity Broker/Path Request Management (PCS)
  To handle and coordinate international feasibility studies
- Messaging Module
  To connect the before mentioned modules, with national (legacy) IT and with central databases

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g. different deadlines)
Partwise feasibility study	A feasibility study is requested from certain IMs only or just for a certain period of the train run. (not every involved IM).	Ability of the IMs: • to have an automated link between national systems, TCR tool, and Capacity Hub for coordination with IMs and anytime for information on the available capacity to Applicants • to receive, elaborate, exchange and coordinate feasibility study request with the Applicants and the neighbouring IM via a common platform in capacity broker • to have automated links between national systems and capacity broker Ability of the Applicants: • to request a feasibility study process from certain IMs for a certain period for traffic in Annual Timetable, recurrent ad hoc and rolling planning	• Different grades of automatisation link between national IT and capacity hub/capacity broker. • Different deadlines for submission of feedback.
Full feasibility study request	Feasibility study is requested from every involved IMs for the whole period of the train run.	Ability of the IMs: • to receive, elaborate, exchange and coordinate feasibility study request with the Applicants and the neighbouring IM via a common platform in capacity broker • to have automated links between national systems and capacity broker Ability of the Applicants: • to request a feasibility study process for traffic in Annual Timetable, recurrent ad hoc and rolling planning	• Different deadlines for submission or feedback.

6. Annual Timetable (ATT)

Short Description

The ATT provides a yearly opportunity to coordinate incompatible requests and find optimised solutions. In order to guarantee the robustness of a timetable, a precondition is to have a relevant proportion of trains with a static timetable. There are various market needs in the segments of passenger and freight traffic that are compliant with this prerequisite. Requests for capacity in ATT can be divided into:

- Annual requests placed on time (new path requests)
- Annual requests place after the path request deadline (late path requests)

The capacity for ATT is taken from the Capacity Supply phase.

Annual requests placed on time (new path requests)

Initial path requests for the upcoming ATT have to be placed at the latest at X-8.5, respecting already all known TCRs. Applicants are encouraged to request pre-constructed products (pre-planned paths and slots in bandwidths) published by IMs as Capacity Supply in the capacity diagram. Tailor-made requests are possible in ATT as well. In case of a conflict between several requests, IMs will coordinate these requests to try to ensure the best possible matching of all requirements. Applicants can place observations to the draft offer before the final offer is published at the final offer deadline.

Changes to initial path request

If an applicant wishes to change the initial path request (e.g., changed parameters, additional requirements) between path request deadline and final offer, IMs will treat these change requests depending on whether they are considered as minor or major. Exact differences between the categories are described in Annex 1.5 of the Description of the TTR Process.

Annual requests placed after the path request deadline (late path requests)

Applicants are given the possibility to request capacity in the ATT until X-2. However, only requests placed until X-8.5 are treated according to the standard ATT procedures, the rest (considered as late path requests) are only processed after the final offer deadline. The relevant treatment of such requests will be on “first come - first served” basis.

Process Timeline (after full implementation)

Starting X-11 with the possibility to place path requests and ending X-1 with the allocation of the last late path requests in ATT.

Process Deliverable (content and format)

The following items should be included in a central system (future capacity hub):

- Available capacity supply for ATT
- Already allocated capacity
- Allocated coordinated ATT paths

Involved stakeholders

- Leading international entity for capacity planning and management
- Infrastructure Managers – incl. leading/involved IM
- Applicants (RU & non-RU) – incl. leading applicant
- Regulatory Bodies
- Terminal and service facility

Relevant Central IT Modules

- Capacity Hub (ECMT)
- Capacity Broker/Path Request Management (PCS)
- Messaging Module: To connect the afore mentioned modules with each other, with national (legacy) IT and with central databases

