ERJU SYSTEM PILLAR

T3-DCM Messages Specification

T3-Draft for DCM Messages Specification

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Abstract	This document deals with messages related to the Timetable Redesign (TTR), focusing on the Digital Capacity Management as here designed
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Comments	**#1 Approval comment** by **Rolf Gooßmann** on 2025-06-17 17:31 Consistency needs to be improved, e.g., terms (Capacity Band vs. Bandwidth; different diagrams showing the same interfaces not using the same terms, ...)

Approvals	Knoedl Herbert (INFRA.Netzzugang) : Waiting , Ghersi Mirko : Waiting , Rolf Gooßmann : Waiting , Bence Jenőfi : Waiting , Patrick Konix : Waiting , PETTINATI, Valter : Waiting , Peter Šišolák : Waiting , NANNI Marco : Waiting , Simone Brezzi : Waiting
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Concerning the STIP

The STIP-revision aims to define GAPS between the work of Task 3 (our deliverables) and the existing legal frameworks (TAF/TAP, Capacity Regulation, RINF,...). These gaps can consist of concepts/ideas we defined in our research activities of Task 3 (= high granularity) or more detailed parts such as new technical messages defined (low granularity).

Ideally, there is no overlap between info passed to ERA via the Joint Sector Group and the ERJU STIP since both will arrive anyway with ERA/EC.

DISCLAIMER

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1 Preamble

1.1 Scope and intended audience

The intended audience of this document comprises of people with knowledge of the upcoming draft capacity regulation and its process, as well as supporting IT requirements. The document is not meant to serve as a detailed specification, as it only describes the context of a hypothetical direction of development. Should this proposal be evaluated positively, further elaboration is expected. **[**SPT3TMS-16864 **]**

1.2 Purpose

The purpose of this document is twofold. For one, it aims to give a high-level introduction to the digitalization developments in the context of the draft capacity regulation. The other goal is to provide an example of a potential expansion of this digital tool ecosystem reflecting on further areas of the draft capacity regulation. As the current developments focus on preparing existing tools to support new processes as well as telematics TSI compliance, the common ground is the messages used. The end of this document aims to describe, which additional elements/messages would be needed within the scope of telematics TSI to make such extension feasible. **[**SPT3TMS-16863 **]**

1.3 Glossary

1.3.1 Terms and definitions

N.A.

1.3.2 Abbreviations

Abbreviation	Definition
ACP	Advanced Capacity Planning
BH	Border Harmonization
DCM	Digital Capacity Management
ECMT	European Capacity Management Tool
FTE	Forum Train Europe
ICL	Intended Capacity Usage Line
IM	Infrastructure Manager
MVP	Minimum Viable Product
OIM	Object Info Message
PCoM	Path Coordniation Message
PCS CB	Path Coordination System - Capacity Broker
PCS EC	Path Coordination System - Envelope Concept
PDRM	Path Details Refused Message

Abbreviation	Definition
PNA	Path Not Available
PRM	Path Request Message
RCM	Receipt Confirmation Message
RNE	Rail Net Europe
RFC	Rail Freight Corridor
RINF	Register of Infrastructure
RIS	Railway Infrastructe System
RU	Railway Undertaking
STAH	Short Term Ad-Hoc
TCR	Temporaray Capacity Restriction
TTR	Timetable Redesign
TIS	Train Information System
TT	TimeTable
TTR	TimeTable Redesign

2 History of Changes

Nr.	Changes	Leader/Authors
00.01	First submission	Bence Jenofi, Philipp Koiser

3 Reference

- [Ref 1] – System Concept R1 Europe Rail CMS & TMS
- [Ref 2] – Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety
- [Ref 3] - System Architecture Description
- [Ref 4] - System Concept_CMS-TMS_Federated Model

4 About this Document

This document aims at describing the needs for messages in relation to the Timetable Redesign (TTR) – rather regarding the Digital Capacity Management (DCM) as designed in TTR – as well as the requirements of the Capacity Regulation, of which a draft was published by the European Commission in July 2023 and which is subject of the trilogue negotiations during the drafting of this document. **[**SPT3TMS-16689 **]**

Digitalization is a key aspect of TTR. It enables the seamless integration of national planning of capacity and provides access to rail capacity to interested applicants. TTR defines workable processes, but also establishes the preconditions for future developments, particularly the communication within a commonly applied IT architecture in Europe. **[**SPT3TMS-16687 **]**

Overcoming the barrier of isolated national systems can become the gateway to further acceleration and automation of processes withing Capacity Management in the future. However, as first step, TTR and the Capacity Regulation aim for a first implementation by the timetable 2030 with subsequent gradual rollout steps (e.g. establishing further automated interfaces.) **[**SPT3TMS-16700 **]**

5 Timetable Redesign (TTR): Summary

5.1 Background

The Timetable Redesign (TTR) is a programme initially launched in 2014 on the request of Railway Undertakings (RUs) represented in Forum Train Europe (FTE) towards Infrastructure Managers (IMs) represented in RailNetEurope (RNE). Goal is to develop and implement a new railway capacity planning system which incorporates the market needs and challenges of limited available capacity. **[**SPT3TMS-16530 **]**

Its first phases, RNE and FTE evaluated the market needs and defined basic processes. Afterwards, the TTR concepts were finalized in 2017, after which innovative new elements were piloted on selected Rail Freight Corridors (RFCs). Starting in 2019, RNE has committed itself to fully implement TTR on the entire network. However, several preconditions need to be established, particularly:

