TTR
For Smart Capacity Management

CNA Pilot | Kick-Off IM-RU Phase

RNE RailNetEurope

FTE FORUM TRAIN EUROPE

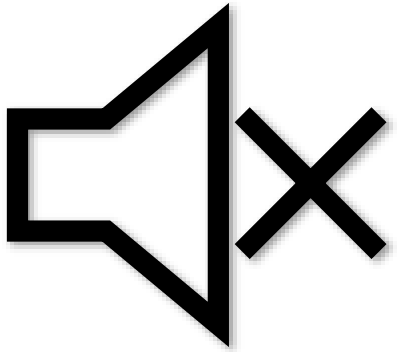
supported by ERFA

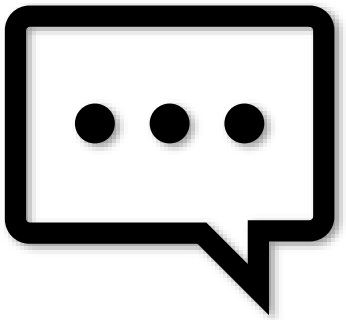
Online, 12 September 2022
CNA Pilot | Kick-Off IM-RU Phase

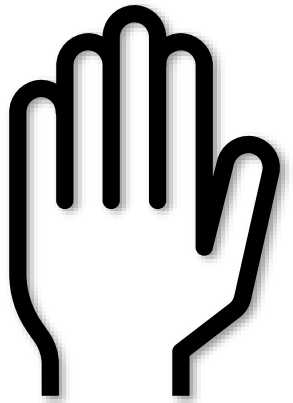
Agenda

Introduction to TTR Advance Planning and CNAs *(Zsolt Ungvári, RNE and Sebastian Naundorf, FTE)*	RNE RailNetEurope FTE FORUM TRAIN EUROPE
CNA Pilot Plans for TT2025 *(Josef Zitzler and Zsolt Ungvári, both RNE)*	RNE RailNetEurope
Information about ECMT IT system *(Aleksandar Markelic, RNE)*	RNE RailNetEurope
Experience from FTE CNA Pilot *(Sebastián Čarek, FTE, Christine Römermann, DB Cargo DE, Boris Ottmar, ZSSK)*	FTE FORUM TRAIN EUROPE DB Cargo ŽELEZNIČNÁ SPOLOČNOSŤ SLOVENSKO NÁRODNÝ DOPRAVCA
Experience from Pilot Amsterdam – Brussels *(Thomas Vanbeveren, Infrabel)*	INFRABEL ProRail
Q&A	

Code of Conduct

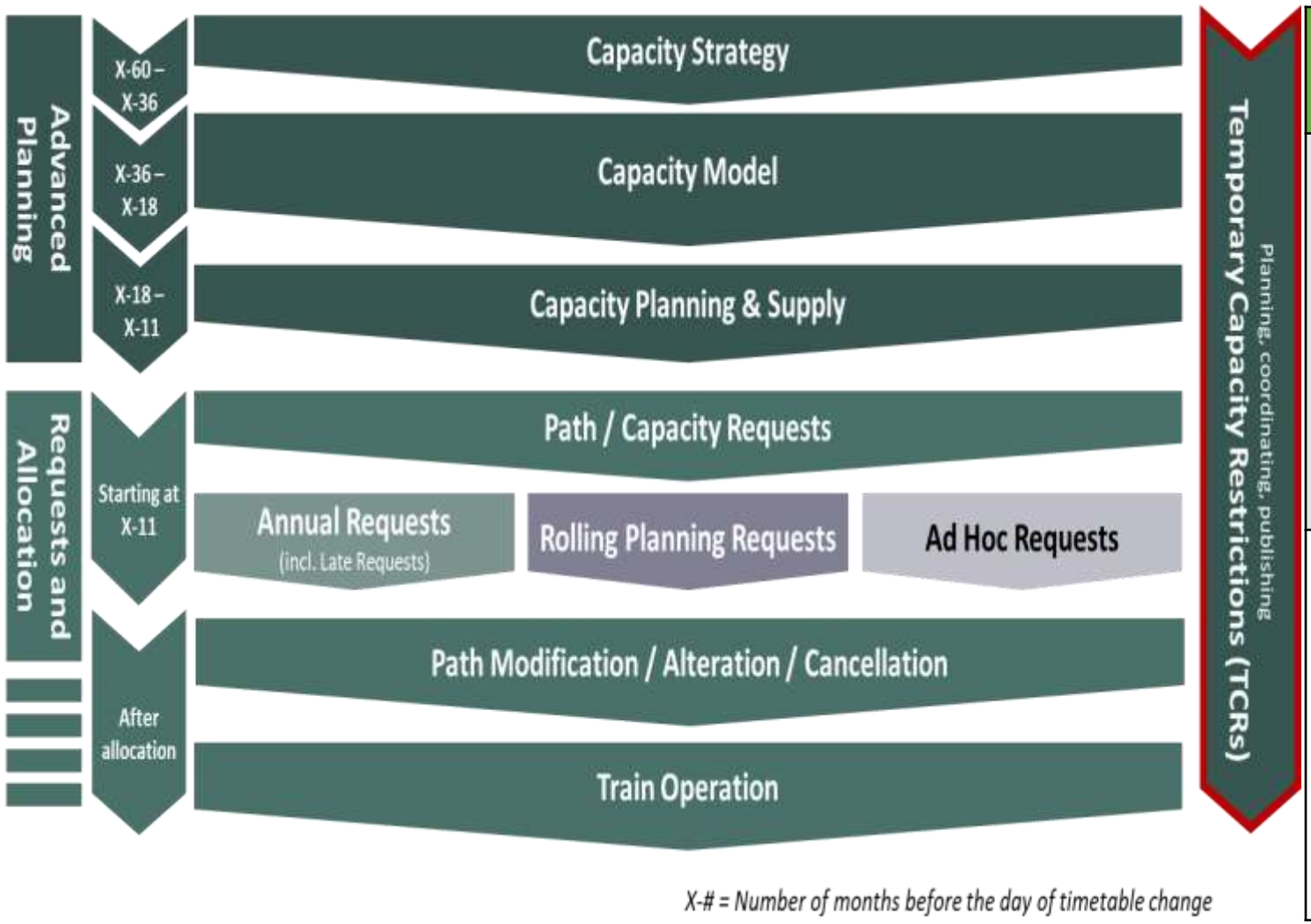






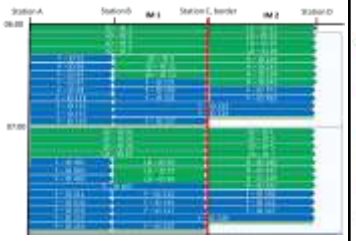
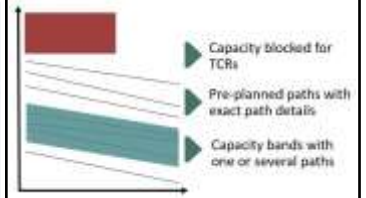
Introduction to TTR Advance Planning and Capacity Needs Announcements (CNA)

Key elements of TTR process – Focus on advanced planning



X-# = Number of months before the day of timetable change

Main focus

Capacity Strategy	Capacity Model	Capacity Supply
➢ Overview on the infra ➢ Description of main TCR and traffic planning principles ➢ Information on crucial Major impact TCRs	➢ Pre-planning of passenger & freight volumes ➢ Traffic solution during major & high impact TCRs.	➢ 365 days overview ➢ Capacity diagram, which displays pre-planned paths & bandwidths ➢ TCRs are also considered
		

Why do we need Capacity Models?

Because the CMs have numerous added values:

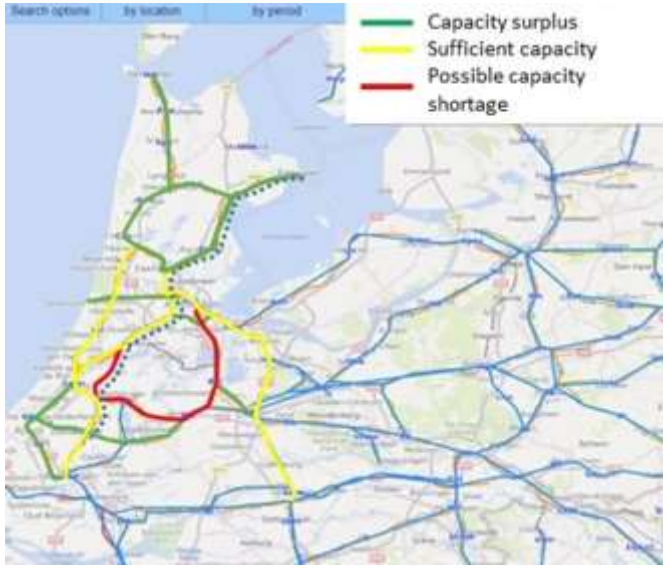
Harmonised cross-border capacity planning

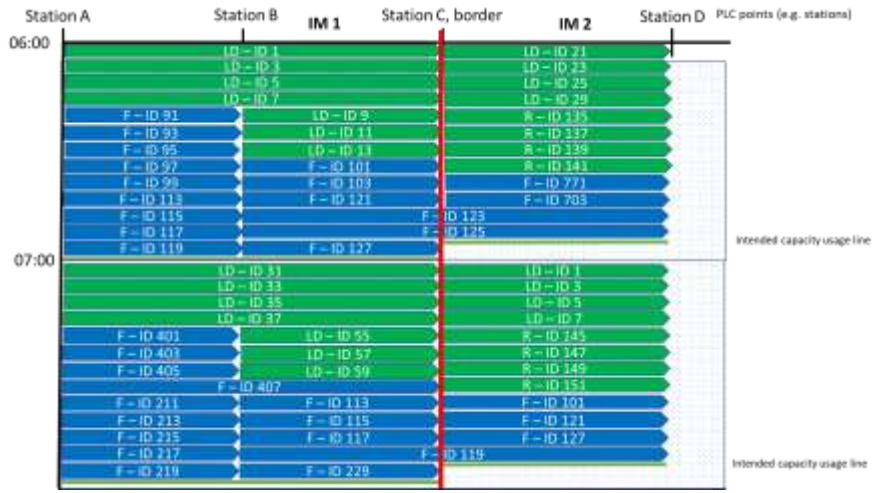
Overview on possible future capacity bottlenecks, nationally and cross-border

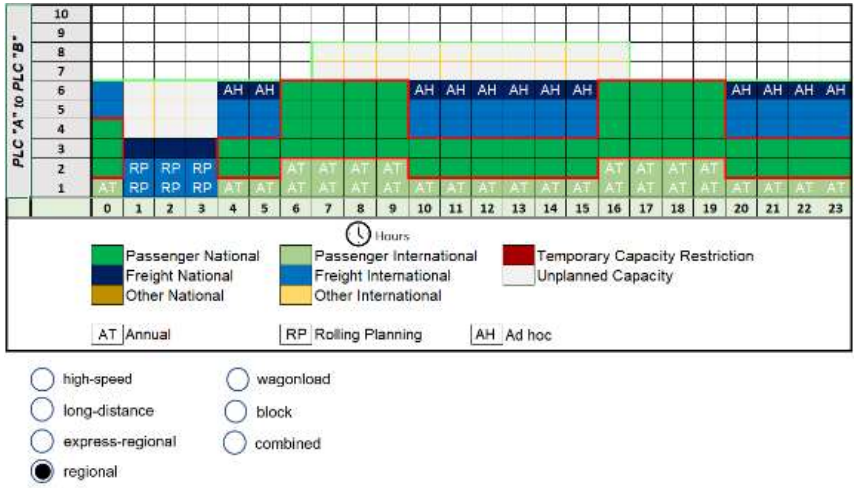
Overview on the pre-planned capacity volumes on European scale

