



INTEGRATION OF THE PUBLIC PASSENGER TRANSPORT IN THE CZECH REPUBLIC

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Abstract: *The paper deals about integration processes in the public passenger transport in the Czech Republic leading to creating of integrated transport systems. There are characteristics of some differences between existing integrated transport systems in the Czech Republic and on the end of the paper there are brief remarks about the role of railway transport and about utilizing of transport modelling by planning of integrated transport systems.*

Key words: *integration, public passenger transport, transport modeling.*

1 The Main Task of Integration

The integration in public passenger transport is necessary because of creation of the unified transport supply for passengers. The transport supply will be differenced in the case of competition of transport operators and this is not so useful for passengers, because there is also the main problem in the competition on the field of modal split between public passenger transport and individual (car) transport. In this case the public passenger transport has to be unified without internal barriers and other obstacles for passengers, e.g. existing of variety of tariffs, differenced transport conditions etc. It has to be said for illustration of this serious problem, that the number of registered passenger cars in the Czech Republic has been risen from 3 438 870 in the year 2000 to 4 108 610 in the year 2006 [1].

2 Integration Principles

The public passenger transport integration is realized in the form of establishing of so called “integrated transport systems.” The integration covers three aspects of transport – tariff, transport and the field of organization and economics [2].

It means that the transport is realized with unified tariff and transport conditions. The only

one ticket is valid for more lines, transport operators or transport modes in the area of ticket validity, e.g. in defined transport zones or in defined time period. The integration in organization subsystem can be represented by rational and unified creating of line structure, time scheduling, making of connections and operative dispatching of all lines, operators and transport modes together. The economic part is represented especially by the questions of clearing and dividing of receipts between all cooperating subjects (transport operators). In the last time is the economical part often connected also with application of new electronic ways of fare-collection, e.g. in form of electronic cards or utilising of mobile phones (SMS sending).

This form of transport organization has got following advantages: for passenger – one ticket for all lines in defined area, spatial and time coordination is also very important; it means e.g. declared waiting of vehicles on the delayed connections etc. The passengers can choose the most suitable connection thank to the tariff integration and the transport supply is wider thank to this. On the other hand it can have also some advantages for transport operators, like network effect of service, unified advertising of system toward wide public or some activities can

be provided by the coordinator of the system, e.g. distribution of tickets, ticket inspection, printing of time-tables etc. The integration can have also some positive effects in the transport technology. The environmentally friendly transport modes can be preferred on the backbone relations, because the line structure can be based on the combination of backbone (e.g. railway) and feeding (bus) lines [3]. There can be also the optimizing of transport service (the transport operator can service some connections on other lines to prevent void drives or idle times of vehicles). The appreciable fact can be also that the connecting into integrated transport system can be a “mark of quality” (sometimes also certified through ISO or European and other norms) [4].

3 Development of Integration Process in the Czech Republic

The first integration in public passenger transport was realized in Hamburg in Germany in the year 1965. Firstly it was realized in the form of associations of transport operators. Nowadays another access is preponderated. The integration is often realized under the control of an independent subject or under the direct control of regional authority. The integrated transport became very popular and well-extended form of transport organization in the German-speaking countries through last 40 years [5].

The first integration plans in Czech Republic are almost 30 years old, but the first real steps were realized after the year 1989, when the change of political and economical conditions was occurred.

The former state road transport operator called “Czechoslovak road transport” has been privatized and divided into a number of private transport companies. The road public passenger transport conditions have been also divided between these newly-established companies in consonance with this fact.

Another situation is in the field of railway transport. The biggest railway transport operator “Czech Railways, JSC” (former national railway operator) has dominant position on the transport market till today. Only about 8 mostly regional railway lines and a few individual connections on other lines are dominantly operated by private operators. On the other hand it has an advantage for passengers realized in unforced way – the unified transport conditions and unified control of transport (e.g. making of connections, time scheduling) in the whole state.

The integration is very powerful tool how to make softer the existence of various transport conditions for passengers in the case of more transport operators participating on the transport route. Thanks to above mentioned this became very actually after 1989.