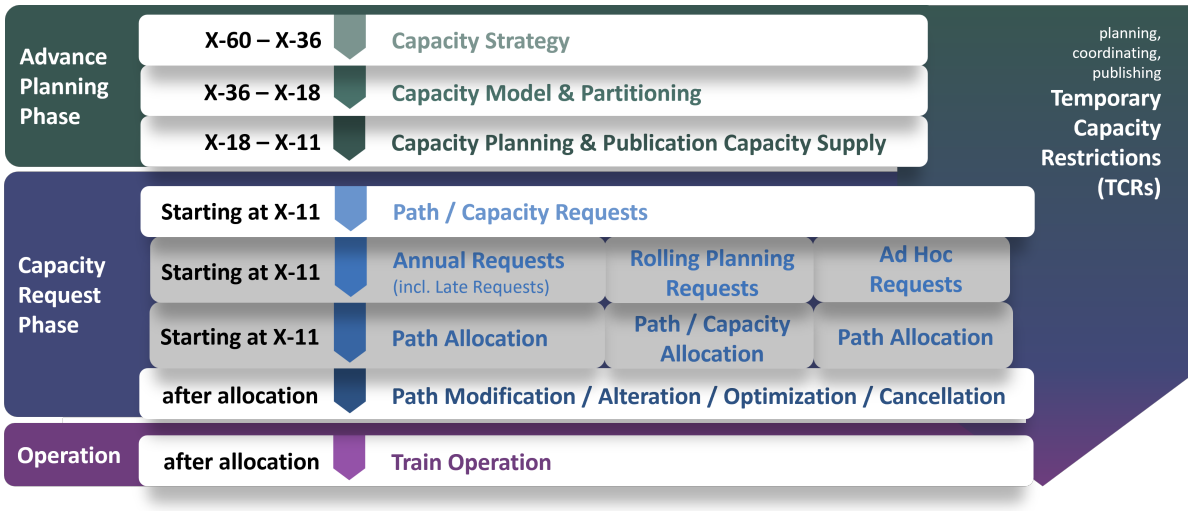
- A legal framework to standardize national legal requirements and to define obligations for all stakeholders.
- A Digital Capacity Management (DCM), enabling a seamless experience for process stakeholders with accelerated processes.

[SPT3TMS-16529 **]**

The processes are being implemented gradually between the timetable periods 2025 and 2030. **[**SPT3TMS-16531 **]**

5.2 The TTR Process

The TTR process is a long-running process divided into three phases: **[**SPT3TMS-16928 **]**



[SPT3TMS-16929]

Figure 1: Phases of TTR process

- The Advanced Capacity Planning phase (ACP) in which capacity is being planned, designed and assigned to the different types of requests and market segments. This phase starts 5 years before each timetable change and ends with the provision of capacity products 11 months before the timetable change.
- The Allocation or Timetabling phase (TT) in which applicants can request the different types of capacity from the IMs based on which the capacity is allocated. This phase starts after the ACP phase 11 months before the timetable change and lasts until the end of the respective timetable period.
- Operations: It encompasses traffic management, including incident management. It is an ongoing process by nature during the entire calendar year. Although it goes beyond the scope of TTR It goes beyond TTR, but TIS

[SPT3TMS-16927]

5.2.1 Advance Capacity Planning

Purpose of the ACP phase is to plan available rail capacity to the best possible extent, consider all known restrictions and traffic increases and in combination of all information identified bottlenecks. All deliverables are harmonized between IMs across Europe. [SPT3TMS-16671]

It is conducted in 3 sub-phases:

- Capacity Strategy (5-3 years before the timetable change): identification of planned main influences on capacity during the respective timetable period, like large construction plans, new lines or change of traffic systems.
- Capacity Model (3-1.5 years before the timetable change): elaboration of identified influences leading to an overview of traffic volumes per traffic type and Temporary Capacity Restrictions (TCRs) per line.
- Capacity Supply (1.5 years to 11 months before the timetable change): the provision of rail capacity available for requests by applicants. It consists of
    - Preplanned capacity (as paths or bandwidths)
    - Temporary Capacity Restrictions (TCRs)
    - Unplanned capacity, available for tailor-made paths and for optimization purposes

[SPT3TMS-16670]

5.2.2 Timetabling

The goal of the timetabling phase is to allocate capacity to applicants. It is based on the Capacity Supply, which is originally created at the end of the ACP phase and is permanently updated to reflect the availability of capacity close to real-time. The allocation of capacity is done in a harmonized way across Europe to enable a seamless origin-destination experience. **[**SPT3TMS-16673 **]**

In general, the different types of requests follow a simple sequence of steps:

1. Request: An applicant requests capacity based on the Capacity Supply – this can be done in a harmonized cooperation with other applicants
2. Elaboration and draft offer: The IMs construct the capacity as path or bandwidth and offer it to the applicant.
3. Observation: The applicant may place comments to request changes to the offer
4. Post-processing and final offer: IMs may incorporate the feedback from the applicant and provide a final offer.
5. Acceptance and allocation: If the applicant accepts the final offer, the IM formally allocates the capacity.