Facilitated consultation of traffic solutions during different periods e.g. in case of Major & High impact TCRs

Capacity Model – Overviews on different levels







Network level overview	Line level overview	Section overview
General overview on capacity a very high level (e.g. capacity situation of a selected country)	Capacity situation on a selected line to facilitate the cross-border harmonisation and creation of variants (e.g. during TCR periods)	Capacity situation between two PLCs (practically between two neighbouring ones e.g. borders or between main national hubs)
Mostly used by: higher management levels, MoT, EC etc.	Mostly used by: IMs, Applicants	Mostly used by: Applicants

Capacity Model – General timeline

X-36	**Start of the Capacity Model phase**
X-26	IMs invite the Applicants to submit CNAs
X-24	**Deadline to submit the Capacity Needs Announcements**
X-23	The Applicants, who submitted CNA(s) are notified about the result of the analysis of the IMs (Acknowledged/To be updated/Not (fully) considered)
X-22.5	If the IMs ask for additional information on the CNA, then the concerned Applicants shall send the requested set of information to the IMs
X-22	The IMs conclude which CNAs will be taken into account during the creation of draft Capacity Models (Acknowledged/Not considered)
X-21	**Deadline to publish draft Capacity Models**
X-18	**Deadline to publish final Capacity Models / Capacity Partitioning**
X-12	*Deadline to publish the draft of updated Capacity Models (inclusion of volumes planned after X-18 e.g. additional ad hoc volumes)*
X-11	*Deadline to publish the final version of the updated Capacity Models*

Standard TTR process

Interim TTR process till the implementation of Capacity Supply

Overview on Capacity Supply

On top of minimum scope TT25

- Supply is presented as 365-day overview capacity diagram:
  - Pre-planned paths
  - Bandwidths with number of slots
  - TCRs considered
- Geographical scope would be aligned with the published Capacity Strategies & Capacity Models
- Harmonization with neighboring IMs forms an integral part of the process
- Acknowledged CNAs (of the Capacity Models) are foreseen to be traceable in the Capacity Supply
- Timeline for preparation
  - X-18 – X-11 to prepare and publish the Capacity Supply
  - X-11 – X-5 to updates according to timetabling phases (e.g. after construction ATT release)
  - M-150 days – M-30 days to update the Capacity Supply due to new minor TCRs (in line with the Path Alteration process)

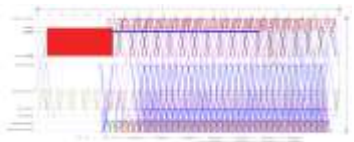
Disclaimer: This is an indicative overview based on the Long Process Description – Processes might be adapted depending on ongoing developments (I. e. the Capacity Supply Handbook)

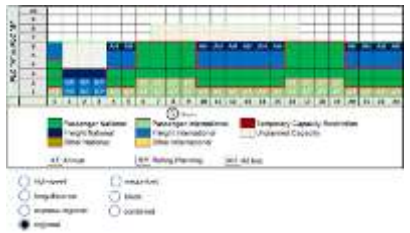
What are CNAs?

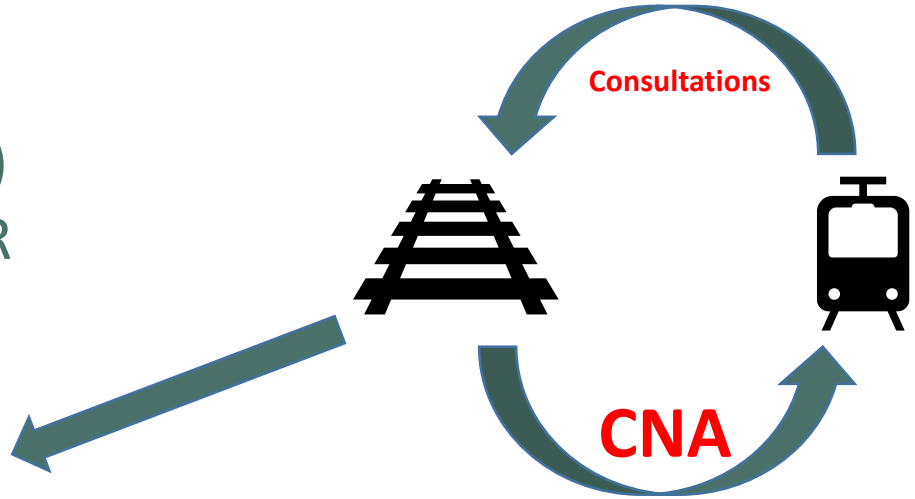
- CNAs are new mean by which applicants (RUs, non-RU applicants and others) can influence the advance capacity planning.
- Standardised information to IMs about some future capacity needs

In TTR CNAs should serve as:

- Input for Capacity Model
- Input for Capacity Supply (capacity products)
- Where applicable: input for handling the TCR

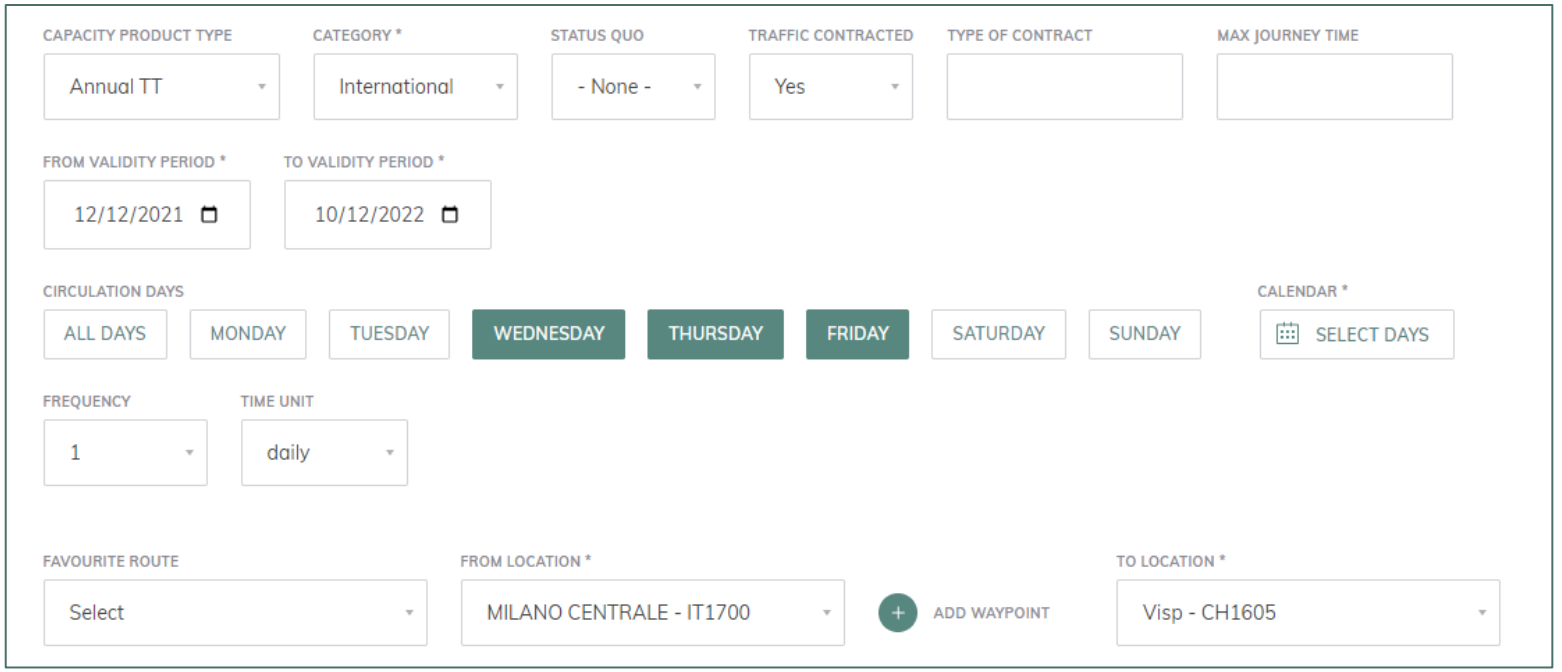


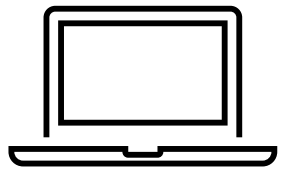




How does a CNA look like?

- Standardised data structure developed by IMs-RUs (to be tested)
- The submission can be:
  - general (expected train volumes per defined period)
  - detailed (wished future timetable)



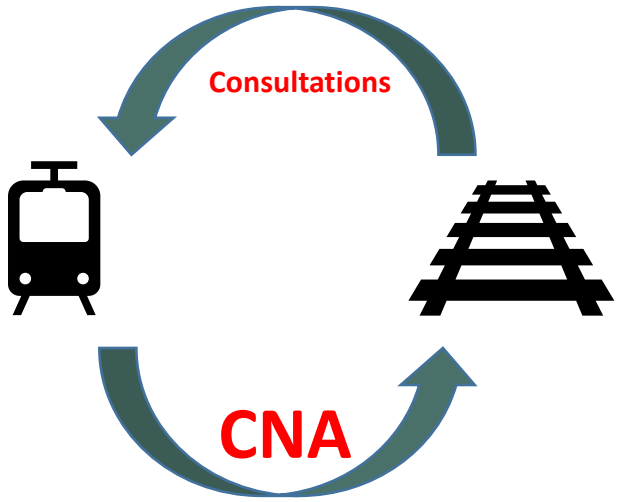


OR

TTR ECMT

CNA: more to know

- Submission of CNAs is not mandatory,
- In fully implemented TTR: IMs are processing CNAs through whole advance planning,
- CNA processing does not lead to capacity allocation,
- IMs can not guarantee that the Model/Supply will fully reflect the CNA wish, but: IMs are consulting applicants where the wish cannot be fully considered.
- Anyone can receive the path later on in path allocation (not limited to CNA submitter)



Added value of CNAs for IM planning

- Input for early detection of capacity shortage
  (giving time for IMs and applicants to find alternatives and counter-measures)

- Information about traffic flows that cannot be always predicted by historical data
  (passenger open-access, new wagonload concepts, some combined transport trains)

- Input for alternative traffic solutions for TCR periods.
- Information for IMs when will be the high-demand periods.
  (even if all needs cannot be satisfied in the Models – information for IM when to avoid small TCRs)

- Input for construction of Capacity Supply, without input the IMs might invest time in construction of products not fitting to market needs and potentially not requested
  (experience from the RFCs)

