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Position Paper

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Rail Freight Corridors & TTR for Smart Capacity Management including Digital Capacity Management (DCM)

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CER Position Paper on Rail Freight Corridors & TTR for Smart Capacity Management /Digital Capacity Management (DCM)

The EU Regulation 913/2010 on the creation of a European rail network for competitive freight transport relies on the Rail Freight Corridors to achieve transport and environmental policy goals in Europe. More than eight years after the start of the operational use of the Rail Freight Corridors, it can be seen that the market share of rail in European freight transport did not increase. Therefore, the upcoming revision of the EU Regulation 913/2010 should be used for a far-reaching reform, which may help in strengthening the effectiveness of RFCs on the basis of the following principles:

1. More weight for the European Commission in the Executive Board (governance)

Even though Core Network Corridors are not part of the RFC Regulation, it is essential to take into consideration the links between RFC and CNCs. The Coordinator of the respective TEN-T Core Network Corridor (CNC) should be more involved in the Executive Board (EB):

➢ The cooperation between the CNC Coordinator and the EB and Management Board (MB) should be strengthened to address the missing alignment between infrastructure planning/investment (CNC) and capacity planning (RFC). Different forms of cooperation between the CNC Coordinator and RFCs are possible. For instance, CNC Coordinators could be more involved in EBs, whereas representatives of RFCs could become more involved in CNC forums and WGs.

➢ The EB has to be consulted and its opinions on CNC work plan should be attentively considered. This can be done either in the framework of EB or at a CNC forum. By this way, RFCs can provide their knowledge of the rail freight market to the CNCs. This ensures that the investment planning on CNCs takes into consideration the market needs of rail freight traffic. To be of benefit for the Railway Undertakings, improvements should have effect on the whole network (instead of corridors only).

2. Strengthening role and responsibility of the Executive Board (governance)

The relationship between the Executive Board and the Management Board is currently not clearly regulated, leaves a lot of room for interpretation and is consequently lived in completely different ways on the individual RFCs. A role for the Executive Board similar to a Supervisory Board would be desirable. This concerns in particular the definition and specification of strategic objectives (including success criteria), the endorsement of the action plans of the Management Board by the Executive Board and a regular reporting duty of the Management Board towards the Executive Board. At the same time the Executive Board is key to solving some of the core challenges of international rail freight: national laws on capacity management, operations and any kind of transport related topics which create barriers to interoperability and the removal of bottlenecks. Only qualified participants with decision-making powers should be sent to both bodies.

3. Revitalizing the "Advisory Groups" Railway Undertaking Advisory Group and Terminal Advisory Group

The Executive and Management Boards must provide the advisory groups with a timeslot on the agenda of each of their meetings if required by RAG/TAG speakers. In this way, a revitalization of the advisory groups could be achieved.

To achieve a better coordination between Railway Undertaking Group, Management Board and Executive Board, the RAG speaker should be elected officially, limited in time-length with the possibility of re-election, and should be mandated for representing Railway Undertakings in all RFC bodies. The RAG speaker shall have a right to be heard in RFC Management and RFC Executive Board as well.

The advisory group may issue an opinion, either at the request of the management board or at its own discretion, on any proposal by the management board which has consequences for these undertakings. It may also issue own-initiative opinions, in which it is not bound to proposals that have consequences for railway undertakings. The management board shall take any of these opinions into account.

4. An increasing role of RFCs in international traffic management (effectiveness)

The need for well-functioning and reliable international railway transport calls for the harmonisation of traffic management procedures and information exchange to meet customers' needs and fulfil European modal share targets. An improvement of cross border cooperation between the IMs can be achieved by agreeing on a common harmonised virtual European Traffic Management (ETM). This would lead to better capacity utilisation, smoother transit on border crossing points, increasing commercial speed and punctuality of rail services.