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g., different deadlines)
Annual requests placed on time	Handling of path requests placed at X-8.5.	Ability of the IM to • handle path request according to new deadline X-8.5 via automated interface to Capacity Hub • automatically informs applicant if the desired timetable conflicts with other capacity objects on particular days and asks for subsidiary timetable • automatically informs applicant if path request cannot be handled in ATT capacity after coordination	Hybrid situation for adjacent networks (IM 1 with old deadline, IM 2 with new deadline). Nonmatching deadlines.
Subsequent changes	Applicants may change the initial request.	Ability of the IM to: • handle path request changes via automated interface to Capacity Hub	
Annual requests placed after the path request deadline	Handling of path requests placed between X-8.5 and X-2.	Ability of the IM to: • to handle late path request after new deadline x-8.5 via automated interface to Capacity Hub • automatically informs applicant if the desired timetable conflicts with other capacity objects on particular days and asks for subsidiary timetable • automatically informs applicant if path request cannot be handled in ATT capacity after coordination	Hybrid situation for adjacent networks (IM 1 with old deadline, IM 2 with new deadline). Nonmatching deadlines.

7. Rolling Planning

Short Description

A Rolling Planning is a new innovative type of path request which serves multi-annual demands irrespective of any timetable change and also serves the request for capacity needs not known (or not stable) at the deadlines for Annual Timetable (ATT) requests. In addition, Rolling Planning enables an Applicant to request capacity for the term of the contract, for up to 36 months. In today's situation, where applicants that are running trains on saturated infrastructure must fear that they receive a totally different slot in the following timetable year, despite a binding contract with their customer. Therefore, the Rolling Planning approach reduces this risk for the Applicants not receiving a similar path as in the previous timetable year(s).

Target group for Rolling Planning

The Rolling Planning product covers the following market needs:

- Production details for a new traffic that are relevant for the preparation of the path request are not known many months ahead of start of operation
- Very first day of operation does in most cases not correspond to a timetable change
- Applicant is interested in receiving a quick response (draft offer) in order to confirm the timetable towards its customer
- Applicant has a contract with its customer for a defined period and is therefore highly interested in requesting and receiving capacity for the entire term of the contract
- Although there is a contract, there is a need to modify the path during the term of the contract

Process Timeline

A Rolling Planning request is a path request placed between four and one months before the first day of operation for a maximum duration of 36 months. The answer to such a request is on the basis of 'first come – first served'.

Process Deliverable (content and format)

Allocated coordinated Rolling Planning path
Updated capacity supply (according to allocated or cancelled capacity)

Involved stakeholders

- International leading entity
- Infrastructure Managers – incl. leading/involved IM
- Applicants (RU & non-RU) – incl. leading Applicant
- Regulatory Bodies
- Terminal and service facilities

Relevant Central IT Modules

- Capacity Hub (ECMT)
  To collect and display the capacity volumes
- Capacity Broker/Path Request Management (PCS)
  To handle and coordinate international path request coordination system for path applicants
- Messaging Module
  To connect the before mentioned modules with each other, with national (legacy) IT and with central databases

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g. different deadlines)
Safeguarded capacity for Rolling Planning requests in Capacity Model	Capacity Model, where the available capacity is partitioned according to market needs, contains the minimum capacity safeguarded for Rolling Planning requests	Ability of the IM: • to partition capacity for Rolling Planning. • to automatically exchange with the central platform (capacity hub) in both directions with automatic updates for all lines. • to coordinate with IMs in electronic format using the central platform (capacity hub) for lines with international traffic. • to consult Applicants about the (preliminary) results using the central platform (capacity hub) for all lines.	Unharmonised capacity partitioning between different IMs (e.g., due to different grade of implementation, manual work may lead to unreliability and non-usage). Unstable capacity planning due to late TCRs.
Capacity for Rolling Planning requests in Capacity Supply	Publication of the Rolling Planning capacity in the Capacity Supply	Ability of the IM: • to safeguard pre-planned paths or bandwidths for requests. • to automatically exchange with the central platform (capacity broker) in both directions with automatic updates for all lines. • to coordinate with IMs in electronic format using the central platform (capacity hub) for lines with international traffic. • to consult Applicants about the (preliminary) results using the central platform (capacity hub) for all lines.	Unharmonised capacity supply between different IMs (e.g., due to different grade of implementation, manual work may lead to unreliability and non-usage). Connected capacity offered by some IMs as Rolling Planning and others as ad hoc.
Rolling Planning path request	Handling and elaborating Rolling Planning requests	Ability of the IM: • to receive, elaborate, exchange and coordinate Rolling Planning requests with the Applicants and the neighbouring IM via common platform in capacity broker. • Automated links between national systems and capacity broker.	Connected capacity offered by some IMs as Rolling Planning and others as ad hoc.
Multi-annual Rolling Planning request		Ability of the IM: • to receive, elaborate, exchange and coordinate Rolling Planning requests with the Applicants and the neighbouring IM for several TT periods • Automated links between national systems and capacity broker	Different implementation of Multi-annual RP requesting possibilities by the different IMs