[SPT3TMS-16672 **]**

Deviations from this process may occur due to the following reasons:

- Either the applicant or the IM cannot accept (applicant withdrawal of the request, applicant rejection of the offer or IM rejection of the request)
- The process is defined with a different process step (e.g. pre-acceptance of offers for ad hoc requests skips steps 3-4, path alteration and optimization is triggered by the IM instead of the applicant)

[SPT3TMS-16675 **]**

Based on the different timelines for placing the request and on the type of capacity, TTR differentiates between several kinds of requests: **[**SPT3TMS-16674 **]**

		When?	Which capacity?
Annual Requests	Annual Request Placed on Time	X-11 – X-8.5	Pre-planned or non-pre-planned capacity
	Late Requests	X-8.5 – X-2	Residual capacity from annual requests (pre-planned and non-pre-planned capacity)
Short-Term Requests	Ad Hoc Request	X-2 – X+12	Residual capacity from annual requests and dedicated safeguarded capacity (Rolling Planning capacity remains safeguarded)
	Short-Term Ad Hoc Request	M-1 – M	Residual capacity from annual and rolling planning (<M-1) requests and dedicated safeguarded capacity
	Path Modification[1] /Alteration[2]	After allocation until X+12	Depending on original request: Residual capacity **OR** alternative rolling planning capacity
Rolling Planning Request		M-4 – M-1	Pre-planned (safeguarded) capacity

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

1) Requested by applicant
2) Request by IM

[SPT3TMS-16680 **]**

Figure 2: TTR requests according to timeòlines

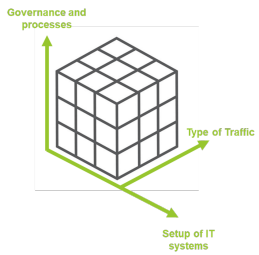
To overcome the limitations of annual planning with timetable changes, TTR foresees two multi-annual methods:

- Multi-annual Rolling Planning
- Framework Agreements

These have to be considered also in the ACP phase. **[**SPT3TMS-16681 **]**

6 Architectural Design of Digital Capacity Management

A key to achieving an integrated and more accessible capacity management process is its digitalization. In the context of TTR, several variants were checked on how to achieve digitalization with the best cost-benefit balance, considering the already taken investments in national and central systems. The conclusion was that the integration of national systems via central tools would serve this aspect best. This is the 2nd variant, called the federated model. **[**SPT3TMS-16683 **]**



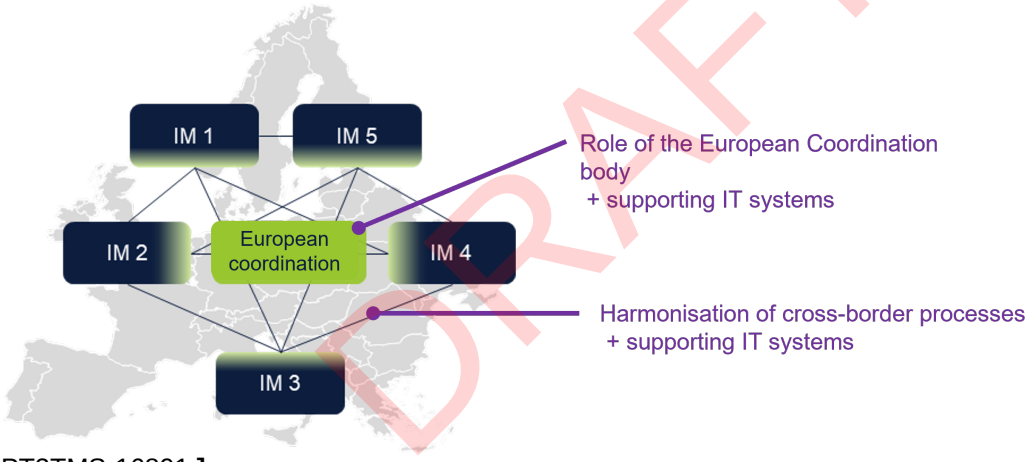
Decentralised

Federated

Centralised

	Traffic Management	Capacity Management
Variant 0	• Decentralised TM • Mutually communicating IT systems • Bilateral alignment for cross-border trains	• Decentralised CM • Mutually communicating IT systems • Bilateral alignment for cross-border trains
Variant 1	• Decentralised TM • Mutually communicating IT systems with central system for support • Bilateral alignment for cross-border trains	• Decentralised CM • Mutually communicating IT systems with roof system for support • Bilateral alignment for cross-border trains
Variant 2	• Federated TM • Mutually communicating IT systems with central system for support • Federated and bilateral alignment for cross-border trains	• Federated CM • Roof CMS connected with individual IM systems • Federated alignment for cross-border trains
Variant 3	• Centralised TM • Central (single) IT system • For cross-border, national and regional traffic	• Centralised CM • Central (single) IT system • For cross-border, national and regional

Figure 3: Possible TMS and CMS variants



[SPT3TMS-16891 **]**

Figure 4: Diagrams for possible TMS and CMS variants

Three main components are required to achieve this:

- National tools and systems made fit for Europe-wide capacity management and connected via central systems.
- Central systems providing workflows to enable coordination and harmonization on a European level.
- Interfaces to enable true digital capacity management and universal participation.

[SPT3TMS-16682 **]**

Preconditions for a fully functional architecture with harmonized functions are:

- Common databases to reduce unnecessary data redundancy and increasing the interoperability of functions.
- Common “language” based on the TAF/TAP TSI standards, establishing a connected European network of systems.

