CHANGES IN EU LEGISLATION AND NEW OPERATIONAL REQUIREMENTS ON INFRASTRUCTURE MANAGERS IN THE CZECH REPUBLIC IN RELATION TO PUBLIC SIDINGS

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Abstract: This paper deals with railway legislation with respect to railway transport in the Czech Republic and EU. It describes certain changes in legislation and their impact on infrastructure managers. It mainly focuses on the tasks infrastructure managers have to take on in relation to a new railway category – public sidings. The authors also deal with recent experience with the process of allocating rail capacity on public sidings.

Keywords: infrastructure manager, legislation, public siding, railway undertaking, railway transport.

1. Introduction

The Czech Republic is bound by the EU legislation (regulations, directives, and decisions). The requirements of these legal regulations are reflected e.g. in the Act on Rail Systems (Directive No 266/1994 Coll.), the regulations to implement the law and subsequently in the regulations of railway operators as well. This paper presents selected requirements on railway undertakings, their implementation and the role of the Faculty of Transport Engineering of the University of Pardubice (hereinafter referred to as "FTE") in this process.

2. New Legislation – New Requirements

One of the recent changes imposed by the EU legislation – Directive 2012/34/EU of the European Parliament and of the Council establishing a single European railway area – was the introduction of a new railway category: public siding (hereinafter referred to as "PS"). These are sidings on which freight transport can be operated by more than one railway undertaking and the main purpose of which is the connection of a service facility to national and regional rail systems. Rails on premises used in mining, processing and energy industries are not considered as PSs.
Another change having an impact on the railway market was the definition of a service facility (hereinafter referred to as "SF"). Service facilities include storage sidings, refuelling facilities, vehicle washes, faeces suction systems for toilets of passenger trains and water refilling systems or train repair and maintenance halls. They can also include other technical facilities providing services directly related to the operation of railway transport on national and regional rail systems or public sidings (Gašparík *et al*., 2017).
Both changes imposed new requirements on railway undertakings for both passenger and freight service, but also on infrastructure managers (rail system operators). From 01 May 2018, PSs must be available to any potential users (passenger and freight railway undertakings, firms providing maintenance and building railway infrastructure, etc.) where possible considering the capacity, technical or operational conditions of the PS. The Czech railway undertaking *České dráhy a.s.* (Czech Railways, hereinafter referred to as "CR"), the owner of the most sidings with refuelling facilities, washes, repair halls and other SFs, had to do the following in reaction to the change:

1. Specify a group of public sidings within its sidings,
2. Establish and publish non-discriminatory rules for the use of PSs,
3. Ensure the allocation of capacity to applicants for the use of SFs at the specified sidings, in a non-discriminatory fashion.

In light of the requirements of the Directive (Directive 2012/34/EU), Access Office to Transport Infrastructure was established in the Czech Republic. Among other things, the Office ensures and oversees the non-discriminatory nature of the conditions for access to the railway market.
Following the requirements of the Directive (Directive 2012/34/EU), CR entrusted FTE as an independent body to implement the above mentioned points 2 and 3. A capacity allocator department was established at the FTE and a team of experts was appointed from the Department of Transport Technology and Control and Department of Transport Management, Marketing and Logistics, who first drew up a Network Statement. It is a fundamental document defining the rules for the allocation of capacity to all applicants for the use of PSs and the SFs thereon (Gašparík *et al*., 2014). Among other things, the document contains technical specifications of the rail systems, the process and ways of submitting a request for capacity allocation, the price of capacity allocation, and penalties for actions which disrupt the operation of the sidings (delays caused, etc.).

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3. Capacity Allocation Information System

To implement point 3, i.e. the non-discriminatory allocation of capacity on PSs, a software tool was developed at the capacity allocator department – the capacity allocation information system (IS PROK). Its purpose is to register record and process online requests for capacity (Abramovič *at el*, 2017). Fig. 1 shows the capacity allocation diagram using this IS. After logging in using their login name and password, the applicants specify, among other things, the requested infrastructure capacity, type of railway transport (passenger service, freight service, etc.), time interval they want to use the siding in, tractor unit series and train (unit) length, and mainly what services they want to use (wash, refuelling facility, repair/maintenance, etc.). After that, they save the request and send it to the allocator (to the Department of Transport Technology and Control of the FTE). Subsequently it is assessed whether formal requirements of the request have been met (mandatory fields, etc.). Where possible considering the capacity of the siding within the time interval required, the request is approved and the capacity is allocated (Hansen *et al*., 2008).