CNA Pilot Plans for TT2025

Scope of the CNA Pilot

	**Geographical scope:** Axis between Breclav – Tarvisio B. and Spielfeld – Graz – Bruck a. d. Mur	Capacity Model	X
		Capacity Supply	
	**Geographical scope:** all international lines with ProRail, DB Netz and CFL: border crossings Essen/Roosendaal, Meer/Hazeldonk, Visé/Eijsden (NL), Montzen/Aachen-West, Hergenrath/Aachen-Sud (DE), Gouvy/Troisvierges, Rodange/Aubange & Sterpeninch/Kleinbettingen (CFL-ACF). This includes the HSL connections between Brussels and Germany and Brussels and the Netherlands, and the main freight axes to Germany, Luxembourg and the Netherlands (all from Antwerp via RFC RALP and RFC NSM)	Capacity Model	X
		Capacity Supply	X
	**Geographical scope:** Dobova-Zagreb-Sid, Gyekenyes-Zagreb-Rijeka	Capacity Model	X
		Capacity Supply	

Scope of the CNA Pilot

CZ	**Geographical scope:** Břeclav – Bohumín, Bohumín - Čadca	Capacity Model	X
		Capacity Supply	
HU	**Geographical scope:** Border crossings, and main section connection to Capacity Strategy (the main lines including RFCs, TEN-T and suburban area).	Capacity Model	X
		Capacity Supply	
IT	**Geographical scope:** Luino-Gallarate, Domodossola and Chiasso-Milano Smistamento, Domodossola-Novara, Luino-Novara, Domodossola-Gallarate	Capacity Model	X
		Capacity Supply	
NL	**Geographical scope:** RFCs and main international lines	Capacity Model	X
		Capacity Supply	

Scope of the CNA Pilot

	**Geographical scope:** Bucuresti Baneasa - Palas	Capacity Model	X
		Capacity Supply	
	**Geographical scope:** The core network: lines currently in RFC 5 and their re-routings.	Capacity Model	X
		Capacity Supply	
	**Geographical scope:** Spielfeld-Strass – Maribor - Dobova	Capacity Model	X
		Capacity Supply	
	**Geographical scope:** Basel - Domodossola Basel - Luino Basel - Chiasso	Capacity Model	X
		Capacity Supply	

Scope of the CNA Pilot – ScanMed RFC

DE	**Geographical scope*:** Maschen - Padborg	Capacity Model	
		Capacity Supply*	X
DK	**Geographical scope:** Padborg-Peberholm* National CNA process and possible scope for Passenger RUs under consideration	Capacity Model	X
		Capacity Supply*	X
SE	**Geographical scope*:** Kornsjö – Gothenburg – Malmö – Peberholm, Stockholm – Mjölby – Malmö, Mjölby – Hallsberg	Capacity Model	
		Capacity Supply*	X
NO	**Geographical scope*:** Alnabru – Oslo	Capacity Model	
		Capacity Supply*	X

**Scope limited to the ScanMed RFC products (e.g. PaPs)*

CNA Pilot – Timeline (1)

- **17 October 2022:** IMs invite Applicants to submit CNAs into TTR ECMT European Capacity Management Tool

- **12 December 2022:** Last day for Applicants to submit CNAs into TTR ECMT European Capacity Management Tool

- **9 January 2023:** Notification about the results of first analysis of submitted CNAs (Acknowledged/To be updated/Not (fully) considered)

- **30 January 2023:** Update the CNAs (in case it was requested by the IM)

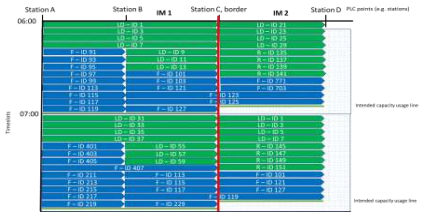
Consultation on not fully considered CNAs

CNA Pilot – Timeline (2)

- ✓ Intermediate workshop to assess the first findings and formulate recommendations regarding the next steps
- ➢ **13 February 2023:** Conclusion on the submitted CNAs (Acknowledged/Not considered)
- ➢ **13 March 2023:** Publication of draft Capacity Models. *Acknowledged CNAs considered during the creation*
- ✓ IM – Applicant consultation on those CNAs, which cannot be fully in considered in the final Capacity Model. Aim is to try to find alternative solutions.

Consultation on not fully considered CNAs

CNA Pilot – Timeline (3)



- **12 June 2023:** Publication of final Capacity Models
- **June 2023:** Online survey to collect information on gained experiences & proposals for the further development of Capacity Needs Announcement process

Capacity Needs Announcement pilot – Aims & Planned evaluation

Monitor the behaviour of Applicants and IMs during the pilot

Define KPIs, which can be smoothly generated by ECMT

Create short summaries about the results, which can be analysed together by the Applicants and IMs

Evaluation of behaviour of Applicants & IMs is planned to be based on the following:

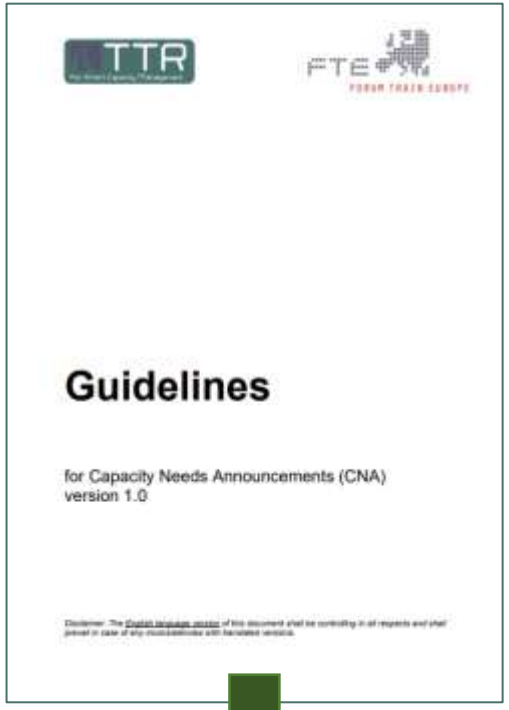
- KPIs would be measured after each milestone
- Measurement of the compliance with deadlines *(e.g. CNA is updated on time, if requested)*
- Analysis of results to measure the ratio of different outcomes *(acknowledged/to be updated/not (fully) considered)*

Detailed information on the planned KPIs can be found in the Annex of this presentation

Useful links

Link

EN



Link

EN DE FR IT CS

TTR ECMT
European Capacity Management Tool

Link

EN

Contact the IMs for more information

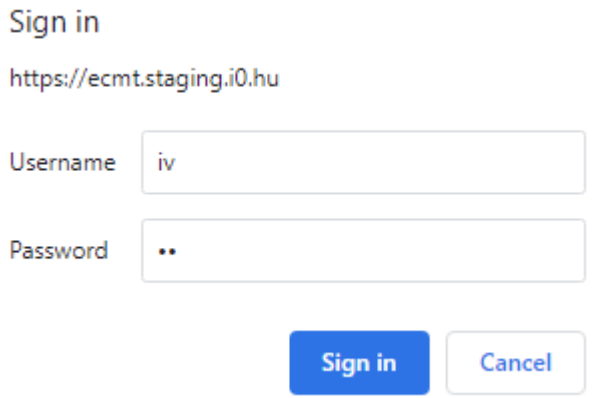
https://ttr.rne.eu/implementation/implementation-next-steps-contacts/

European Capacity Management Tool (ECMT)

Access to ECMT (until 10th of October 2022)

Open link
https://ecmt.staging.i0.hu/

Once a pop-up window shows up,
enter “iv” both as username and password



Access to ECMT (from 17th of October 2022 onwards)

Once the Pilot timeline officially starts at X-26 (**October 17th**), the submission of CNAs is possible in the **production environment of ECMT.**

Data/Information entered into staging environment prior 10th of October will be **migrated into production environment**. (Data inputs **given in staging after 10th of October WILL NOT** be moved into Production environment!)