[SPT3TMS-16677]

To cover all business processes of TTR, main functions have been identified, for which central systems are required:

- Coordinated planning of Temporary Capacity Restrictions (to be established in the RNE TCR Tool)
- Planning and publication of capacity models and supplies (to be established in the RNE European Capacity Management Tool/ECMT)
- Requesting and allocating rail capacity (to be established in the RNE Path Coordination System – Capacity Broker/PCS-CB)

[SPT3TMS-16676]

7 Requirements of Capacity Regulation

In July 2023, the European Commission published the draft Capacity Regulation. Large parts of it were inspired by TTR with all key components being described. The draft deviates in some details from the original TTR concept, but overall keeps the main ideas for each component intact, thus establishing a legal requirement for IMs and stakeholders to implement TTR. [SPT3TMS-16679]

In addition, the draft Capacity Regulation foresees the simplification of the request process for applicants, requiring single interfaces in which the complete process step can be done (e.g. from request to allocation) without switching to other systems. This is also in line with the already planned architecture as defined in TTR. [SPT3TMS-16678]

According to the draft by the European Commission, a gradual implementation is foreseen with the full implementation for Timetable 2030. Considering the long-running process leading to a timetable, this will require the start of some process phases immediately after the coming into force of the Regulation. As of the drafting of this document, the trilogue negotiations are still ongoing, leaving some details unclear. Consequently, all activities conducted to fulfil the Regulation are based on the draft by the European Commission with priority given to immediate actions. [SPT3TMS-16685]

8 Description of Messages in DCM (Digital Capacity Management) based on TTR processes and the draft Capacity Regulation

As stipulated in the draft regulation, digital tools, functions, services and interfaces should be used to support:

- Capacity supply plan publication, about available and not-available capacity(EUR-Lex - 52023PC0443 - EN - EUR-Lex - Art. 18., 10. (a))
- Capacity allocation(EUR-Lex - 52023PC0443 - EN - EUR-Lex - Art. 27., 4.)
- IM-IM coordination(EUR-Lex - 52023PC0443 - EN - EUR-Lex - Art. 53., 2. (a))

[SPT3TMS-16691]

Most of all, such tools and services should be based on a harmonised architecture, with standardised interfaces, a single interface or common system should be adopted for multi network rail services.(EUR-Lex - 52023PC0443 - EN - EUR-Lex – Art. 62., 5.)

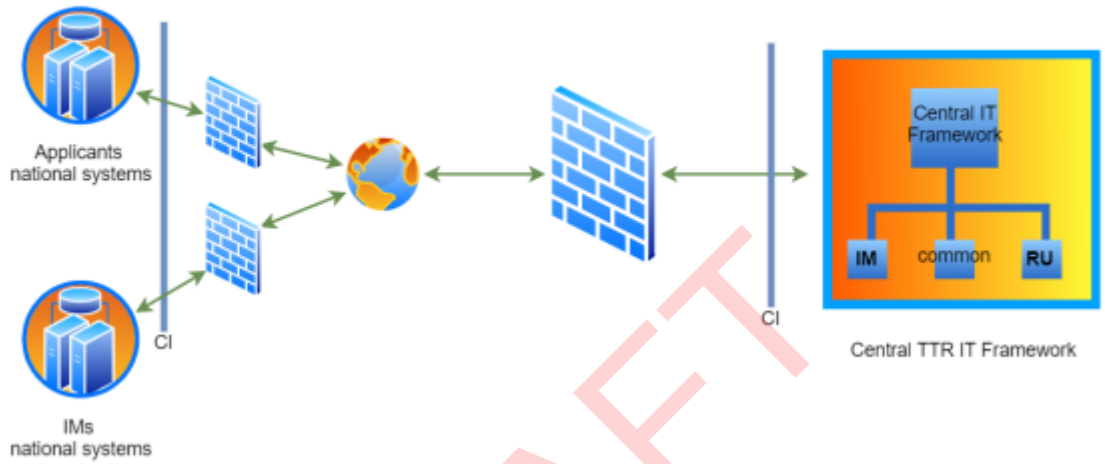
In partnership with Infrastructure Managers, and other stakeholders from the market, RNE develops such tools to aid their future compliance. These are meant to support similarly harmonized processes. Beyond harmonisation and digitalisation of existing ones, however, new processes, and messages are also requisite which are yet to be defined in the sector.(Downloads - RNE – Rail Net Europe | Association for Facilitating Traffic on European Rail Infrastructure) [SPT3TMS-16698]

As a result, a stepwise implementation approach is used for DCM, the IT element of TTR, with a corresponding IT Landscape Technical Specification.(TTR-IT-Landscape-Technical-specification-v3.0.pdf) [SPT3TMS-16696]

As guidance, the current target IT architecture of DCM is provided below. This way it will be clear which areas call for further sector elaboration. When reading the diagram, consider, that the IT tools, and the

processes they support are designed in consideration of the federated variant of reference implementation, described in the variant analysis document of system pillar 3. **[**SPT3TMS-16694 **]**