A clear position and coordination role of RFCs will guarantee that the planned processes will strengthen the international cooperation among infrastructure managers and will reflect the railway customers' expectations at the highest level. The given role of the RFCs with supportive actions and pilots will allow the virtual network of ETM to deliver tangible results and follow customers' demands[1]. The present abilities of RFCs in surveying, monitoring, piloting and providing support to the traffic management process create a strong pillar for a future virtual ETM network. Although the RFCs keep their non-operational tasks, they can contribute and use their experience for an efficient virtual ETM.

ETM shall be implemented by the infrastructure managers without the need to incorporate it into the legislation.

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[1] An example of such supportive actions and pilots could be to subdivide the corridor into relevant cross-border sections.

5. Replacement of the Corridor-One Stop Shop (C-OSS) by "Corridor Account Manager"

In some cases, the establishment of the C-OSS created a parallel organization alongside the already existing "national OSS" of the European infrastructure managers. Furthermore, with the implementation of TTR, the management and allocation of capacity will be increasingly supported by common elements of TTR IT.

On the other hand, in the last years C-OSS managers were successful in establishing a professional customer management along the corridors.

Therefore, to organize this business more efficiently, we should develop the C-OSS into a "Corridor Account Manager" on our RFCs. This means, we should leave the operational business dealing with concrete train paths allocation to the IMs who would coordinate through their IT tools interfaced to the central TTR IT Landscape. At the same time, we should use the skills developed in the last years in terms of international customer management and establish a "Corridor Account Management" (CoAM), where the strategic tasks of the C-OSS are transferred into the TTR environment. Based on their unique market knowledge and customer management experience, the CoAM would support and coordinate IMs in offering harmonized international capacity in line with customer needs. In this context, national processes and procedures which are relevant for international capacity planning and allocation should be harmonised according towards TTR in order to ensure a real international approach.

In addition, the MB will remain contributing to creating a capacity concept prior to the complete implementation of TTR on all infrastructures of the RFC. TTR will be implemented stepwise so that the MB has to handle different national capacity concepts along the RFC during the period of transition. The CoAM strives to assure an RFC offer of international harmonised capacity fitting to freight customer needs.

6. Providing more and better infrastructure capacity for freight traffic

A key factor for the success of the RFCs is the provision of more and better infrastructure capacity for freight. Part of this goal could be achieved inter alia through the **TTR project** (**TTR for Smart Capacity Management**) to be implemented by IMs driven by RNE in cooperation with RUs in FTE and ERFA. It can also be achieved with the extensive digitalization of capacity and train path management (**DCM**) without reducing capacity for passenger services including the TCRs planning and coordination. Through organizational measures, massive digitalization and the identification of RFCs' role and business needs within TTR, it will be possible to harmonize capacity models across Europe, to carry out train path allocations for passenger traffic earlier and, at the same time, to reserve and protect necessary capacities in terms of quantity and quality for freight traffic. Furthermore, with the help of digitalization, TTR overcomes the strict limit of the annual timetable and enables the necessary flexibility in capacity and train path management through rolling planning. Within a transition phase, RFCs could continue a specific role in this regard as they have the right market position to support rail freight parties to make available the right capacity, which will be dealt with within the framework of TTR IT Landscape. That being said, a strong cooperation between IMs with full network views is essential to successfully manage the capacity for both freight and passenger traffic.

Until TTR is fully rolled out, European infrastructure managers – within the boundaries of the respective regulatory law – provide capacity security for European rail passenger and freight operations and ensure an efficient migration phase. Infrastructure managers and Railway Undertakings are using first outcomes of TTR pilots for continuing optimization of existing capacity products as far as possible in the current legal framework. In addition, the pilots and first implementations shall be used for fact-based evaluation and improvements to the concept and implementation approaches.