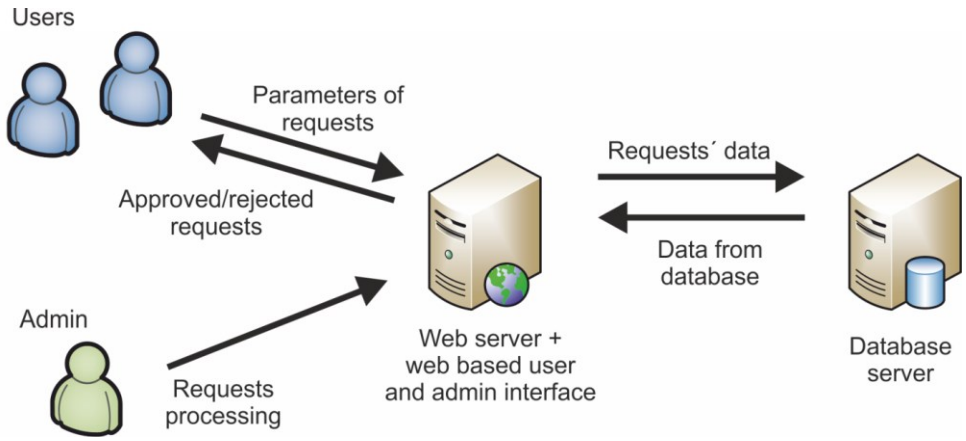

Fig. 1.
IS PROK diagram
Source: Authors

Where there are two or more requests to use the same SF within one time interval, the allocator decides about the priority of the individual requests and gives priority to individual applicants. The Network Statement sets out the priorities of individual trains as follows:

a) Regular public railway transport trains providing transport services on national level,
b) Regular public railway transport trains providing transport services on regional level,
c) Combined transport trains,
d) Trains of railway undertakings with a framework agreement,
e) Regular international passenger service trains,
f) Regular international freight service trains,
g) Regular national passenger service trains,
h) Regular national freight service trains,
i) Other trains.

Possible positions of SFs (e.g. refuelling facilities or washes) are shown in Fig. 2. The specific position of the SF in relation to other facilities and buildings on the siding and the number of service lines (service facilities) has an impact on the possibilities of practical use of the SF by several railway undertakings (applicants). Of key importance is for instance the number of fuel dispensers of the refuelling facility and the possibility of their parallel use by two entities (railway undertakings). Significant is also the railway lay-out (number and length of tracks) at the PS entrance, at the facility and at the PS exit (Directive No 104/2014).

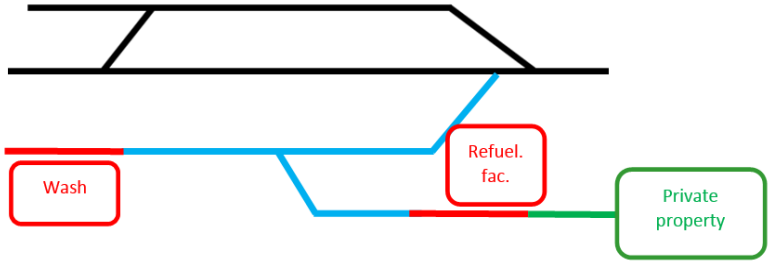

Fig. 2.
Example of siding arrangement
Source: Authors

Problematic can be another private property on the siding premises where this property can only be accessed using the track at the SF. Maintaining access to this property can have a negative impact on the SF's capacity. Another limiting factor for the parallel use of several SFs on one siding is the technological time standards for the use of the individual SFs in combination with the train unit parameters, mainly its length (Dollevoet *et al*., 2008).
Fig. 3 shows the original and current conditions. A railway undertaking wanting to use a siding had to sign an agreement with the siding operator (owner). In addition to that, it currently has to request service facility capacity, to which purpose an independent body has been established – the allocator allocating capacity to applicants (Široký *et al*., 2014).