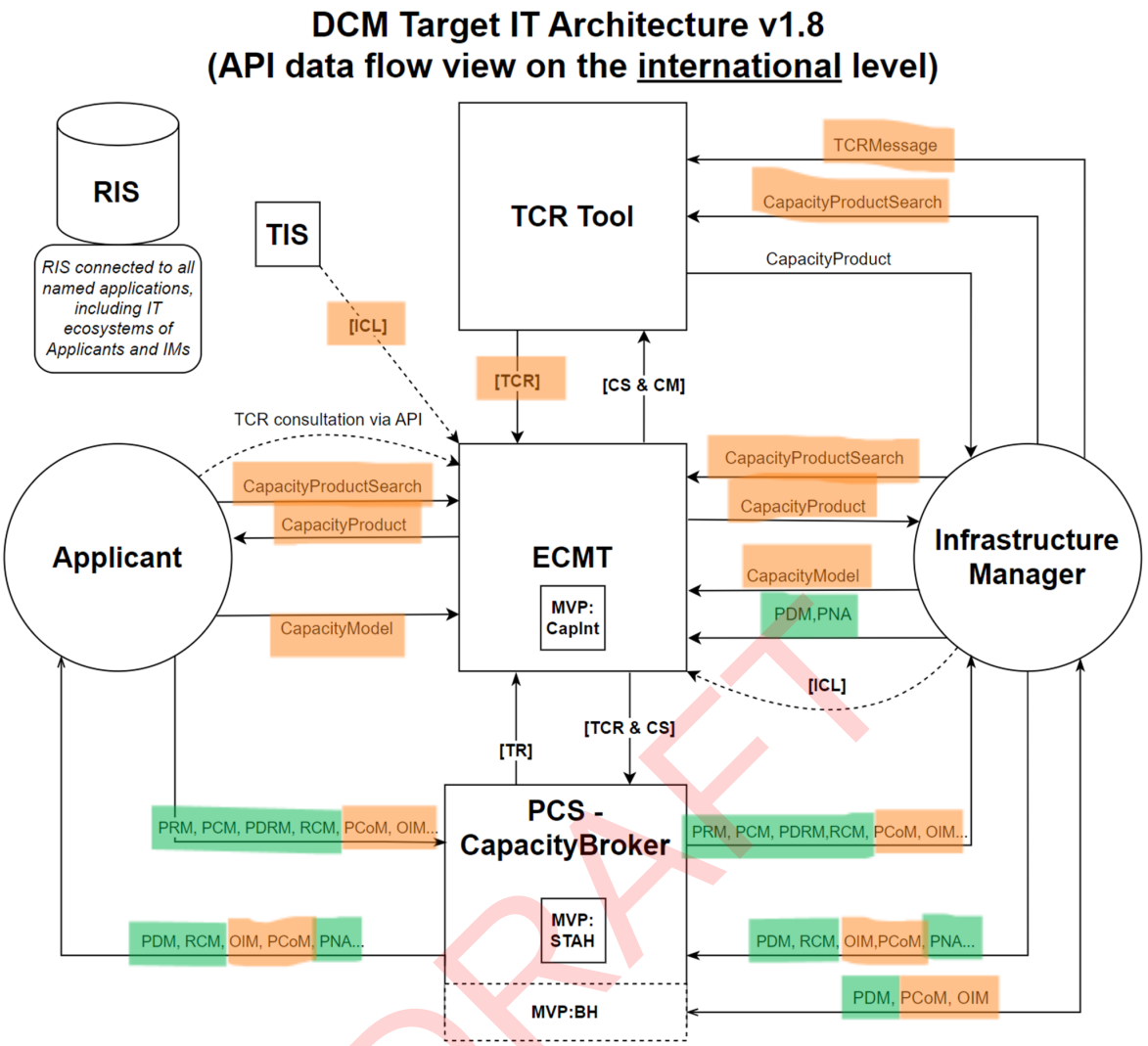
Thus, before elaborating on the maturity of the messages, clarification on the general setup is given. As the below figure describes, the IT architecture is organised around national (IM) and company (RU) specific software environment via a common interface. Instead of replacing these individual systems, an inter-system communication platform is built. Although this aids stakeholders to comply with the draft capacity regulation, the IT infrastructure itself and the set of messages are organized around a so-called schema version, a common language stakeholders need to communicate through the messages, which needs to be approved by the sector and ultimately by ERA. To do so, it needs to comply with the TSI (Technical Specification for Interoperability) regulation currently under revision. **[**SPT3TMS-16703 **]**



[SPT3TMS-16702 **]**

Figure 5: Access to Central TTR IT from applicants

It is visible now, that the messaging module serving as the connector between stakeholder and the common interface needs to be implemented by both RU and IM. **[**SPT3TMS-16704 **]**



[SPT3TMS-16712]

Figure 6: DCT IT Architecture

With one level of abstraction below, the messages can be described. To avoid misunderstanding that may stem from the above figure, these messages do not aid communication between tools as standalone entities, but are clustered into modules (commonly referred to as microservices in IT), which in turn are organised within dedicated central tools (TCR, ECMT, PCS-CB). This also means that the Common interface is also organised around the messaging module, and the Big Data module (RIS in the future). The messaging module (among others) is the enabler to support the communication via translating different formats (xml, csv, text…) used by legacy softwares. [SPT3TMS-16710]

This also means, that the maturity of the messages and ultimately the readiness of the modules are not dependent purely on development efforts, but also on the acceptance of the latest schema version. Schema version development is necessary to accommodate newly defined needs (including future innovation efforts). As such, messages described reflect the current state, and will of course progress in their maturity as new schema versions appear. Based on this distinction the messages necessary for DCM to support full compliance with the draft capacity regulation are grouped below. in the following way: [SPT3TMS-16708]

- Required and already defined and incorporated into the official TAF/TAP TSI schema by ERA.
- Required and already defined, incorporated into the Joint Sector Group schema, and used by the sector.

- Potentially required, yet to be defined messages to fulfil requisites of the draft regulation (requisites as examples will be listed with unclear necessity of newly defined messages leaving room for innovation)