In the interest of implementing TTR for Smart Capacity Management and DCM as early as possible, the following measures must be carried out:

6.1. Sound legal basis for TTR on the European comprehensive network

Some elements of TTR, such as capacity models and rolling planning, currently have no explicit European legal basis. This leads to a situation where in some cases national law may hinder infrastructure managers' participation and implementation in TTR. That is why we need a sound legal basis for TTR that applies to the entire European network as early as possible; but not later than the end of 2022, so as not to endanger the Europe-wide implementation of TTR. For the success of the initiative and its timely implementation, this legislation shall not reopen the 4th Railway Package, unless the ongoing evaluation will conclude it is not legally possible to establishing robust legal basis for TTR without changes to the main body of Directive 2012/34. In the latter case, the changes to the text of the Directive 2012/34 should be of a very targeted nature, i.e. strictly limited to enabling the TTR project, as otherwise the railway sector will be destabilized by such a frequent change of the EU legal framework.

6.2. Precise planning of capacity restrictions on the network

The current situation shows that infrastructure managers make capacity available first, but later withdraw it due to construction work, even if this capacity has already been allocated. There are two reasons for this. Either infrastructure managers do not enjoy multiannual funding from the owner and therefore cannot carry out effective construction planning. Or the infrastructure manager has not yet been able to implement the necessary business processes within her own company. Therefore, we ask the European Commission to encourage Member States to comply with multiannual funding for their railway infrastructure managers.

In addition, information of applicants and their consultation in accordance with the rules of Annex VII is of primary importance in the making. The interpretation and implementation needs to be harmonized in all countries. However, concerning the latter, with Annex VII covering this issue, no further legislative measures are necessary in this Regulation.

It is crucial that capacity restrictions do not prevent the competitiveness of the rail sector compared to other modes.

On this basis, the infrastructure managers in Europe will be in a better position to make their business processes fit for the deadlines according to market needs and Annex VII of EU Directive 2012/34.

6.3. Commercial conditions for efficient capacity management

The lack of clear and aligned commercial conditions for train path ordering in Europe leads to unbalanced ordering processes. European infrastructure managers, and if required based on national rules, the MoTs must therefore establish aligned commercial conditions as soon as possible in order to avoid blocking of infrastructure by railway undertakings and ensure capacity (re)gains by TTR.

On the other hand, railway undertakings need reliable information on available capacity during a sufficiently long period (cf. 6.2.), therefore commercial conditions should incentivize all parties of the railway sector to maximize the rail capacity use. It is key that future commercial conditions will be applied reciprocally for RUs and IMs as both parties shall be motivated for a maximum stability and reliability of their planning.

6.4. Boosting digitalization in capacity and train path management / MVPs

European rail infrastructure managers will only be able to make their positive contribution to achieving climate targets if existing infrastructure capacities are managed highly efficiently. This requires the use of state-of-the-art digitalization technology in all areas of capacity and path management. Both for the central element of the TTR IT Landscape at RNE and for all national tools connected to the central TTR IT Landscape. It is essential that solutions bringing benefits to RUs and IMs related to digital capacity management are developed and implemented already early, in the first wave of TTR implementation.

Digitalization of the European capacity management is a huge effort and therefore can be done step by step only. It aims at providing solutions for all parts of capacity management, for all traffic on the full European network, allowing for effective planning according to market needs while reducing the workload for planners at both RUs and IMs. The annex to this position paper shows how to start implementing DCM.

Annex to Position Paper on Rail Freight Corridors & TTR for Smart Capacity Management including Digital Capacity Management (DCM)

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Together with DCM can **TTR** be successfully implemented. This requires the digitalisation of all parts of the capacity provision process, i.e. Capacity Strategy, Capacity Model, Capacity Planning, TCR Allocation, Annual Requests, Rolling Planning and Ad-hoc and Short-term Request. A digital construction can provide train paths for occasional traffic (also automated), path orders during the timetable (Rolling Planning) and the (in TTR) shortened phase of annual timetabling in time and coordinate them internationally. This applies in particular to routes with high utilisation, anywhere on the network.. Of course, also national pre-arranged path catalogues can be fed into the path construction process, common for national and international traffic.