Open link
https://ecmt-online.rne.eu/

TTR ECMT
European Capacity Management Tool

Visit as anonymous profile

or

Email address

Password

Remember me

Forgotten password

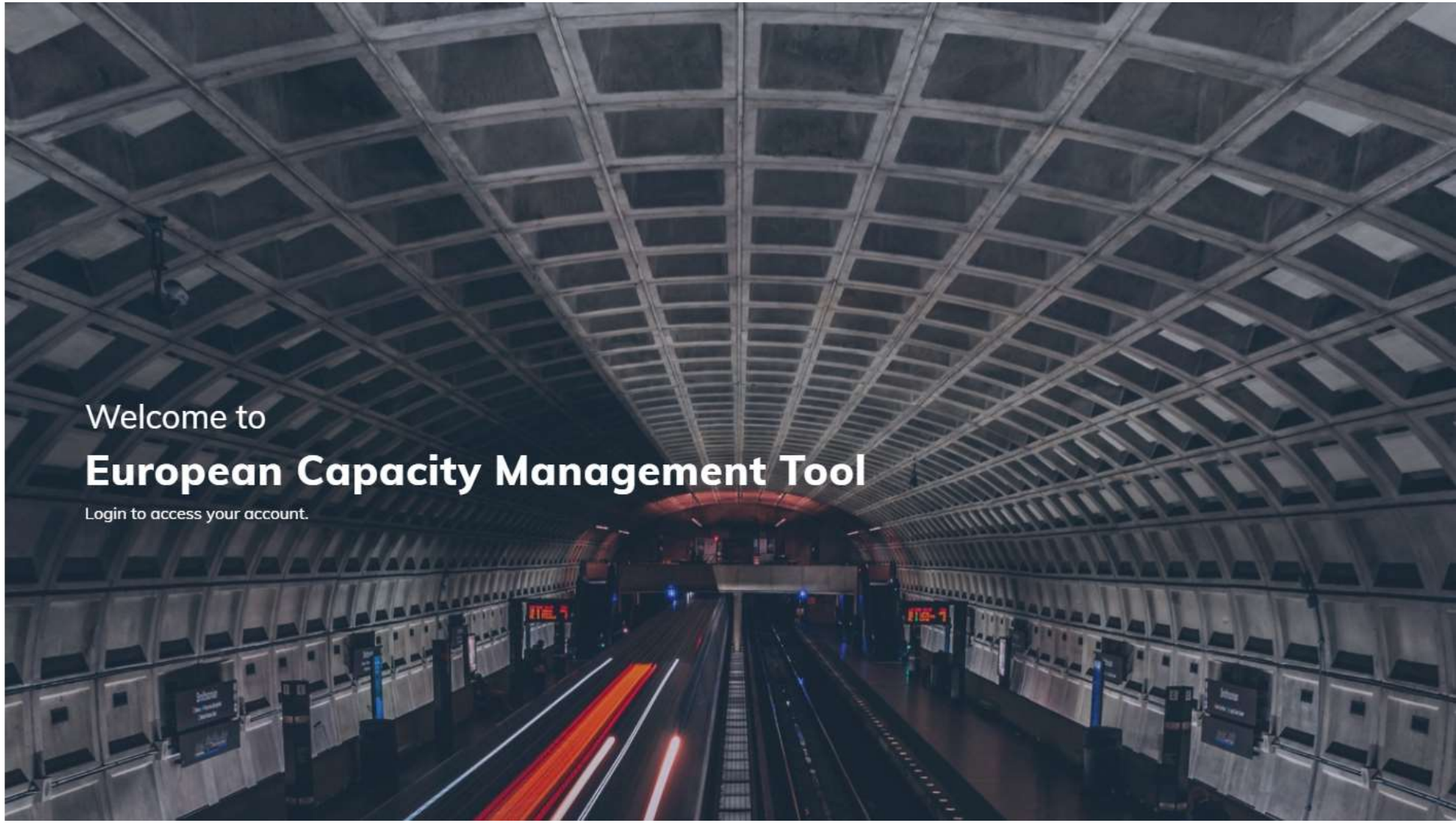
Log in

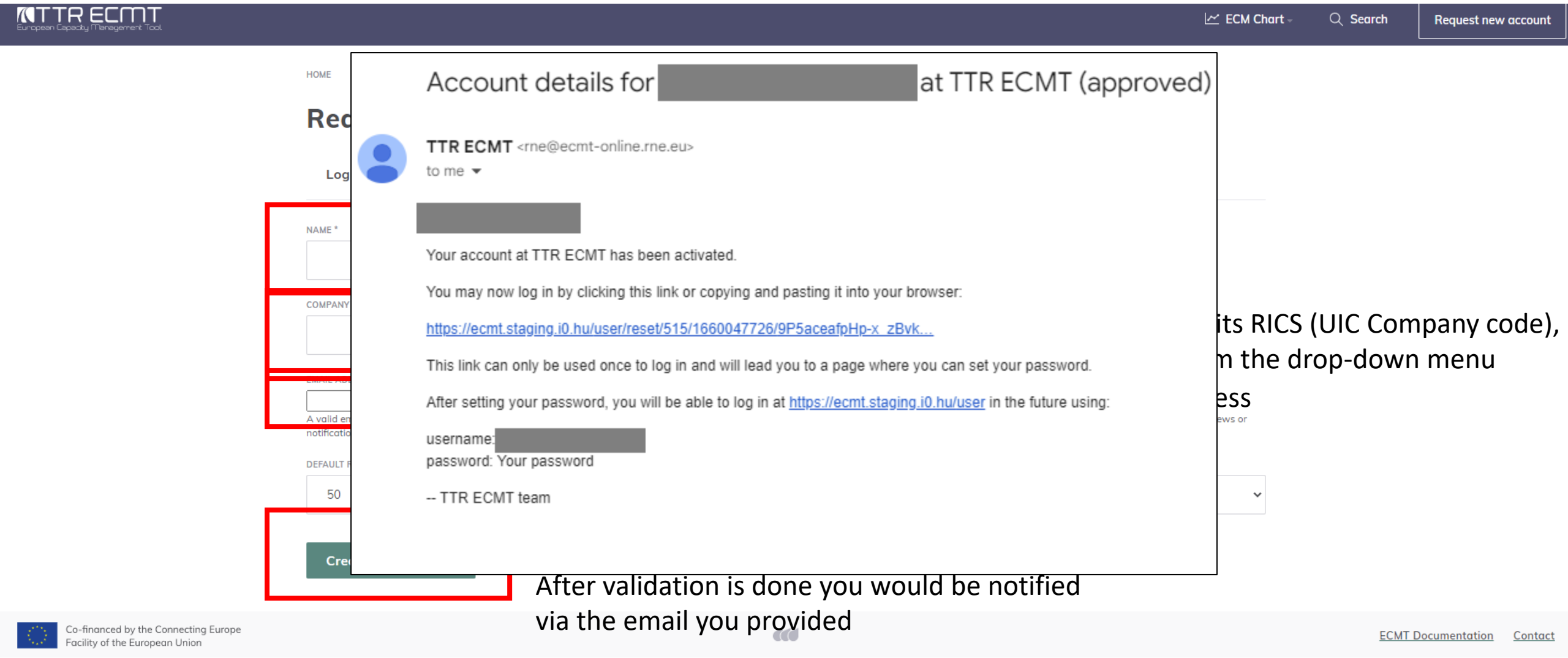
Request new account

Questions or comments?
Please contact ECMT support

ECMT Documentation

Co-financed by the Connecting Europe Facility of the European Union





After validation is done you would be notified via the email you provided

Capacity Model – feeding ECMT

1. Inclusion of the intended capacity usage line:
    - It should be calculated for every railway line to:
        - Detect pressuring points;
        - Have a clear picture on unplanned capacities;
        - To facilitate the estimation of shares of TCRs.

    The intended capacity usage line can be calculated based on the following inputs:

    (1) Railway line (mandatory) → should be calculated for every railway line;

    (2) Primary Location Code (PLC) level information (optional) → It is possible to also share PLC level information and calculate the intended capacity usage line on PLC level;

    (3) Period (mandatory) → It is possible to set one figure for the whole day or to set it for periods/hours.

    Calculation can be based on:

        - Historical data stemming from RNE TIS/national traffic management system;
        - Own estimation of the IM.

Give it a try!

Link

Question

What is your knowledge about CNAs now?

- I heard all for the first time in the meeting
- I was familiar to a certain extent
- Very limited new information (I knew most already)

BREAK (10min)

Experience: FTE CNA Pilot

(April – July 2022)

DB Cargo

ŽELEZNIČNÁ SPOLOČNOSŤ SLOVENSKO
NÁRODNÝ DOPRAVCA

FORUM TRAIN EUROPE

FTE CNA Pilot (RU-only phase)

Countries, where the CNAs were tested in the 1st phase

- FTE Plenary Assembly launched RU-only pilot (April-July 2022)

- The aim:
  - Test the process (on RU side)
  - Test the data structure and data availability
  - Define new the functional requirements for ECMT
  - Get realistic expectations for the second phase (RU-IM)

- FTE published manual and excel sheet after consultation with IMs
- **RUs created first CNAs**
- 14 RUs took part in the pilot
- Feedback and learning have been delivered to IM-RU bodies

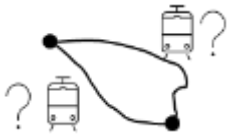
Experience from the pilot

DB Cargo

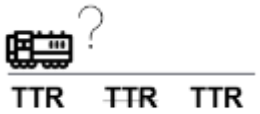
Current IT not suitable

Level of detail

Leading RU – submitter of whole CNA



Route depends on the partner,
which is not known at X-24



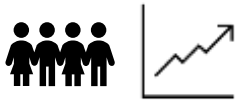
Hybrid situation – CNA and non-CNA line

ŽELEZNIČNÁ SPOLOČNOSŤ SLOVENSKO
NÁRODNÝ DOPRAVCA

Current IT not suitable:
manual work not handable

Benefits for CNAs submitters
should be clarified

The process cannot be closed at X-24
(market demand develops)



Experience from the pilot (summary)

Process / Implementation

- Only some market segments predictable at X-24
- Final/only deadline at X-24 not sustainable:
  world is changing → updates shall be possible

- Full CNA (Origin-Destination) submission by the leading applicant will be the frequent case

- Mixed RU feelings from the geographical scope for CNAs
  - How to handle CNAs where part of the journey out of scope?
  - Critical: DB Netz and SNCF R missing

- RU benefits for doing CNAs should be clearly defined and communicated

- CNA handling without IT not possible in larger scale (central + IM IT + RU IT)

IT and Technical

- Better documentation needed
- Data quality issues in databases of IMs
- Different days can have different parameters / timetable – currently not reflected
- Suggestion to change some data fields

Expectations for IM-RU phase

- High amount of **manual work** → will lead to not high number of CNAs for TT2025 and TT2026
- **Missing CNA lines** of DB Netz and SNCF R **might demotivate some RUs**
- **Availability of ECMT is needed** (at least for data upload, editing and submission)

Feasible approach for pilot TT2025:

- CNAs rather additional input for first Capacity Models/Supply
- The submitted CNAs investigated more thoroughly by the IM and consulted with the involved RUs (kind of early feasibility study)
- Options where to put focus:
  - New or significantly changed traffic concepts
  - Traffic running through a bottleneck/congestion
  - Wished alternative in case of a Major/High impact TCR (must be driven by IMs)

Experience: Amsterdam – Brussels Pilot

(ongoing)

Capacity Model conception: How?

Data input: 3 options

Historical data

- Paths requested (3 – 5 year period)
- Train runs (3 – 5 year period)

Evolution prognosis

- Socio-economic
- Historical trends

Applicant input

- National customer platforms
- RFC capacity needs survey

CNA status before 2022

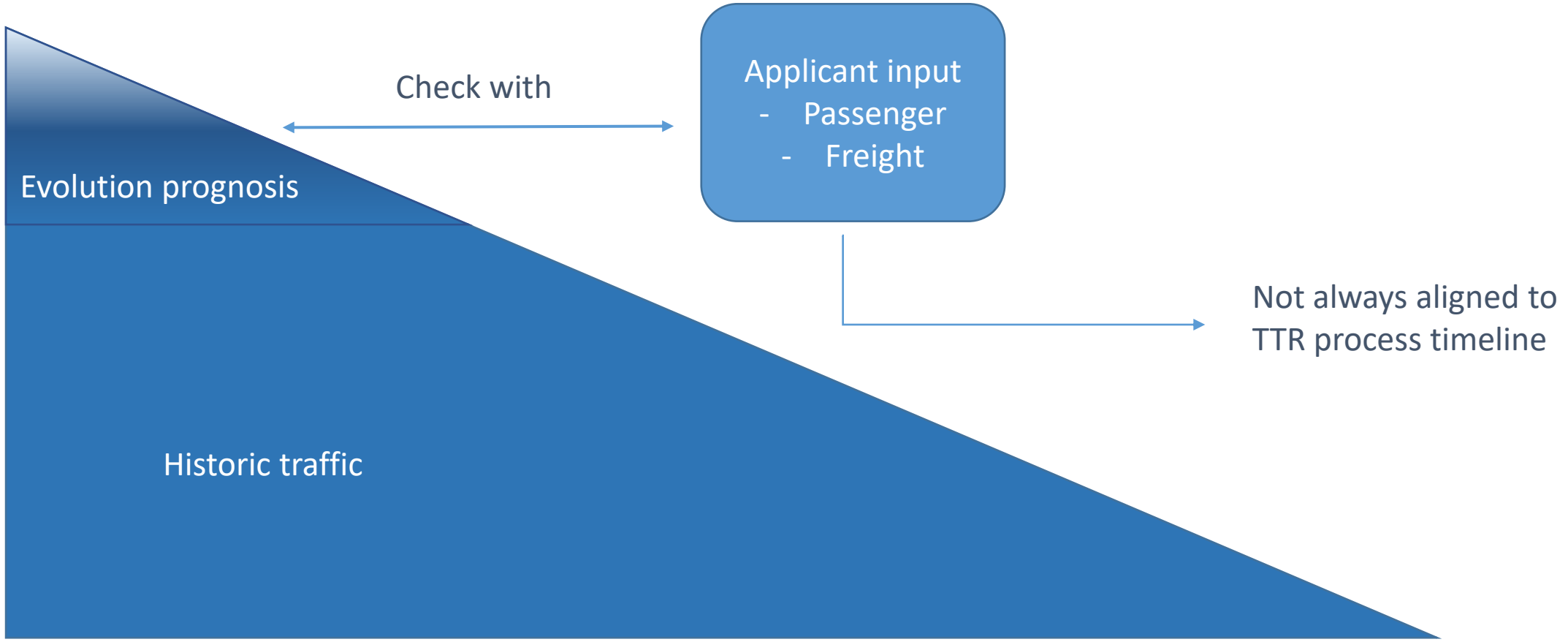
No agreed format

No agreed process

RU and IM wish to not initiate formal CNAs (as new process element)