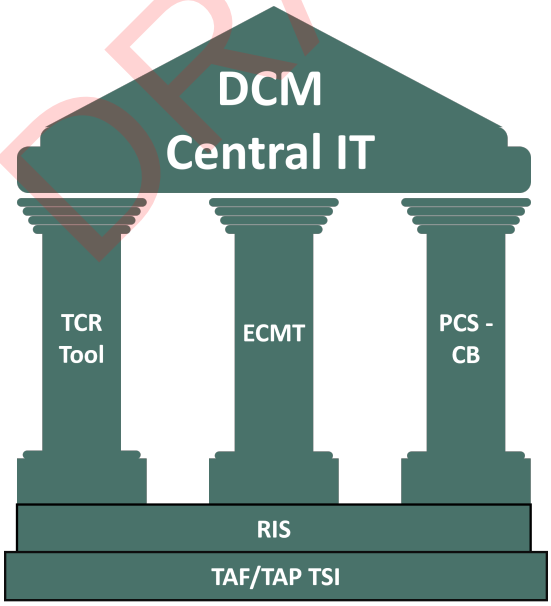
[SPT3TMS-16707 **]**

For easier understanding where and why the messages are within the IT architecture, they will be introduced along with a brief description of the distinct tools / databases using them to communicate with each other. It must be considered that processes supporting progress between phases are defined not only to cover certain scenarios or stages of planning/timetabling, but also the dependencies on each other, and their triggering conditions. As IT messages are composed of elements, they can be applicable for multiple processes, and it is the values of their elements based on which a tool acts in one way or another. The TCR message for instance shall be used for communication between the TCR tool and ECMT in the early stages of Advance Capacity Planning, as well as during the traffic management phase, should capacity supply be updated with negative capacity resulting from an incident.
[SPT3TMS-16716 **]**

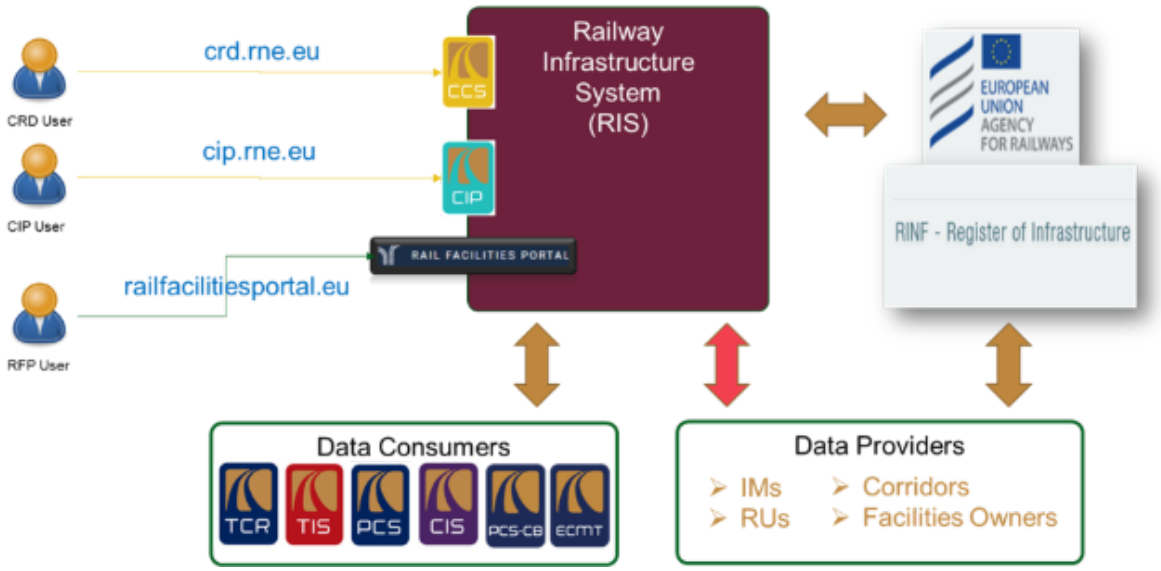
In alignment with the variant approach setting the foundation for innovative applications of DCM, messages will be introduced in consideration of the federated variant regardless of their current legal bindingness. **[**SPT3TMS-16717 **]**

8.1 RIS

As the figure below indicates RIS serves as kind of a foundation, which the tools, the pillars of the DCM ecosystem rely on. As mentioned in Chapter 6, common databases are crucial for seamless interoperability. RIS aggregates data from the Central Reference Database (a common repository node in the network containing the Primary Location Codes), and the Register of Infrastructure from ERA, serves as the source of truth for all tools, as such, its maintenance is crucial. Thus, besides the messaging module, this is the other one that needs to be implemented by both stakeholder groups (IM and RU).
[SPT3TMS-16715 **]**



[SPT3TMS-16892 **]**



[SPT3TMS-16714]

Figure 7: RIS as a basis for DCT IT

Messages necessary for this communication are incorporated to the official schema of ERA. [SPT3TMS-16718]

8.2 TIS

The Train Information System is a web-based application that supports international train management by delivering real-time train data concerning international (partly national) passenger and freight trains. The relevant data is obtained directly from the Infrastructure Managers' systems. It can be used to create intended capacity usage lines in ECMT, which is crucial for the network view for Capacity Models. However, the relevant messages are yet to be defined, and so far, only a handful of IMs use it. [SPT3TMS-16686]

8.3 TCR Tool

TCR tools is used to manage negative capacity. It is already utilized in the Capacity Modelling phase; as such it feeds ECMT via the common interface, but is constantly updated during the timetable year, from the national traffic management systems as well (e.g. incident related TCR). This volume of data is too much for uploading via manual entry or file import. Thus, TCR messages (below) and objects are inevitable for TTR. [SPT3TMS-16693]

Messages defined and incorporated by JSG, but not officially by ERA: [SPT3TMS-16692]

- TCR message
  - IM to TCR tool describing the TCR: it consists of the following elements:
    - TCR ID
    - TCR harmonization status (preparation, published, closed)
    - Temporal expansion
    - Classification (minor, medium, high, major, unclassified)
    - Validity period
    - Circulation days (continuous, periodical)
    - Calendar (dates)
    - Traffic impact (various reasons for the reduced capacity and its impact on volume)
    - Traffic measures (cancellation, re-routing, train/bus replacement, estimated delays
    - Route (to, from, direction)