TTR including DCM will bring decisive **advantages** to Applicants, IMs and governments:

Customer responsiveness
RUs will be able to request ad hoc paths, national and international, shortly before the departure of the train. RUs will be able to request and follow up all paths (long term, short term) within one common IT landscape.

Punctuality
Since customers request paths when they know what they need or even when they are ready to depart, punctuality might increase.

Harmonization of paths at borders
The harmonization of paths at borders will be improved at all stages of the timetabling process, from requests in annual timetable and running timetable incl. rolling planning and ad hoc.

Timeliness
IMs will be able to meet timetable deadlines better than before, notwithstanding increasing numbers of freight path requests and TCRs on their networks.

Capacity
Constructing paths with harmonized demand-oriented parameters for each market segment and packing them into homogenous bundles as an option for highly used lines will increase available capacity.

Speed
As an option for highly used lines, through bundling of homogenous train paths, the average speed of the overall path can be increased.

Lower investments as for infrastructure
DCM supports Ministries of Transport in fulfilling their task of providing infrastructure. It leverages the investment in hardware and can be implemented faster than building new infrastructure, thus buying time in the essential planning of new infrastructure.

Enabler for integrated European Schedule
By increasing the capacity on the highly utilized TEN-T Core Network Corridors and other highly utilized lines DCM is also an enabler for setting up the integrated European Schedule connecting the national integrating timetables.

Cost reduction

DCM reduces the need for rolling stock and loco drivers because of better transport times. Equally, it frees up time of schedulers by automating semi-manual processes of path construction.

*Customer commitments beyond one timetable period*

The implementation of TTR allows for multiannual capacity commitments between IMs and RUs. This enables RUs to have customer expectations fulfilled that are not bound to "artificial" timetable periods, currently only known in rail.

Summary
Overall, TTR including DCM increases the competitiveness of rail for freight and for passenger traffic and becomes a key enabler for modal shift to green transportation

The **investments** for the digitalisation of capacity management, in particular for the "First-Wave Implementers of TTR" (SNCF Réseau, RFI, DB Netz, ProRail, Infrabel, SBB Infra, BLS Netz, TVS, ÖBB-INFRA, BaneDanmark, Trafikverket, BaneNor, ACF, CFL, SZCZ) and for the central IM and RU components, were conservatively estimated by RNE on the basis of a survey with the stakeholders at approximately € 675 millions. The Infrastructure Managers, Railway Undertakings and RNE/FTE require extensive funding for this from the EU and national governments (the current draft CEF II "Actions related to smart and interoperable mobility" already provides funds for this).