- Passenger: existing exchanges are working fine
- Freight: too early in process, request to IMs to use historical data

Capacity model pilot: build up



Capacity Model conception: pro/con CNA

CNAs

Existing applicant input

- International standardisation
- One time input
- New process step
- (too) early in process (cfr. RP process)
- Direct information
- Considerable IT developments needed

- Existing – usual – processes
- Fragmented
- Workload (for international users)
- Direct information
- Customisation per market segment/client type

Conclusion for next steps

- On the pilot no formal CNA process was introduced yet because similar mechanisms exist and no formal TTR CNA process was ready
- Workload and framework are important aspects:
  - Quick and usable input/output
  - No ‘one-on-one’ link between a specific CNA and capacity in the model
    ➔ Info to enrich data set
  - CNAs are optional ➔ no discrimination if a RU does not provide CNAs

Cornerstones for future CNA pilots:

Look for the added value and the holes in the current existing process

Do not add red tape to a process which was intended to be simplified

Pilot next steps

CNA pilot is under consideration

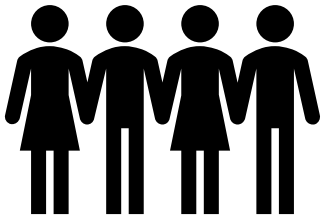
Important elements :

- IT development: ECMT dataflow CNAs not yet clear
- Client input ➔ what will be the work load


THANK YOU VERY MUCH FOR YOUR KIND ATTENTION!

Q&A

Now is your space!



Back up slides

Capacity Needs Announcement pilot – Planned evaluation

Timing	Measured party	Aim	KPIs and Analysis
After 12 December 2022 (X-24 in CM process)	Applicants & IMs	To monitor the submitted CNAs / IM	Overview: number of successfully submitted CNAs (per IM, per border)
After 9 January 2023 (X-23 in CM process)	IMs	To measure, whether the IMs notified the Applicants on time about the results of first analysis	Number of CNAs with the results of first analysis divided by submitted CNAs (per IM and per applicant)
After 9 January 2023 (X-23 in CM process)	IMs	To monitor the ratio of different outcomes after the first analysis grouped by IMs	Number of Acknowledged/To be updated/Not (fully) considered CNAs, divided by submitted CNAs (per IM and per border)
After 9 January 2023 (X-23 in CM process)	Applicants	To monitor the ratio of different outcomes after the first analysis grouped by Applicants	Number of Acknowledged/To be updated/Not (fully) considered CNAs divided by submitted CNAs (per Applicant)
After 30 January 2023 (X-22.5 in CM process)	Applicants	To monitor, whether the Applicants answered to the IMs on time in case it was requested by the IM	Number of updated CNAs divided by all “CNAs to be updated” (per Applicant)
After 13 March 2023 (X-21 in CM process)	IMs	To monitor the ratio of different outcomes after the conclusion on CNAs grouped by IMs	Number of Acknowledged/ Not considered CNAs divided by submitted CNAs (per IM and per border)

Disclaimer: the KPI value per an applicant will not be publicly available without permission from the applicant, to ensure confidentiality.

Capacity Needs Announcement pilot – Planned evaluation

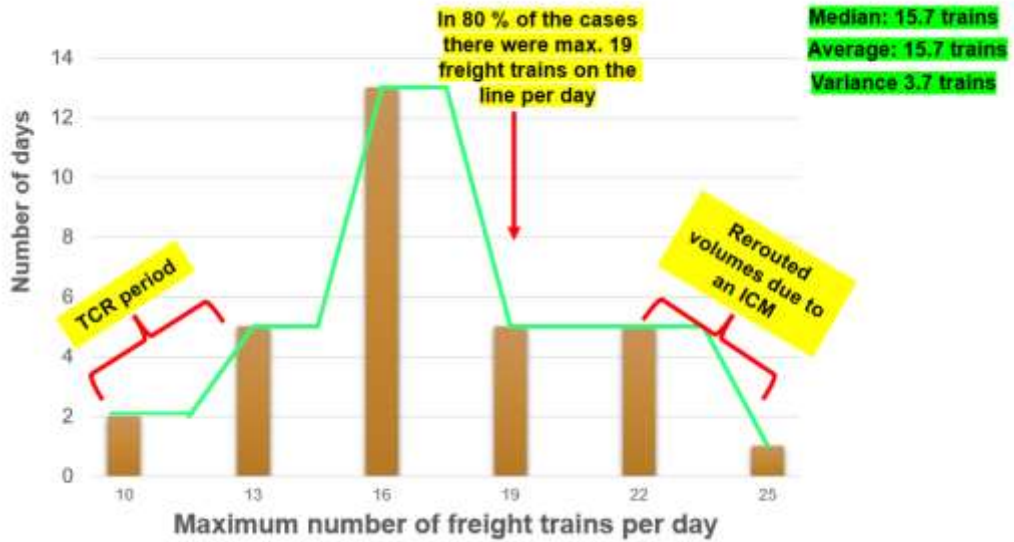
Timing	Measured party	Aim	KPI – definition
After 13 March 2023 (X-21 in CM process)	Applicants	To monitor the ratio of different outcomes after the conclusion on CNAs grouped by Applicants	Number of Acknowledged/ Not considered CNAs divided by submitted CNAs (per Applicant)
After 13 March 2023 (X-21 in CM process)	IMs	To monitor, whether all acknowledged CNAs are incorporated into the draft Capacity Model	Number of CNAs incorporated into the draft Capacity Model divided by all acknowledged CNAs (per IM)
After 13 March 2023 (X-21 in CM process)	IMs		Number of not fully considered CNAs in draft CM divided by submitted CNAs (per IM, per Applicant) Further monitoring of these CNAs: consulted (Yes/No), reasons for not incorporation.
After 12 June 2023 (X-18 in CM process)	IMs	To measure the amount of acknowledged CNAs, which could not be incorporated into the final Capacity Model (=consultations did not result in alternative solutions)	Number of CNAs incorporated into the final Capacity Model in relation to CNAs considered in the draft Capacity Model (per IM and per border)
After 12 June 2023 (X-18 in CM process)	IMs		Number of not fully considered CNAs in final CM divided by submitted CNAs (per IM, per Applicant) Further monitoring of these CNAs: consulted (Yes/No), reasons for not incorporation.

Disclaimer: the KPI value per an applicant will not be publicly available without permission from the applicant, to ensure confidentiality.

Capacity Model – Intended capacity usage line – Historical data

Intended capacity usage line: indicates the maximum number of trains, which can be accommodated without paying special attention on capacity / traffic management

The automatic calculation of the intended capacity usage is based on the bell curve theory.



The methodology of the model enables the IMs to avoid the extremes and to define the intended capacity usage line based on real data which can be later adjusted.

It is possible to plan volumes above the intended capacity line.

Capacity Model – feeding ECMT

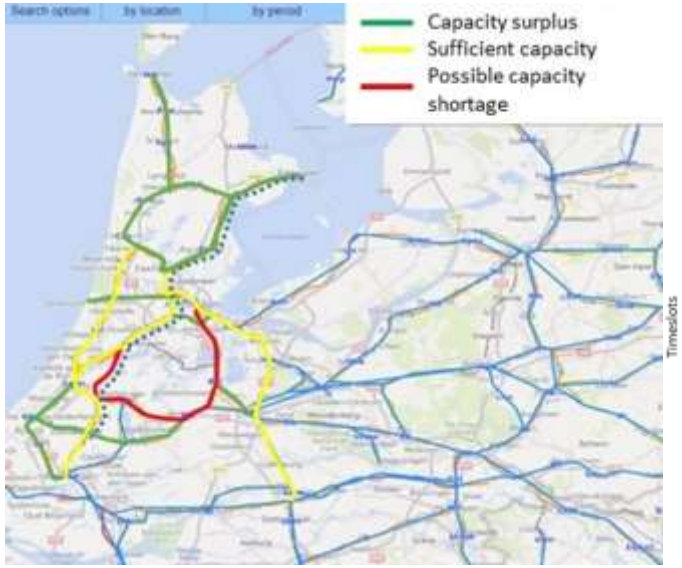
Import the data required for the Capacity Model:

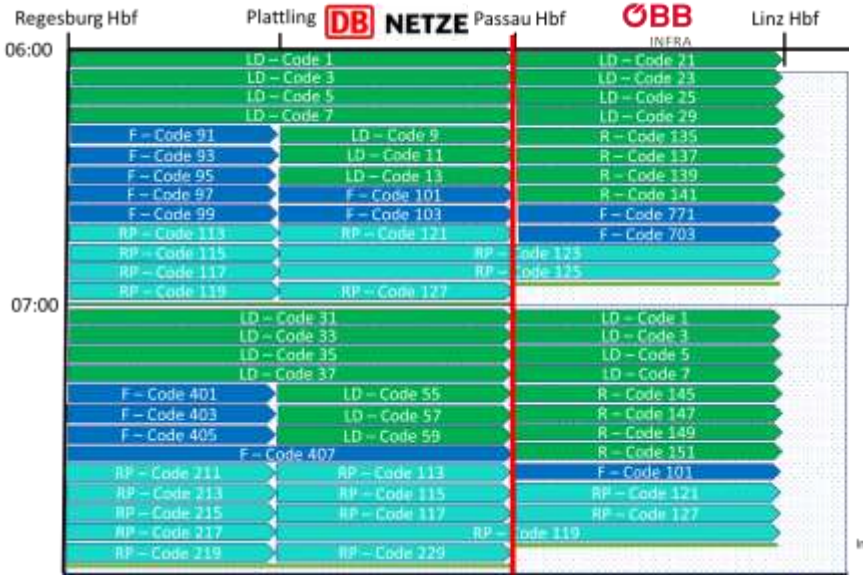
- The time data of the volumes should be uploaded into the ECMT on Primary Location Code (PLC) level for each railway line (min 1 point / line).