- TCR response message
  - Contains the status and a report of the import.
- TCR cancelled message.
  - IMs are able to cancel the particular TCR that was sent to the TCR tool, (object):
    - TCR ID

[SPT3TMS-16690 **]**

8.4 ECMT

ECMT is used for Capacity modelling; this enables IM-s to indicate the planned volumes on their infrastructure to RU-s/Applicants. A cornerstone of DCM is to enable IM-s to develop capacity supply from these models, which is updated throughout the year 24/7/365. A key enabler of this will be the – FUSION – project, a modular integration of ECMT (sometimes referred to as Capacity Hub) with the TCR tool. From the IM perspective this integration will cover the following objects of messages: **[**SPT3TMS-16688 **]**

- Temporary Capacity Restriction
- Capacity model object
- Catalogue Paths
- Bandwidths
- Paths (allocated)

[SPT3TMS-16701 **]**

Messages defined and incorporated by JSG, but not officially by ERA, are the following:

- Capacity Model Message
  - To provide data on Capacity Needs Announcements (CNAs) and Capacity Model Objects (CMO-s)
- Capacity Product Search Message
  - shall be used to search all the capacity products (negative and positive as well)
- Capacity Product Message
  - is the response to the search capacity product message. Contains information about the TCRs, Capacity bands, Catalogue paths or pre-arranged paths.
- Capacity Product Coordination Message
  - Used to exchange data about path requests.

[SPT3TMS-16699 **]**

8.5 PCS

The tool currently used for path requests and allocation is the PCS EC. As its name suggests, it was meant to serve as an MVVP. Its new iteration, the PCS CB, is in its final stage of development and is meant to completely replace the current version by 2024 Q4. This will enable new processes as well as TAF/TAP message-based communication, providing its users a solution compliant with the coming draft capacity regulation as well as the draft revision of Telematics TSI regulation. **[**SPT3TMS-16697 **]**

- Path Coordination Message
  - IMs can send all of their updates before the offer with Path Coordination message. Also, all notifications from PCS (except RU originated) are sent via Path Coordination message.
- Object Info Message
  - Facilitate the efficient information exchange with RU-s and IM-s (via CI)

[SPT3TMS-16695 **]**

Messages defined and incorporated both by the sector and officially by ERA.

- Path Request Message

[SPT3TMS-16706 **]**

PCS CB will deliver the path requests to the IM-s with this message.

  - Relevant processes: New Path Request / Late Path Request / Ad-Hoc Path Request / Rolling Planning Path Request

- Path Details Message

  - IMs can send all of their offers to PCS with Path Details message.

- Path Details Refused Message

  - PCS will deliver the information about the rejection of the Final Offer to IMs with this message.

- Path Cancelled Message

  - RU-s/Applicants can use this to forward their path cancellation intentions.

- Path Confirmed Message

  - PCS will deliver the information about the acceptance of the Final Offer to IMs with this message.

- Path Not Available Message

  - IMs need an option to delete an existing path in PCS. They can do it with this message.

- Receipt Confirmation Message

  - This is a message sent by PCS CB (centrally) to the IM-s/AB-s as well as RU-s/Applicants. This, for example could be a successful creation of a Capacity product upon sending the Capacity Product Coordination Message. For RU/Applicants this can mean Message exchange, however, from the other way around is not required /supported.

- Error Message

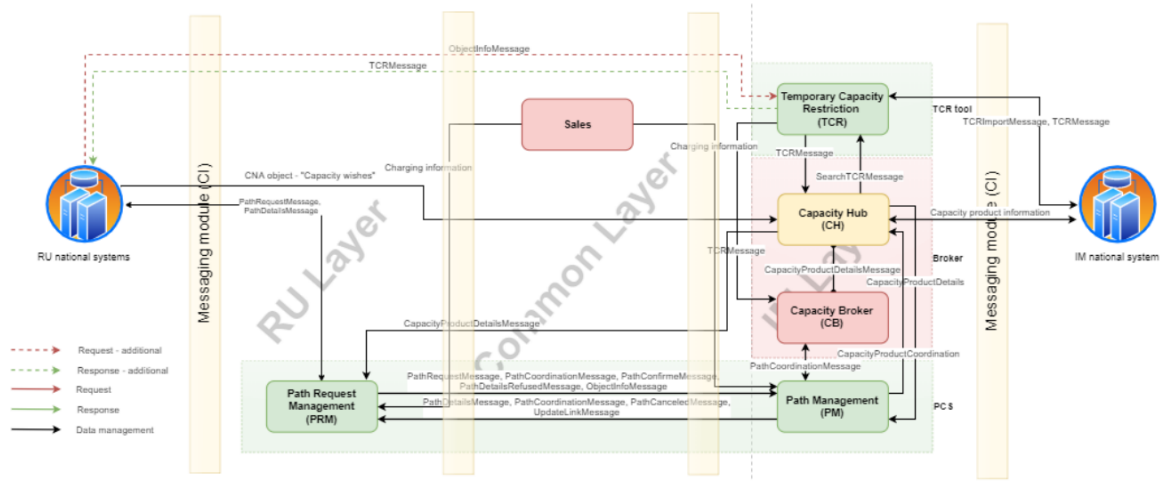
  - In case there is any mistake regarding the update, PCS will send back Error messages with PCS specific error codes inside.