8. Ad hoc

Short Description

Ad hoc requests refer to traffic for which the published capacity for Annual Timetable and Rolling Planning cannot be used (from X-2) or traffic requested in a very short notice (short-term ad hoc requested after M-1 for all remaining capacity).

A distinction is made between two types of Ad hoc traffic. On the one hand, requests for an individual, single path and on the other hand, requests for recurrently used paths.

Target group for Ad hoc traffic

The Ad hoc product covers the following market needs:

- Transport need for an extended period (shorter than a TT year), but the deadline for placing ATT Late path requests (X-2) has expired and the published Rolling Planning capacity does not correspond with the required path characteristics.
- Transport need for an individual, single train run in the current TT year but the published Rolling Planning capacity does not correspond with the required path characteristics.
- Customer has a one-time transport need at short notice (short-term ad hoc request).

Process Timeline

An ad hoc request is a path request placed after X-2 until shortly before operation for either an individual or recurrent train path, it can be placed for operation days within the current timetable year. The answer to such a request is on the basis of ‘first come – first served’.

Process Deliverable (content and format)

Allocated Harmonised Ad hoc path(s)
Updated Capacity Supply

Involved stakeholders

- International leading entity
- Infrastructure Managers – incl. leading/involved IM
- Applicants (RU & non-RU) – incl. leading applicant
- Regulatory Bodies
- Terminal and service facilities

Relevant Central IT Modules

- Capacity Hub (ECMT)
  To collect and display the capacity volumes
- Capacity Broker/Path Request Management (PCS)
  To handle and coordinate international path request coordination system for path applicants
- Messaging Module
  To connect the before mentioned modules with each other, with national (legacy) IT and with central databases

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g., different deadlines)
Safeguarded capacity for Ad hoc requests in Capacity Model (if applicable)	Capacity Model, where the available capacity is partitioned according to market needs, might contain the minimum capacity safeguarded for Ad hoc requests	Ability of the IM (only applicable if IM decides to safeguard capacity for Ad hoc requests): • to partition capacity for Ad hoc requests. • to automatically exchange with the central platform (capacity hub) in both directions with automatic updates for all lines. • to harmonize with IMs in electronic format using the central platform (capacity hub) for lines with international traffic.	Unharmonised capacity partitioning for Ad hoc traffic between different IMs (e.g., due to different interpretation of the market needs for Ad hoc traffic). Safeguarding of connected capacity by IMs to different products (ad hoc and Rolling Planning)
Ad hoc path request	Handling and elaborating Ad hoc requests	Ability of the IM: • to receive, elaborate, exchange and coordinate Ad hoc requests with the Applicants and the neighbouring IM via common platform in capacity broker. • Automated links between national systems and capacity broker.	Mixing of Rolling Planning and Ad hoc capacities and requests

9. Changes after Path Allocation (Path Modification PM / Alteration – PA / Optimisation – PO / Cancellation – PC)

Short Description

Although TTR aims at stability on allocated paths, there may be reasons for change by applicants and IMs:

- The freight and passenger markets require certain adoptions from **the applicants** to adapt to market changes in relation to already allocated capacities. This activity is the so-called "**Path Modification**" (PM). These may refer to one single running day, several days or all remaining days in a yearly timetable; it is possible to modify the whole path section or just a part of it. It applies to paths in a yearly timetable and to those booked using the short-term planning process as well.
  Two types of modifications should be recognised: major and minor modifications. In general, major modifications are changes in parameters of an allocated train path that have a substantial impact on the allocated timetable, therefore, making it impossible to respect the allocated train path.
  Requesting such change shall be harmonised by the involved RUs and subsequently by the affected IMs.
  Modification for multiannual Rolling Planning will have two steps: normal modification for the current timetable; subsequent timetable period: can be requested during the preparations for converting a slot into a path.