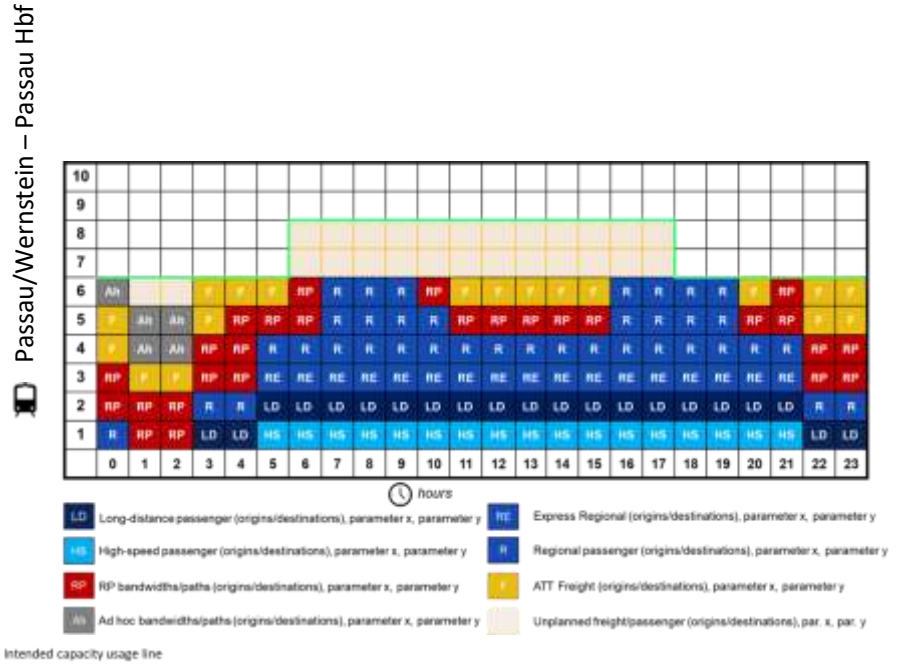
GROUPID	ObjectType	Company	Core	Variant	Timetable Year	OTN	Title	CMVariant	LeadRU	Coordinating IM	TrainType	TrafficType	CapacityProductType	Category	StatusQuo	Traffic Contracted Type Of Contract	Max Journey Time	Country Code ISO	Primary Location Code	Primary Location Name	Train Activity	ELA	ELD	ALA	ALD
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	12453	Dresden Hbf					17:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	12470	Dresden-Neustadt					17:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	12845	Elsterwerda					17:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	12267	Doberlug-Kirchhain					18:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	10851	Flughafen BER - Terminal 1-2					19:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	10947	Berlin Südkreuz					19:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	10871	Berlin Hbf					19:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	11005	Berlin Gesundbrunnen					19:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	18138	Oranienburg					20:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	17656	Neustrelitz Hbf					20:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	20784	Waren(Müritz)					20:00
55	CP	80	202111260836	00	2024	2172	IC - Dresden - Rostock	Standard non-TCR			Passenger	Long distance	ATT	National				DE	19035	Rostock Hbf				21:00	

ECMT shall automatically calculate the information regarding those PLCs, which are on the concerned line, but were not filled with information by the IMs.

Capacity Model – Options for visualisation



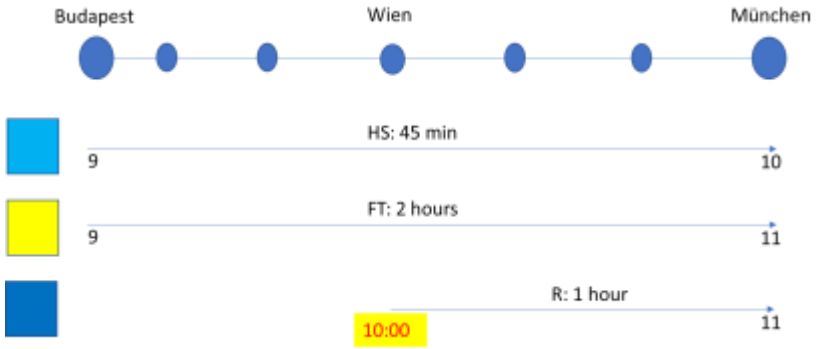


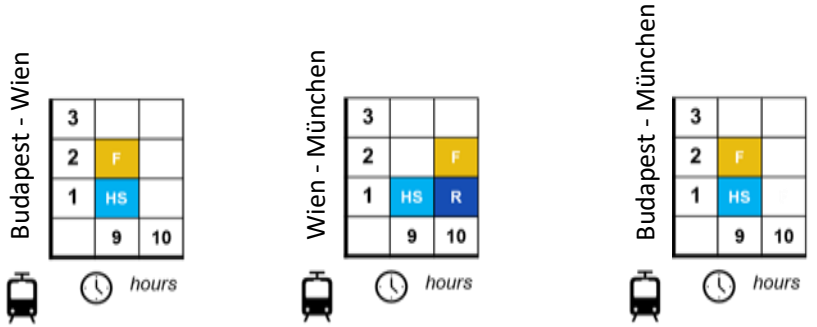


Network level overview	Line level overview	Section overview
General overview on capacity a very high level (e.g. capacity situation of a selected country)	Capacity situation on a selected line to facilitate the cross-border harmonisation and creation of variants (e.g. during TCR periods)	Capacity situation between two PLCs (practically between two neighbouring ones e.g. borders)
Mostly used by: higher management levels, MoT, EC etc.	Mostly used by: IMs, Applicants	Mostly used by: Applicants

Capacity Model – Generating the models (section level overview)

Tool generates the Capacity Models based on the requests of the users. The Capacity Model visualises the values, which are valid at the first planning point (PLC).





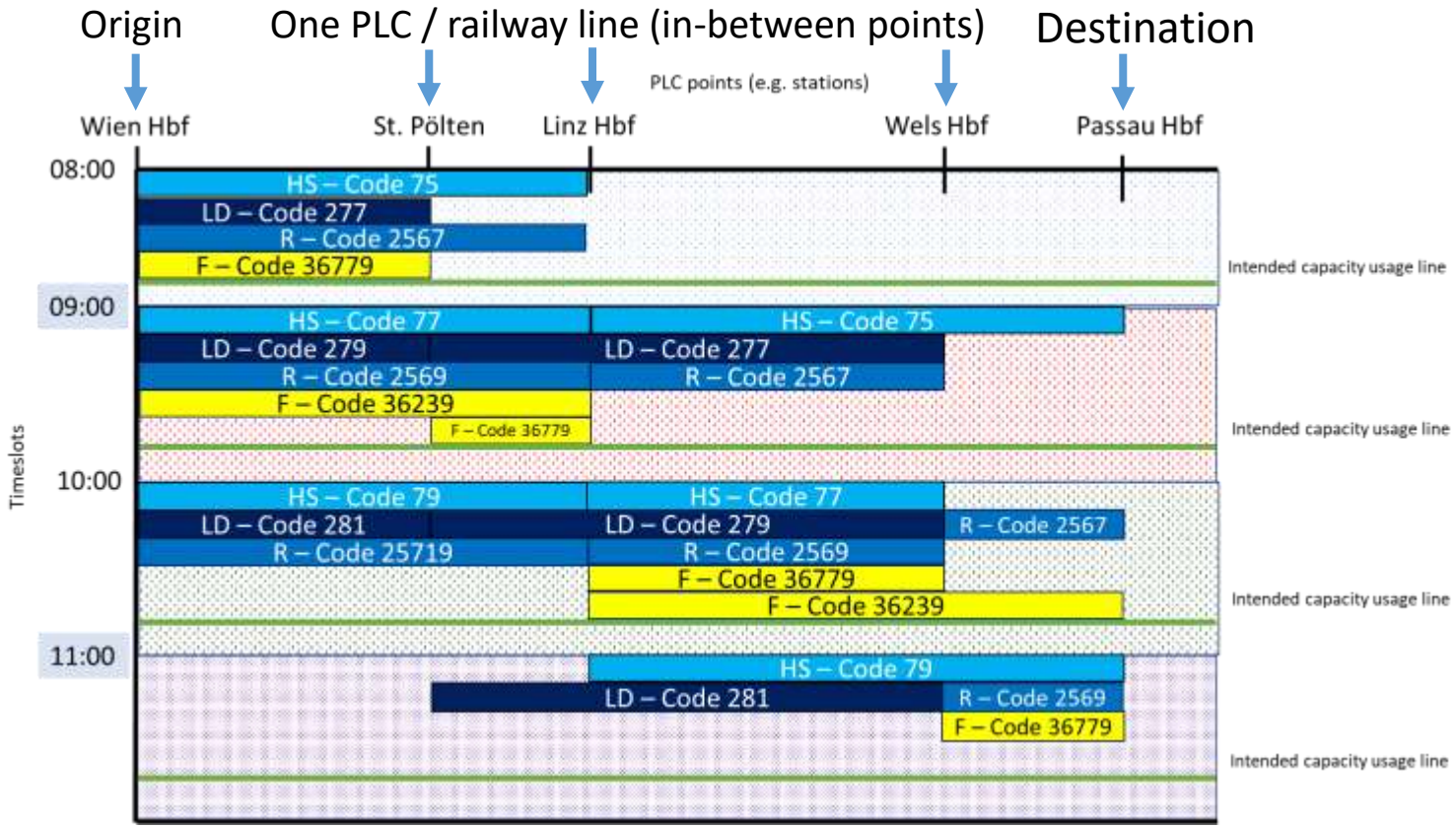
In case the model is generated for the volumes from point A to C, then it takes into account the time data, which is available at point A.

Therefore, the volumes from point B towards point C will not be considered during the generation of the Capacity Model between the points A and C.

Capacity Model – Generating the models (line level overview)

Tool generates the Capacity Models based on the requests of the users.

Following information shall be set by the user:



- ✓ Capacity Model analyses the situation at the defined measuring points (PLCs)
- ✓ Time information of volumes refers to hourly departures from PLCs

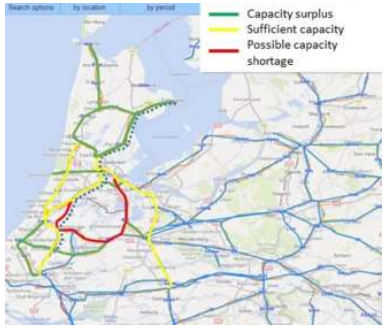
Capacity Model – Generating the models (network level overview)

Basis for the generation of network level overviews is the uploaded information on:

1. Traffic volumes & TCRs
2. Intended capacity usage line

Network level overview can be generated on:

- ✓ Hourly basis
- ✓ Daily basis



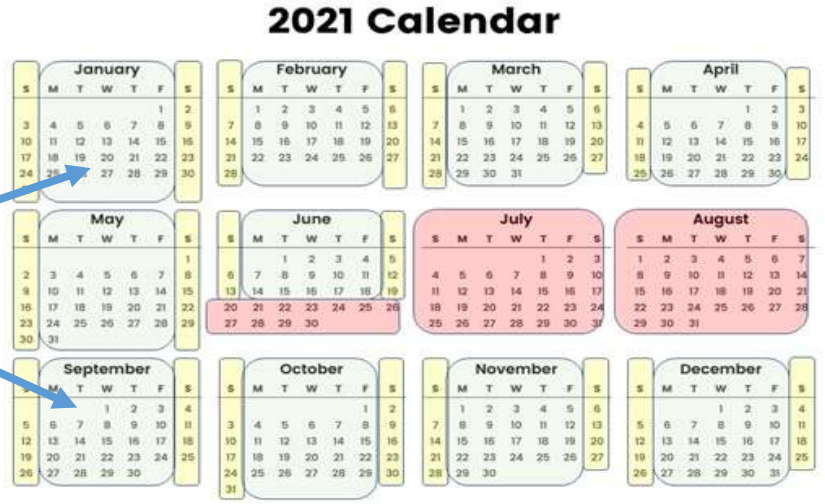
Categorisation of railway lines

Possible capacity shortage	Volume(s) can be found in the analysed period already above the intended capacity usage line
Sufficient capacity	The number of planned volumes is under the intended capacity usage line and consumes in case of ➢ hourly overview more than 80% ➢ daily overview more than 50% of the available capacities under the intended capacity usage line.
Capacity surplus	The number of planned volumes is under the intended capacity usage line and there is room for unplanned capacities to accommodate additional needs (volumes consume in case of hourly overview less than 80% / daily overview less than 50% of the available capacities under the intended capacity usage line).