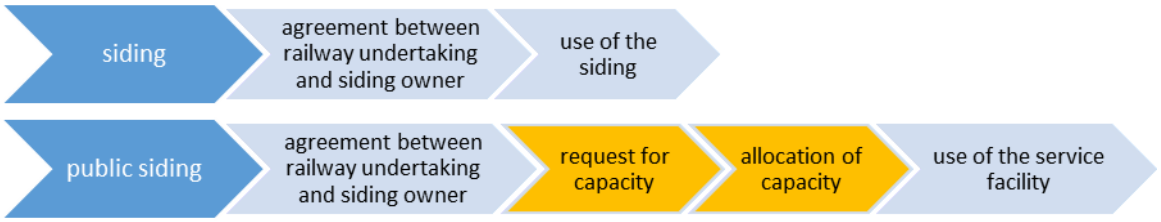

Fig. 3.
Use of sidings and public sidings
Source: Authors

4. Process of Rail Capacity Allocation

Only an authorised applicant can submit a request for rail capacity allocation to the allocator, the authorised applicant being a person with a valid licence for the particular rail or, in accordance with the Act on Rail Systems, a person who doesn't hold a valid licence, but presents the allocator before the rail capacity allocation with a written statement of the licence holder stipulating that they would actually use the capacity allocated (Stojadinovic *et al*., 2016).
The request for rail capacity allocation is to clearly define the required capacity and services, including information on the time of its use. The request is to be supported by a valid licence to operate railway transport, authorising the applicant to operate the required type of railway transport in the time period for which the rail capacity allocation is requested, or the applicant is to prove the submission of a statement in accordance with Article 4(1), point (b) of the Statement, where allowed by the applicable Act on Rail Systems.
Requests for rail capacity allocation, for introduction of a train of the railway undertaking, for shunting a vehicle or processing a working timetable of a train are submitted by the applicant electronically using the allocator's information system. When requesting ad hoc capacity allocation in accordance with Article 7, points (b)-(d), it is recommended to contact the respective service facility before submitting the request and verify its free capacity.
In allocating capacity, the allocator proceeds in a way so as not to give preferential treatment to an applicant.
Where the rails to which the statement applies meet with another rail, the capacity allocator is the capacity allocator on such another rail (Cempírek *et al*., 2017).
Capacity is allocated using four key processes. At the same time, the allocator allows for submitting a request in a format defined by the allocator. A detailed description of this option is provided for on the allocator's website (pridelce.upce.cz):

a) Long-term allocation, which is taken into account in creating the annual working timetable and implementing the planned changes thereof. Regular requests and late requests for capacity fall within this category as well. Requests to be taken into account when creating the annual working timetable are to be submitted by 15 August 2018. Late requests to be taken into account when creating the annual working timetable are to be submitted by 31 October 2018. Changes of the working timetable are then carried out in accordance with the National and Regional Rail Statement applicable to the preparation of working timetable for the respective period issued by the *Správa železniční dopravní cesty* (Railway Infrastructure Administration; hereinafter referred to as the "Railway Infrastructure Administration Statement"). The infrastructure manager provides the railway undertaking with working timetable aids, upon request and for consideration. The price for the provision of aids is agreed by the infrastructure manager with the railway undertaking in a railway transport operation agreement. The dates and time periods for the submission of these requests are provided for in §34a of the Act on Rail Systems. The request can be submitted in the allocator's information system at pridelce.upce.cz or www.ceskedrahy.cz/pd. The railway undertaking can include in one request for a specific location (part of a national rail or siding) more trains or shunted vehicles,
b) Ad hoc allocation using the free capacity left after the creation of the annual working timetable and implementation of all the planned changes thereof. Ad hoc requests are submitted no later than 5 calendar days before the requested date of rail capacity allocation electronically in the allocator's information system at pridelce.upce.cz. Where the request is submitted late, its processing cannot be guaranteed. In this case, the applicant can use a process in accordance with points (c) or (d). The maximum period of validity of all types of ad hoc requests is only until the next change of the annual working timetable

c) Urgent ad hoc allocation – where the applicant intends to submit the request later than 5 calendar days, but no later than 24 hours before the requested date of the rail use, it is possible to select the urgent ad hoc allocation option in the allocator's information system at pridelce.upce.cz. Before submitting an urgent ad hoc request, it is recommended to verify the free capacity of the respective service facility (service volume, time interval),
d) In case of an unpredictable event, which the applicant couldn't have foreseen even within the period stated in point (c) and which happened through no fault of their own, it is possible to submit a super-urgent ad hoc request in the allocator's information system. Also in this case the allocator recommends finding out whether the respective service facility has free capacity (service volume, time interval) before submitting the request. Such request is usually processed within 60 minutes. Such request can only be approved where it doesn't affect rail capacity already allocated and the requested time of use of the rail doesn't exceed 120 minutes. This request is subject to a charge in accordance with point (c).