- Based on the path agreements, applicants can expect that an allocated path is available up to its operation. However, in several cases, it may be necessary for **infrastructure managers** and allocation bodies to alternate, adjust, replace or withdraw already allocated paths. This activity is the so-called "**Path Alteration**" (PA) for one or several running days. The need for path alteration shall be reduced to a minimum. The path alteration can also result to a situation where there is **no alternative available**, in such a case the affected running days are **withdrawn**. The IMs should set up joint procedures for the alterations to treat them in a harmonised way and agree on the operational details that have to be respected in all networks as for instance, the harmonised response time, acceptance timeline and allocation principles.

- The **Path Optimisation** (PO) process is a special case of the path alteration. The original path is still available for the train operation and active for the applicants holding the rights to this allocated path. The **IMs** trigger the path optimisation process to ensure the best possible matching of all path requests and or to increase the line capacity by timetable optimisation. The communication has to include the information that the process is driven by the optimisation and not by the fact that the original path is not available anymore. If no response is provided by the applicants in the time frame given by IMs, the optimised path offer is considered as rejected and the original path remains active and allocated.

- **Path Cancellation (PC):** An **applicant** may always cancel an allocated path. This path cancellation may refer to one single or more days. It is also possible to cancel the entire train run (all path sections) or just one or more sections of the train run (one path section). If more than one applicant is involved in the path sections, it may be possible for one of the involved applicants to keep its allocated path section and reuse it for another traffic with identical parameters. In such a case, the path modification request shall be placed (following the cancellation process for the not needed path sections) by the applicant that still wishes to use its path section for another train service.

Process Timeline (after full implementation)

- Path Modification, Path Cancellation, Path Optimisation: any time after allocation (earliest x-5.25) until the end of the timetable period (x+12)
- Path Alteration for minor and late TCRs: starting latest T-135 days and finalised latest T-106 for passenger and T-16 for freight traffic

Process Deliverable (content and format)

The following items should be included in a central system (future capacity hub):

- Updated allocated coordinated paths
- Updated capacity supply

Involved stakeholders

- International leading entity
- Infrastructure Managers – incl. leading/initiating/coordinating IM
- Applicants (RU & Non-RU) – incl. leading/initiating Applicant
- Regulatory Bodies
- Terminal and service facilities

Relevant Central IT Modules

- Capacity Hub (ECMT)
- Capacity Broker/Path Request Management (PCS)
- TCR tool
- Messaging Module: To connect the aforementioned modules with each other, with national (legacy) IT and with central databases

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g., different deadlines)
Path Modification, Path Cancellation	Applicants may ask for modification or cancellation of already allocated paths.	Ability of the IM to: • handle and harmonise modifications/ cancellations for all trains via automated interface to capacity broker.	Missing harmonisation of modification requests by RUs and offers by IMs.
Path Alteration	IMs may alter already allocated paths if the path commitment cannot be met (e.g due to minor/late TCR).	Ability of the IM to handle and harmonise alterations for minor and late TCRs: • latest by T-120 days for all passenger and • latest T-30 days for all freight trains Ability for the IM to handle and harmonise alterations in joint timeline: • for all trains via automated interface to capacity broker.	Different timelines for TCR planning Missing harmonisation of Alterations
Path Optimisation	IMs may propose for adapting already allocated paths to increase the line capacity.	Ability for the IM to handle and harmonise optimisations in joint timeline: • for all trains via automated interface to capacity broker.	Missing harmonisation of Optimisations

10. Temporary Capacity Restrictions – TCR

Short Description

Temporary capacity restrictions (hereinafter defined as TCRs) are necessary to keep the infrastructure and its equipment in good condition and to allow infrastructure development in accordance with market needs.