Capacity Model – Calendar view

IMs will be able to create different CMs for different periods (in theory 365 variants) → users have to indicate for which day/period the Capacity Model should be generated.

ObjectType	Company	Core	Variant	Timetable Year	OTN	Title	CMVariant
CP	3032	202111260836	00	2024	4150	CM demo 1	Working days
CP	3032	202111260836	00	2024	4150	CM demo 1	Working days
CP	3032	202111260836	00	2024	4150	CM demo 1	Working days
CP	3032	202111260844	00	2024	4152	CM demo 2	Working days
CP	3032	202111260844	00	2024	4152	CM demo 2	Working days
CP	3032	202111260844	00	2024	4152	CM demo 2	Working days



Green marking: standard non-TCR variant for working days

Yellow marking: standard non-TCR variant for weekends

Red marking: TCR/TCR window variant

Capacity Model – Standard non-TCR working day

As minimum requirement the IMs shall define **at least one** standard non-TCR Capacity Model variant for the TT period.

The IMs shall strive to define this variant based **on a working day**, which represents the standard traffic situation as far as possible.

CAPACITY MODEL - CALENDAR VIEW - TT2024

RAILWAY LINE Dresden Hbf --> Berlin Hbf, SECTION Dresden Hbf --> Elsterwerda

2024	MON	TUE	WED	THU	FRI	SAT	SUN	WEEK
JAN								52
	1	2	3	4	5	6	7	1
	8	9	10	11	12	13	14	2
	15	16	17	18	19	20	21	3
	22	23	24	25	26	27	28	4
	29	30	31					5
FEB								
				1	2	3	4	5
	5	6	7	8	9	10	11	6
	12	13	14	15	16	17	18	7
	19	20	21	22	23	24	25	8
	26	27	28	29				9
MAR					1	2	3	9
	4	5	6	7	8	9	10	10
	11	12	13	14	15	16	17	11
	18	19	20	21	22	23	24	12
	25	26	27	28	29	30	31	13
APR								
	1	2	3	4	5	6	7	14
	8	9	10	11	12	13	14	15
	15	16	17	18	19	20	21	16
	22	23	24	25	26	27	28	17
	29	30						18
MAY								
			1	2	3	4	5	18
	6	7	8	9	10	11	12	19
	13	14	15	16	17	18	19	20
	20	21	22	23	24	25	26	21
	27	28	29	30	31			22
JUN						1	2	22
	3	4	5	6	7	8	9	23
	10	11	12	13	14	15	16	24
	17	18	19	20	21	22	23	25
	24	25	26	27	28	29	30	26

	MON	TUE	WED	THU	FRI	SAT	SUN	WEEK
JUL								
	1	2	3	4	5	6	7	27
	8	9	10	11	12	13	14	28
	15	16	17	18	19	20	21	29
	22	23	24	25	26	27	28	30
	29	30	31					31
AUG								
					1	2	3	4	31
	5	6	7	8	9	10	11	32
	12	13	14	15	16	17	18	33
	19	20	21	22	23	24	25	34
	26	27	28	29	30	31		35
SEP							1	35
	2	3	4	5	6	7	8	36
	9	10	11	12	13	14	15	37
	16	17	18	19	20	21	22	38
	23	24	25	26	27	28	29	39
	30							40
OCT								
		1	2	3	4	5	6	40
	7	8	9	10	11	12	13	41
	14	15	16	17	18	19	20	42
	21	22	23	24	25	26	27	43
	28	29	30	31				44
NOV								
					1	2	3	44
	4	5	6	7	8	9	10	45
	11	12	13	14	15	16	17	46
	18	19	20	21	22	23	24	47
	25	26	27	28	29	30		48
DEC							1	48
	2	3	4	5	6	7	8	49
	9	10	11	12	13	14	15	50
	16	17	18	19	20	21	22	51
	23	24	25	26	27	28	29	52
	30	31						1

Capacity Model variant

Non-TCR standard day for TT2024

15 December 00:01 Start of the timetable 2025

Capacity Model – Variants for particular periods

The IMs can create further variants in order to better reflect to the **different traffic needs of various periods**

Particular days of the week

Weekends

School holidays

CAPACITY MODEL - CALENDAR VIEW - TT2024

RAILWAY LINE Dresden Hbf --> Berlin Hbf, SECTION Dresden Hbf --> Elsterwerda

2024	MON	TUE	WED	THU	FRI	SAT	SUN	WEEK
JAN								52
	1	2	3	4	5	6	7	1
	8	9	10	11	12	13	14	2
	15	16	17	18	19	20	21	3
	22	23	24	25	26	27	28	4
	29	30	31					5
FEB								
				1	2	3	4	5
	5	6	7	8	9	10	11	6
	12	13	14	15	16	17	18	7
	19	20	21	22	23	24	25	8
	26	27	28	29				9
MAR					1	2	3	9
	4	5	6	7	8	9	10	10
	11	12	13	14	15	16	17	11
	18	19	20	21	22	23	24	12
	25	26	27	28	29	30	31	13
APR								
	1	2	3	4	5	6	7	14
	8	9	10	11	12	13	14	15
	15	16	17	18	19	20	21	16
	22	23	24	25	26	27	28	17
	29	30						18
MAY								
			1	2	3	4	5	18
	6	7	8	9	10	11	12	19
	13	14	15	16	17	18	19	20
	20	21	22	23	24	25	26	21
	27	28	29	30	31			22
JUN								
						1	2	22
	3	4	5	6	7	8	9	23
	10	11	12	13	14	15	16	24
	17	18	19	20	21	22	23	25
	24	25	26	27	28	29	30	26

2024	MON	TUE	WED	THU	FRI	SAT	SUN	WEEK
JUL								
	1	2	3	4	5	6	7	27
	8	9	10	11	12	13	14	28
	15	16	17	18	19	20	21	29
	22	23	24	25	26	27	28	30
	29	30	31					31
AUG								
					1	2	3	4	31
	5	6	7	8	9	10	11	32
	12	13	14	15	16	17	18	33
	19	20	21	22	23	24	25	34
	26	27	28	29	30	31		35
SEP							1	35
	2	3	4	5	6	7	8	36
	9	10	11	12	13	14	15	37
	16	17	18	19	20	21	22	38
	23	24	25	26	27	28	29	39
	30							40
OCT								
		1	2	3	4	5	6	40
	7	8	9	10	11	12	13	41
	14	15	16	17	18	19	20	42
	21	22	23	24	25	26	27	43
	28	29	30	31				44
NOV								
					1	2	3	44
	4	5	6	7	8	9	10	45
	11	12	13	14	15	16	17	46
	18	19	20	21	22	23	24	47
	25	26	27	28	29	30		48
DEC							1	48
	2	3	4	5	6	7	8	49
	9	10	11	12	13	14	15	50
	16	17	18	19	20	21	22	51
	23	24	25	26	27	28	29	52
	30	31						1

Capacity Model variant

Non-TCR standard day for TT2024

Weekend variant for TT2024

School holiday variant for weekdays for TT2024

15 December 00:01 Start of the timetable 2025

It will be up to the IMs to create additional Capacity Model variants, the decision-making should consider the business trends (own forecasts, information received via CNAs) and the available resources (HR, IT), as well.

Capacity Model – Variants for TCR / TCR window periods

The IMs can create Capacity Model variants for TCR / TCR window periods to show the cancelled, replaced and re-routed volumes.

Capacity Model variants for TCR / TCR window periods are created for all affected part of the network (from PLC to PLC)

CAPACITY MODEL - CALENDAR VIEW - TT2024

RAILWAY LINE Dresden Hbf --> Berlin Hbf, SECTION Dresden Hbf --> Elsterwerda

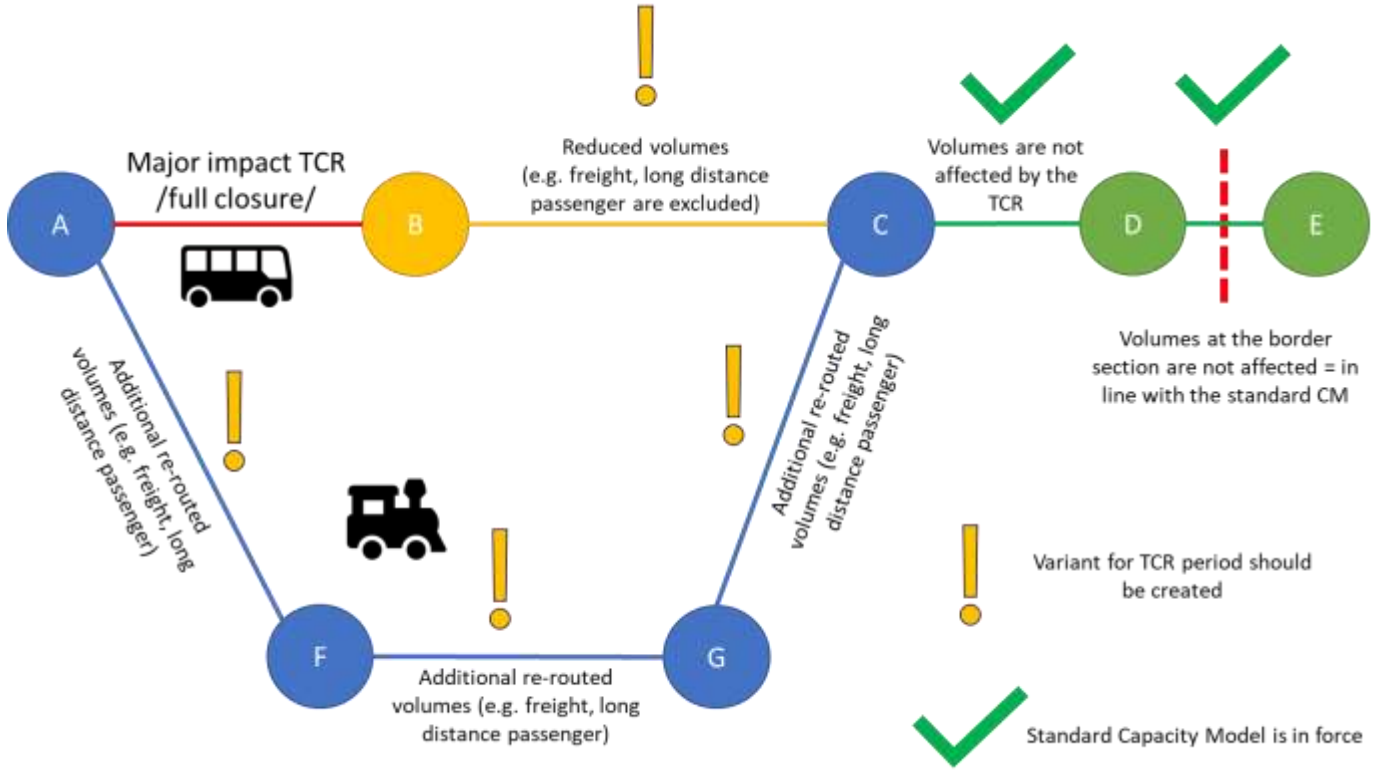
2024	MON	TUE	WED	THU	FRI	SAT	SUN	WEEK
JAN								52
	1	2	3	4	5	6	7	1
	8	9	10	11	12	13	14	2
	15	16	17	18	19	20	21	3
	22	23	24	25	26	27	28	4
	29	30	31					5
FEB								
				1	2	3	4	5
	5	6	7	8	9	10	11	6
	12	13	14	15	16	17	18	7
	19	20	21	22	23	24	25	8
	26	27	28	29				9
MAR					1	2	3	9
	4	5	6	7	8	9	10	10
	11	12	13	14	15	16	17	11
	18	19	20	21	22	23	24	12
	25	26	27	28	29	30	31	13
APR								
	1	2	3	4	5	6	7	14
	8	9	10	11	12	13	14	15
	15	16	17	18	19	20	21	16
	22	23	24	25	26	27	28	17
	29	30						18
MAY								
			1	2	3	4	5	18
	6	7	8	9	10	11	12	19
	13	14	15	16	17	18	19	20
	20	21	22	23	24	25	26	21
	27	28	29	30	31			22
JUN								
						1	2	22
	3	4	5	6	7	8	9	23
	10	11	12	13	14	15	16	24
	17	18	19	20	21	22	23	25
	24	25	26	27	28	29	30	26