Rail capacity, i.e. its usable capacity within a schedule of required routes of trains / shunted vehicles on a specific rail section in a specific time period, is expressed as a number of trains / shunted vehicles that can be moved on a national rail or to/from sidings in a specific time period given the existing technical, operational and personal capacities and maintaining the necessary transport quality. Should it not be possible to satisfy all requests for capacity allocation to be taken into account in the annual working timetable, the allocator can offer to the applicant free capacity in a different location or different time period (Šrámek *et al*., 2016).
The allocated rail capacity can only be used by the applicant the capacity has been allocated to and who holds the respective licence, or by a licence holder having made a statement in accordance with Article 4(1). Where the licence holder cannot use the allocated rail capacity, or intends to limit the scope or frequency of train journeys on specific days or in a specific time period, they can waive the allocated capacity at the allocator no later than 30 days before the date of the planned train journey or of using the public siding. Where the applicant waives the allocated capacity later than 30 days before the date of the planned train journey outside of the date of the regular working timetable change specified in the Railway Infrastructure Administration Statement, or the allocated rail capacity expires due to a delay in the use of the rail by a train or shunted vehicle longer than 1,200 minutes through fault of the applicant, or where they fail to use the allocated rail capacity, they are obliged to pay a penalty to the infrastructure manager in accordance with the provisions on penalty payments. Capacity freed in such a way can be allocated to another applicant.
In the event of extraordinary situations in railway transport (e.g. delays, track closures, train redirection due to impassable rail sections, introduction of abnormal trains, etc.), the rail system operator allows for the use of the rail according to the order established for railway dispatch control in the Decree No. 173/1995 Coll. issuing the railway transportation rules, as amended, and proceeds according to §23b (5) of the Act on Rail Systems.
During the long-term capacity allocation, it is possible to make changes to the requests in the allocator's information system. Upon making a change, the original number of the request remains the same, but the date of submission is changed. Where this change is made after the end of the time period for submitting regular requests taken into account in the annual working timetable, but before the end of the time period for submitting late requests taken into account in the annual working timetable, also the type of request is changed from regular to late (UIC CODE 406).
The applicant can use the allocated capacity of a rail or public siding within a time interval starting no earlier than 3 hours before the time of arrival stated in the request and ending no later than 21 hours after the time of departure stated in the request for capacity.

5. Conclusion

New EU legal regulations impose new requirements on railway undertakings, infrastructure managers, but also on the Ministry of Transport and other railway transport administrative bodies (Rail Authority, Access Office to Transport Infrastructure). Defining the category of public sidings and service facilities created a need to establish an independent body allocating capacity on PSs and coordinating the use of SFs owned by the Czech Railways. This body is the Faculty of Transport Engineering of the University of Pardubice where the academic staff can thus put their expert knowledge into practice.

References

Abramovič, B., Zitrický, Z., Meško, P. 2017. Draft Methodology to Specify the Railway Sections Capacity, *Logi* – Scientific Journal on Transport and Logistics 8(1): 1-10. Available from Internet: DOI: https://doi.org/10.1515/logi-2017-0001.

Cempírek, V., Široký, J., Matuška, J. 2017. Register of train driving licences. *The Scientific Technical Collection of Czech Railways*, 43(2017): p. 1-8 (in Czech).

Directive No 104/2014 Operating intervals and subsequent intervals, 2014, Railway Infrastructure Administration. Statement on national and regional railway. Available from Internet: <http://www.szdc.cz>.

Directive No 266/1994 Coll., on rail systems, as last amended. Regulation of the Government No. 1/2000 Coll., on the

Rules of Carriage for the Public Rail Freight Transport, all as last amended. Available from Internet: <http://www.mdcr.cz>.

Directive 2012/34/EU of the European Parliament and of the Council establishing a single European railway area. Available from Internet: < https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32012L0034>.

Dollevoet, T., Huisman, D., Kroon, L. et al. 2017. Application of an iterative framework for real-time railway rescheduling, *Computers & Operations Research*, Vo. l43, pp. 203-217.

Gašparík, J., Majerčák, J., Široký, J., Abramovič, B., Meško, P., Nachtigall, P., Zitrický, V. 2017. *Railway Traffic Operation*. Žilina: Žilinská univerzita, p. 292.

Gašparík, J., Široký, J., Pečeny, L., Halás, M. 2014. Methodology for assessing the quality of rail connections on the network. *Communications: scientific letters of the University of Zilina*, Vol. 2: p. 25-30.

Hansen, I. A., Albrecht, T. 2008. *Railway timetable & traffic*. Eurailpress, Germany. p. 352.

Stojadinovic, N., Boskovic, B., Bugarinovic, M. 2016. Train Path Performances and Capacity Allocation: What is Actually the Object of Transactions in the Liberalized Railway Market, *Transport Means - Proceedings of the International Conference*, pp. 735-740.

Široký, J., Cempírek, V., Gašparík, J. 2014. *Transport Technology and Control*. Tribun EU. Brno. p. 238.

Šrámek, P., Molková, T. 2016. Utilization of Train Routes in Relation to the Implementation of Periodic Timetable. *Proceedings of the Third International Conference on Traffic and Transport Engineering (ICTTE)*, p. 949-954.

UIC CODE 406 – Capacity, 2016. Paris: UIC International Union of Railways.
Lille VAL, France. In: Railway-technology.com [online]. Railway Technology [cit. 2016- 11-2]. Available from: http://www.railway-technology.com/projects/lille_val/.