Annex VII of Directive 2012/34 (hereinafter defined as Annex VII) has set the basic elements to be considered in order to enable the implementation of a TCR process throughout Europe.

Moreover, out of Annex VII, also late TCRs should be incorporated into the TTR elements as it is defined in the TCR HB.

Based on this principle Annex VII has:

- Defined criteria into which TCRs should be clustered based on their impact on traffic;
- Set common deadlines for IMs to complete each process step for each type of TCR.

	Consecutive days	Impact on traffic (estimated traffic cancelled, re-routed, or replaced by other modes of transport)	First publication deadline according to Annex VII
Major impact TCR[1]	More than 30 consecutive days	More than 50% of the estimated traffic volume on a railway line per day	X-24
High impact TCR	More than 7 consecutive days	More than 30% of the estimated traffic volume on a railway line per day	
Medium impact TCR	7 consecutive days or less	More than 50% of the estimated traffic volume on a railway line per day	X-12
Minor impact TCR	unspecified	More than 10% of the estimated traffic volume on a railway line per day	X-4
Less than minor impact TCR	unspecified	Maximum 10% of the estimated traffic volume on a railway line per day	The IMs are recommended to comply with the Path Alteration requirements: ➢ *Passenger: T-4* ➢ *Freight: T-1*

Involved stakeholders

- International leading entity
- Infrastructure Managers – incl. leading/coordinating IM
- Applicants (RU & non-RU) – incl. leading Applicant
- Regulatory Bodies
- Terminals and Service Facilities

Process Timeline (after full implementation)

- TCR management (X-60 → X+12)

Process Deliverable (content and format)

The following items should be provided:

- **Capacity Strategy:** Basic principles for TCR planning
- **Capacity Model:** Capacity Model variants for major and high impact TCR periods
- **Capacity Supply:** Capacity Supply incorporating major, high and medium impact TCR periods
- **Final Offer:** Adjusted according to the available TCR information
- **Altered Path:** Coordinated alteration process in line with Annex VII.

Relevant Central IT Modules

- TCR Tool
- Capacity Hub (ECMT)

Element	Content	Full scope of implementation, including ***full IT***	Implausible implementation to be avoided (e.g., different deadlines)
Major impact TCRs	TCRs with a duration of more than 30 days affecting more than 50% of the estimated traffic volume per day	• Technical interface for automatic data exchange implemented on both national and central level • TCR Tool fully connected with the ECMT for the automatic update and visualization of TCRs • TCR planning principles defined in the Cap Strategy (X – 36) • Draft Capacity Model variants are prepared for Major and High impact TCR Periods (X-21) • Final Capacity Model variants are prepared for Major and High impact TCR periods (X-18) • Updated Capacity Model / Draft Capacity Supply incorporating Major and High impact TCRs (X-13.5) • Updated Capacity Model / Capacity Supply incorporating Major, High and Medium impact TCRs (X-11) • Final offer for ATT incorporating Major, High and Medium impact TCRs (X-5.5) • Final offer for LPR, RP and ad hoc incorporating Major, High, Medium and Minor impact TCRs (X-1) • ECMT can automatically create and update the TCR capacity consumption overview (X-30 - X+12) • ECMT can automatically calculate the impact of TCRs (X-30 - X+12) • ECMT can automatically cluster TCRs • (X-30 - X+12) • Ability for the IM to handle and harmonise alterations in joint timeline for all allocated paths via automated interface to capacity broker.	• Uncoordinated TCR planning principles among the IMs • Fluctuations available financial sources to execute works on rail infrastructure might lead to significant changes from first to second publication • Uncoordinated usage of the TCR Tool • Heterogeneous timing to implement technical interface at national level • Various interpretation of the path alteration process
High impact TCRs	TCRs with a duration of more than 7 days affecting more than 30% of the estimated traffic volume per day		
Medium Impact TCRs	TCRs with a duration of 7 days or less affecting more than 50% of the estimated traffic volume per day		
Minor impact TCRs	TCRs affecting more than 10% of the estimated traffic volume per day		
Less than minor impact TCRs	TCRs affecting max. 10% of the estimated traffic volume per day		