JUL	MON	TUE	WED	THU	FRI	SAT	SUN	WEEK
	1	2	3	4	5	6	7	27
	8	9	10	11	12	13	14	28
	15	16	17	18	19	20	21	29
	22	23	24	25	26	27	28	30
	29	30	31					31
AUG								
					1	2	3	4	31
	5	6	7	8	9	10	11	32
	12	13	14	15	16	17	18	33
	19	20	21	22	23	24	25	34
	26	27	28	29	30	31		35
SEP							1	35
	2	3	4	5	6	7	8	36
	9	10	11	12	13	14	15	37
	16	17	18	19	20	21	22	38
	23	24	25	26	27	28	29	39
	30							40
OCT								
		1	2	3	4	5	6	40
	7	8	9	10	11	12	13	41
	14	15	16	17	18	19	20	42
	21	22	23	24	25	26	27	43
	28	29	30	31				44
NOV								
					1	2	3	44
	4	5	6	7	8	9	10	45
	11	12	13	14	15	16	17	46
	18	19	20	21	22	23	24	47
	25	26	27	28	29	30		48
DEC							1	48
	2	3	4	5	6	7	8	49
	9	10	11	12	13	14	15	50
	16	17	18	19	20	21	22	51
	23	24	25	26	27	28	29	52
	30	31						1

Capacity Model variant

- Non-TCR standard day for TT2024
- Weekend variant for TT2024
- School holiday variant for weekdays for TT2024
- Variant for Major impact TCR for TT2024
- Variant for High impact TCR for TT2024

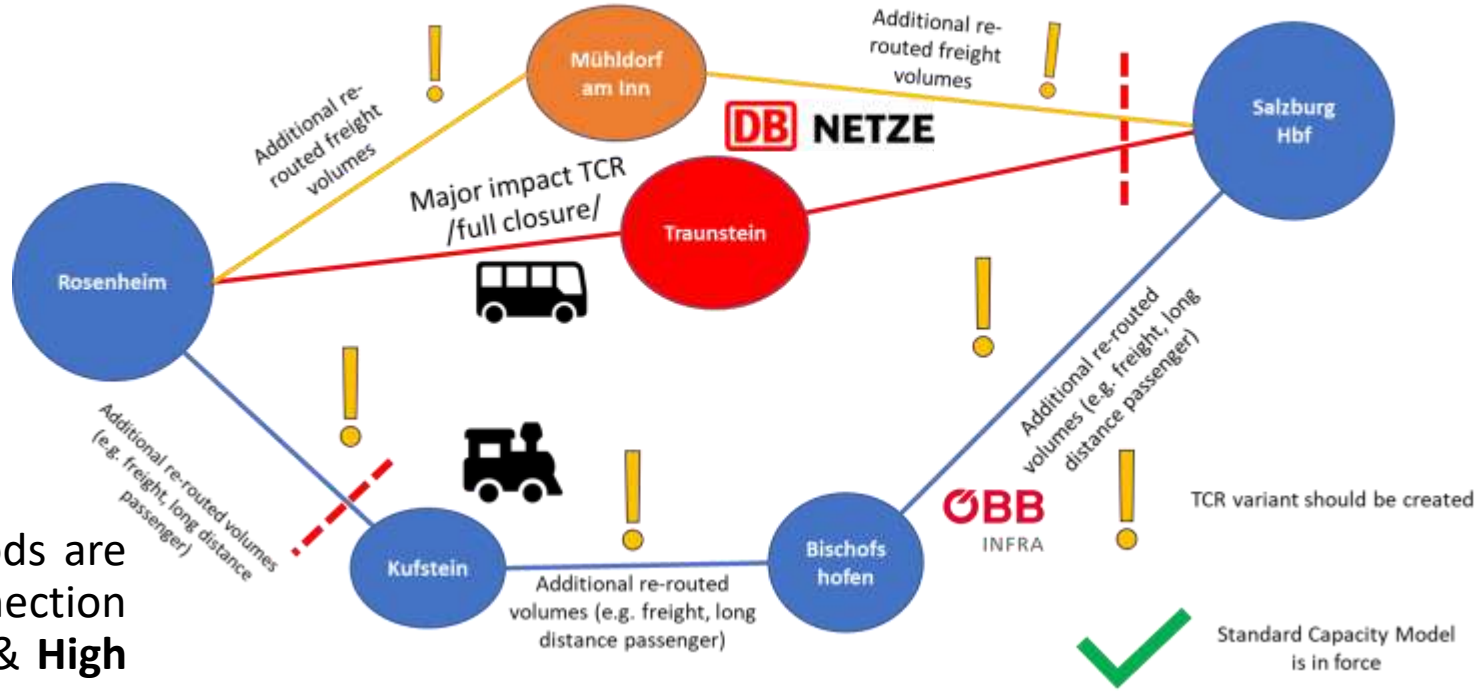
15 December 00:01 Start of the timetable 2025



Capacity Model variants for TCR periods

In case the TCR or the TCR window has effects on the volumes at a border section, then the Capacity Model variant(s) shall be coordinated with the neighbouring IM.

Capacity Model variant with effects on the border volumes
Coordinated Capacity Model variants have to be created by the IMs

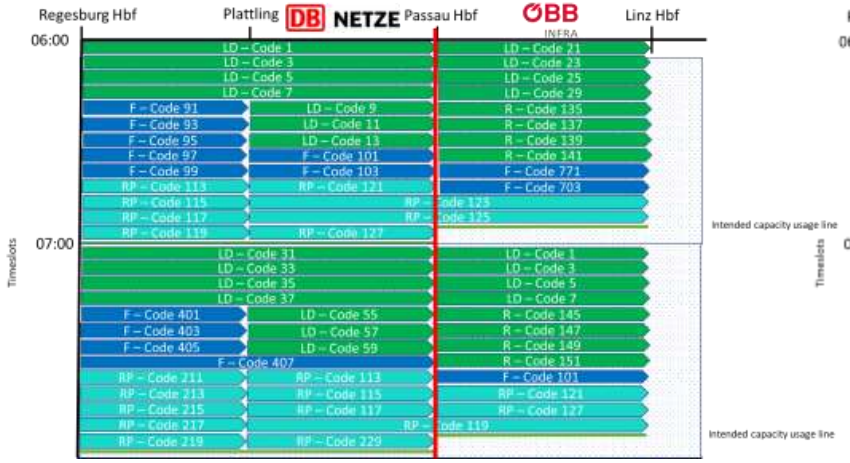


Capacity Model variants for TCR periods are created on **mandatory basis** in connection with **Major** (published latest at X-18) & **High** impact TCRs (published latest at X-12)

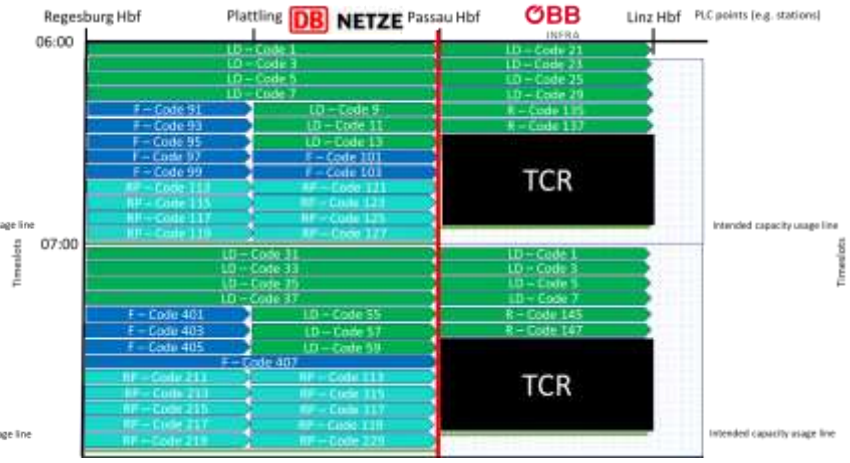
Capacity Model variants – TCR periods

Calculating the capacity consumed by TCRs:

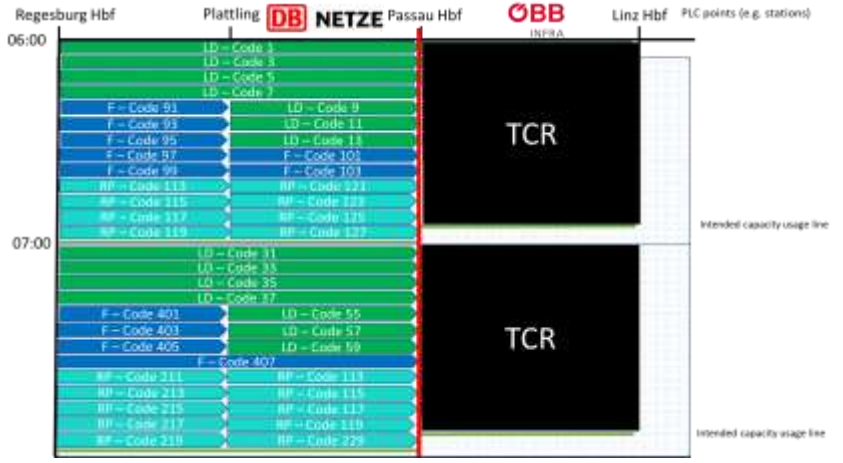
- Based on TCR Impact calculation (only cancelled, re-routed, replaced)
- The capacity consumed by the TCR would be visualised based on assumptions. These calculations would consider the TCR categorisation (national/international). The used categorisation shall be included into the Capacity Strategy.
- IMs would have the option to specify the ratio based on past experiences.



Standard non-TCR



Partial closure (e.g. 50%)



Full closure (100%)