RNE builds and operates the **Central TTR IT** as part of DCM, which combines the capacity offer for international path requests from the national sections. DCM, combined at European and national IM level, can make a significant contribution to the national IMs with its ability to quickly and, if necessary, automatically construct paths without having to hold all paths in a pre-constructed form, which however can remain the preferred from of providing capacity for some IMs. This ability to construct paths quickly and, if necessary, automatically can reduce the utilisation risk, especially on heavily loaded routes, and avoid inflexibility in the event of path conflicts.
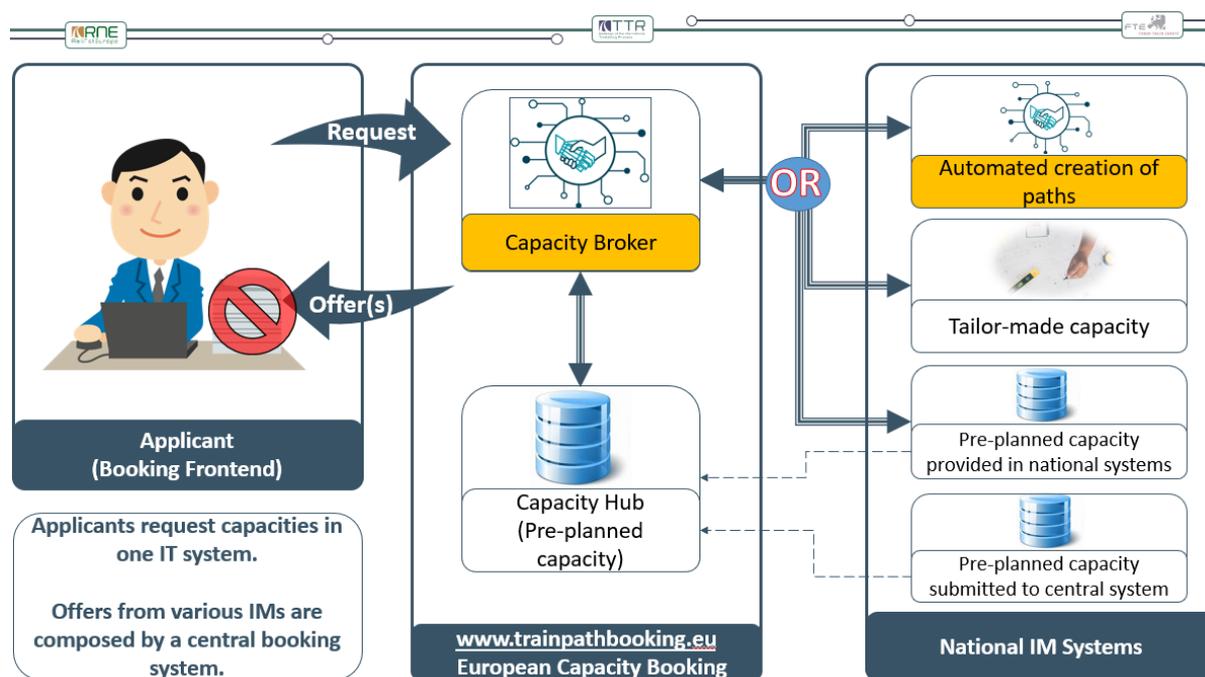
The digitalisation of capacity management requires large efforts and can therefore only be **built up gradually**. This concerns the entire life cycle of a train path. However, a logical **starting point is ad hoc traffic** (short term request):

- The customer benefit is most immediate here. Train paths can be made available in minutes or seconds. Capacity thus becomes easily available.

- The complexity of digitisation is relatively lower than in the automation of the entire annual timetable.

- The ad hoc timetable already contains all relevant business capabilities in IT and could form the basis for the later expansion of automation to other timetable phases with a technical breakthrough.

- An internationally coordinated train path offer will significantly relieve the burden on the border operating lines, which have so far suffered particularly from the fragmented and uncoordinated train paths of international trains in ad hoc traffic.

With **Click & Ride**, DB Netz has already achieved a degree of automation of almost 50 per cent in ad hoc and short-term services and shown that automation in the timetable is possible. The advantages described above have been confirmed. The success has aroused interest throughout Europe and the expectation that C&R can be a first building block for a comprehensive Digital Capacity Management (DCM) and that, together with other components and services, the capacity management of the future can be developed. A high quality of a harmonized infrastructure representation is crucial for every future development Rail Freight Forward actively calls for DCM as a total system and has identified it in its White Paper as a core lever for the modal shift to 30% market share of rail freight.

The development of a comprehensive DCM is already gaining momentum, among others based on several TTR Minimal Viable Products (MVP).

For a **successful implementation** of DCM, both as an overall system and for individual building blocks alike, five points are required:

1. **Software solutions for timetable construction and capacity management: "Services that can be used by all instead of proprietary individual solutions"**

   For the operational management of DCM, standardised, highly automated services for timetable construction and capacity management of European railway infrastructure companies should be made available and generally accessible.