For illustration the suburban transport of Prague (called Prague Integrated Transport) is operated by 17 transport operators, the same number of transport companies can be as well found in suburban transport of the second biggest city Brno in region of Southern Moravia [6, 7].

Somewhere there were also some operative aspects leading to integration. It is not an exception, that there are some relations with shorter travel times by using of train than city public transport in the area of large cities. It can make about 50 % on some relations between the suburban areas and city centre of Prague [8]. Other situation can be seen in Zlín agglomeration, where the railway line makes the backbone of this area situated along this line. For these and similar reason the Czech Railways were one of the most active subjects by establishing of integrated transport systems in spite of above mentioned unified situation on the whole railway network.

On the beginning, the integrated transport systems were applied in surroundings of big cities (Prague, Ostrava, Zlín), but nowadays is the integration spread into wide rural areas as well. The last tendency is to create one integrated transport system in each self-governing region of the Czech Republic in the frame of geographical borders of these regions.

4 Differences between Integrated Transport Systems

There are 15 integrated transport systems in the Czech Republic [9] (see Fig. 1). All of these systems were developed in individual way influenced by local conditions. These conditions were often determined by willingness of local subjects to integration and by the agreements between these subjects.



Fig. 1: Map of Integrated Transport Systems in the Czech Republic. Source: Author, based on [9]

For that reason the integrated transport systems are differenced in size of integrated area (e.g. diameter of Prague Integrated Transport area is almost 80 km [6]; on the other side the Integrated Transport System of České Budějovice covers the area of the city and very close suburbs only), in tariff structure, in number of participating transport operators (17 in Prague, 2 in Tábor) in number of integrated transport modes (in Prague there are integrated subway, trams, city buses, regional buses, railway, but also one funicular and five river-ferries; on the other side in the Integrated Transport of Central Bohemia there are regional and city buses only), in assortment of tickets, in check-in system etc. [6]

Some of above mentioned facts (e.g. number of transport operators) are based on some, it can be said “geographical,” specifics and it is not seen as a problem. There is the main problem in differing transport technologies applied in these systems. The well-structured composition of lines is created in some systems, what is logical consequence (on the possibility from the second point of view) of the unified tariff structure. This leads to optimizing and often also to increasing of transport supply. On the other hand there are some systems very oriented especially on the tariff conditions (application of electronic cards) without significant changes in transport supply. There are not used all advantages and technological possibilities in these systems and it is a pity, because it means not so extended transport supply as it can be. Every non-utilized possibility for strengthening of public passenger transport is opportunity for strengthening of individual passenger transport realized by cars. This tendency has to be eliminated, because of negative effects of this mode of transport (congestions, noise, pollution, etc.).

The second problem is that the differenced conditions of public passenger transport in each integrated transport system (region) bring treatment of regionalizing of the public passenger transport network. It is a problem in the situation, when the Czech regions are not so large and a lot of trips (daily commuting included) are realized over the regional borders. It has to be reminded, that the individual car transport relatively has got the same conditions in the whole state (and very often abroad too).

Where is the problem? There are not existed any legal acts creating unified legal (and as operational as well) form for integration. Each transport mode is abided by individual legal acts with only a few remarks to public passenger transport integration. The prepared “Public Passenger Transport Act” can be seen as a solution, but the preparation takes a long time and the law is still not passed. There is problem of time-delay, because how longer will it takes, the integrated transport systems will be more different and the way to unify these conditions will be more difficult and the public passenger transport will still suffer through that. [10]

5 The Role of Railway in the Integrated Transport Systems

The role of railway is very important in the integrated transport systems, because it will create a backbone of line structure of these systems. The buses can be used as a backbone only in case, when the railway does not exist in that area or if the operational parameters of railway are not so good (low speed, long travel times, bad technical condition of line etc.). Very important aspect of railway is that it is almost environmentally friendly mode of transport especially in the case of electric traction etc. Very significant is that the railway has got a segregated line in urbanized areas. The travel times can be shorter than to this and as well than to longer distance between railway stops than between the stops of city public transport.