[SPT3TMS-16705 **]**

8.6 In practice

The schematic diagram below aims to give a better understanding of how the above tools facilitate the communication between stakeholders in practice. **[**SPT3TMS-16713 **]**

Despite the static nature of the diagram, it encompasses message exchanges starting from advance capacity planning (X-36) till traffic management (X+12) phases, indicating overlaps between timetable years as well. **[**SPT3TMS-16711 **]**



[SPT3TMS-16709]

Figure 8: Tools integration

9 Digitalised framework agreement bidding as a new addition

The draft capacity regulation sets out, that RUs should be given the possibility to book capacity via multiannual framework agreements. Of course, such contractual agreements are more complex than a simple path request. However, providing the ability to execute such agreements via the same Digital platform could facilitate processes. Although PCS Capacity Broker will be able to relay available capacity in the annual Capacity Supply and serve related requests, it does not enable create, forward and sign a framework agreement securing future capacity. Further on, currently its not possible to evaluate such framework agreement requests, especially not in a semi-automated way. [SPT3TMS-16883]

Processes to involve RU-s and include their preferences in the capacity modelling phase already exist. In an evolution of DCM, RU-s could place offers on multiannual request packages which would be evaluated based on preset criteria. It can be tough, that an RU only realises capacity with favourable conditions once its available in supply and would like to make sure it will be available in future timetables as well. Hence to provide a smooth process and ensure a user does not need to leave the tool, PCS-CB should be able to support such request as well.
[SPT3TMS-16885]

A new module of DCM

The draft capacity regulation also requires socioeconomic criteria to be taken account when providing capacity rights. This should be no different for agreements over multiple years.
[SPT3TMS-16884]

However, on which terms it would be or how such criteria will be set, and whether each IM (ministry?) will be able to provide individual preferences is not known. However, it should be transparent and harmonised.
[SPT3TMS-16880]

New socioeconomic module (potential)

- Socioeconomic modelling module - yet to be defined by the sector

The socioeconomic criteria, stipulated in the draft capacity regulation Art. 8(4),(5), 25, and 37(1)(3) is meant to be a mechanism to manage, allocate, partition scarce infrastructure capacity as well as to provide conflict a resolution procedure, most favorable to society and the environment.
[SPT3TMS-16879]

To ensure a fair application on all stakeholders these criteria (parameters and their weight) should be harmonized, a message needs to be defined with which the IM feeds this module with to be defined parameters of train runs effected with the TCR. With this module, an IM can prioritize the order of communication with effected RUs. (precondition: socioeconomic criteria needs to be agreed on as part of draft capacity regulation compliance)
[SPT3TMS-16889 **]**

An innovative approach could be setting up a database like for topology data, but containing the socioeconomic aspects and the weight attached to it by the respective network, potentially even on the segment level. **[**SPT3TMS-16882 **]**

The new network coordinator could coordinate the agreement of aspects and weights for major cross border routes, corridors. Such database should be dynamic to the extent to include forseeable changes due to urban or industry developments. Setting values should essentially indicate and reflect capacity strategy preferences digitally on a database level.
[SPT3TMS-16881 **]**

This way a framework agreement request, could be evaluated near real time, by assessing the type of train run in question and how it fares compared to the segment level preferences and the price offered. Once accepted the offer becomes a binding multi-party contract based on the access rights provided to user. (Two factor authentication in current DCM supports a signing process). **[**SPT3TMS-16903 **]**

Messages and databases required:

- Definition of the aspects taken into account in a socioeconomic model
- Description of them and how values weights could be attached to them
- Setting up a database for their inclusion similarly to RINF overseen by ERA
- Description of Telematics TSI compliant messages connecting IMs and RU-s to the common interface and to the database above
    - Including commitments values from RU-s like expected passenger / freight types/volumes, PSO or not etc.
- A dynamic pricing mechanism approved by the sector

[SPT3TMS-16902 **]**

9.1 Messages necessary

The following messages are deemed mandatorily to be defined: **[**SPT3TMS-16887 **]**

	TSI message	JSG message	Missing message
IM			
RU			
RNE			

Journey plan message

- Tells the provider the number of expected passengers based on common registry filled by all participating providers (each passenger is identified by the same unique user ID)

[SPT3TMS-16905 **]**

Path confirmed message

- Can be used to retrieve arrival time at the service handover point
- Also, the necessary arrival time to the next service provider handover point or the final destination (can determine whether a provider can fulfil such need)

[SPT3TMS-16904 **]**

It is very important to mention, that to stay competitive, RUs could already feed in data from the path confirmed message and not wait until final allocation. If something changes later on, this system will be able to inform all other stakeholders (including passengers and aid them with automatized cancellation procedures). The added value of the latter is reflected in the airline industry where it developed a distinct market on its own! **[**SPT3TMS-16898 **]**

Partner search message

- Checks whether the service provider already has a combined fare agreement with another one included in the journey
- Checks and provides information cancellation policy to provide the common resolution.

[SPT3TMS-16897 **]**

Contingent allocation message

- Checks whether this partnership has a limited contingent and whether the new offer still fits there

[SPT3TMS-16900 **]**

Journey change message

- Checks for cancellation of the entire journey or delays compared to the planned times of connecting service providers

[SPT3TMS-16899 **]**

Validation check message

- Checks whether passenger missed a connection. (journey chain cancelled)
    - Based on fare products in the chain of journey, the provider can adjust their capacity and potentially offer a set on the next bus, in case the passenger has a railway ticket/pass not bound to a distinct train and make it to the service handover point till the next bus departure.

[SPT3TMS-16906 **]**

Validation can be done by automated checking-in utilizing state of the art Be-in be-out systems that may also have the added benefit of signalling whether the passenger will make the connection or not. It is also important to avoid passengers taking advantage of better prices by buying journeys which they do not intent to use in full. **[**SPT3TMS-16901 **]**