   In comparison, this corresponds to the idea and the 'operating model' of Amazon Web Services (AWS). Amazon needed to operate its e-commerce platform itself and also made it available to third parties. The services that are now offered in large numbers offer extensive functions and are used by many companies for their own services (e.g. SNCF Réseau, Siemens, National Rail Enquiries). The use and interconnection of the services are easily possible and ensured by the use of standardised interfaces.

   However, the system for DCM differs in two essential points: First, there is no profit motive overall and among the participants in relation to this service use. Secondly, the various services and the provision of connecting and overarching elements are not provided by a single company. The infrastructure managers (IM) contribute

individual services and can use the services of others. The provision of connecting and overarching elements is basically ensured by RNE.

In this way, there are no individual solutions or diverse 'software instances' that have to be maintained in an expensive, individual and time-consuming manner. In this way, development costs are shared and further advantages arise. Both the basic data, e.g. on infrastructures or (occupied) capacities, and also the decision on capacity allocation remain at all times under the sovereignty and sole control of the respective infrastructure managers.

A European comprehensive DCM should digitalise the entire process of capacity provision. Possible further modules could include:
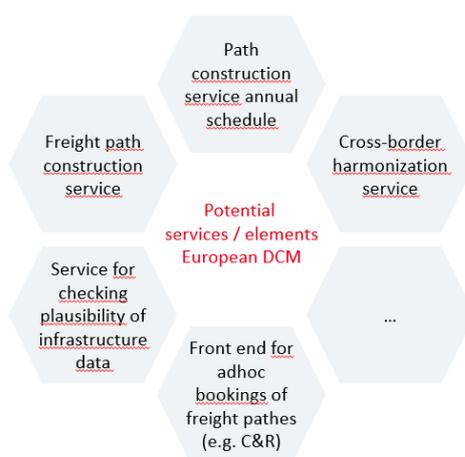
DB Netz is willing to make its train path construction service (= C&R) available for use by other IMs on a non-profit basis and to contribute to such a platform and collection of services.

2. **Legacy Integration:**

Of particular importance is the question of how the national algorithm and other DCM modules can be combined with the existing IT landscape of the respective infrastructure operators. ProRail prepared a proof of concept with DB Netz. Here too, DB Netz is prepared to share its experience with other infrastructure managers.

3. **Infrastructure representation:**

A prerequisite for automated path construction is the representation of the actual infrastructure in digital form ("digital twin"). In order to explore all possibilities of fulfilling the customer's wishes in accordance with the rules and regulations and, if necessary, to find solutions by calculating different variants, DCM absolutely needs a complete, up-to-date and correct representation of the actual and future infrastructure. This effort is easily underestimated. All interested infrastructure managers should start here in the short term. A transfer of know-how could also be useful here.

4. **Connectivity:**

TTR Central IT functions as an intermediary that allows national DCM solutions to communicate with each other. This IT solution is developed within the TTR IT Landscape and TAF/TAP TSI Specifications. By participating (at least as an observer), interested infrastructure managers can understand how they can connect their national timetable constructions via the IT landscape in the future. At

the same time, this offers the opportunity to introduce their own requirements, which will make the IT landscape more universal.

5. Financing:

Experience has shown that the cost of software development, the mapping of the entire infrastructure, the integration into the legacy IT landscape and the question of international connections is initially underestimated. The European Commission already provides the possibility for Co-Funding, which appears a once-in-a-generation possibility to ease the cost burden.

About CER

The Community of European Railway and Infrastructure Companies (CER) brings together railway undertakings, their national associations as well as infrastructure managers and vehicle leasing companies. The membership is made up of long-established bodies, new entrants and both private and public enterprises, representing 71% of the rail network length, 76% of the rail freight business and about 92% of rail passenger operations in EU, EFTA and EU accession countries. CER represents the interests of its members towards EU policy makers and transport stakeholders, advocating rail as the backbone of a competitive and sustainable transport system in Europe. For more information, visit www.cer.be or follow @CER_railways on Twitter.