The integration of railway brings also more requests on railway than in the case of normal operation. The improved frequency time schedule is often requested. This form of railway service is in general more capacity-consuming. The time interval 15 min is often requested in the city areas (incorporating of railway into the city public transport system) and it often borders with capacity limits of these railway lines. The four-tracked railway lines are often built in these cases in Germany. Two tracks are used for long-

distance passenger and freight trains. Second pair of tracks is reserved for this regional (suburban) transport. This type of line is not applied in the Czech Republic. There is only one three-tracked line in Prague and in all other cases in the Czech Republic there are normal two- or single-tracked lines and this is seen as a substantial limitation for more intensive incorporating of railway into the city public transport systems. In spite of this fact two city railway lines have been opened in the Czech Republic on in Prague and one in Brno. Both of these lines are realized in tangential relations, where capacity infrastructure for city public transport (tram or subway lines) is missing. Very important request for railway as a mode of city public transport is diametric composition of railway lines structure usually with one central transferring point (usually main station) to better service on city relations. This is a problem especially in Prague, where are the lines historically terminated on two railway stations with a bit complicated transfer between these stations. There are also requests on railway rolling stock in these relations like low-floor vehicles, wide doors for faster changing of passengers, attractive design, good acceleration of a train etc. There are operated new modern electric units Class 471 (named CityElefant) in Prague, Pardubice, Olomouc, Ostrava and Ústí nad Labem with requested parameters. [11]

6 Other Transport Modes in the Integrated Transport Systems

The integrated transport systems are not consisted from the railway only. Other transport modes are participating there as well. The lines of city public transport operated in electric traction are usually predefined by the its infrastructure, but in the field of bus lines contains a place for some changes and for optimizing. There are various accesses to bus transport and its meaning. Bus lines are often utilized as feeding lines to lines operated by railway, trams or subway. This model can bring a better utilizing of bus vehicles. Shorter bus lines are operated in shorter time interval with holding of the same transport output. The backbone line is strengthened by these passengers from former in the part of way parallel lines and the total transport supply for passengers can be wider in this case. The mini and mini buses are set into operation in some systems thank to this and it can brings also some financial-savings. [11]

There can existed also some parallel lines, in the case, that the passenger flows are so strong

for filling up of capacity of both lines. The integration has got an advantage in this case as well. Passengers can choose between these lines in the common section after time when they can travel. In the case, that these lines are operated by different operators without integration, it is not possible, because time-tickets are usually valid for one line only. For that reason the transport supply is administrative reduced in spite of the fact that the connection really exists. This barrier is removed in the frame of the integrated transport system.

It is very useful to prepare the plans of transport service for every area. The transport modelling can be a powerful tool for solution of this problem, because of the travelling public is very sensitive for every change. The macroscopic models supported by software can be appropriate for it, because there is calculated with transport flows of passengers. The models can bring a help for decision making. Some measurements can be verified before investing of money. The quality of gained results is depended on the quality of base data. It is very significant to give a very good attention to this first stage of transport modelling because of future results quality. It is often connected with organizing of transport surveys and communication with transport operators and it is often very complicated. The models are based on the comparison of some predefined variants, but the impact of each variant (some technological indices) can be verified in the more effective way than without software support. [12]

7 Information

The practical realisation of integration has to be supplemented by unified and very detailed information strategy, because of the passengers have to be informed about all possibilities which integrated transport systems brings. The travelling has to be easy and user-friendly; in another case the individual car transport will offer better conditions. [11]

The information system can be divided into two parts. One part is consisted of information towards wide public like time schedules, printed materials, maps, electronic operative information systems (displays on stops, broadcasting, etc.). The second part is determined for controlling of system operation and used by the staff of the transport operator or of the coordinator of the system, like dispatching, transmitting of actual position of vehicle, waiting on delayed connections, information about fare-collection,

behaviour of staff (keeping of compulsory safety breaks), etc.

Conclusion

The creating of integrated transport systems will be a good way for public passenger transport propagation and a powerful tool for strengthening of the public passenger transport in competition with the individual car transport, what is very important in these days. The integration brings unified way into the organizing of public passenger transport, what is missing in the case of existing of various transport operators participating on public passenger transport. On the other hand there are various ways of integration in each of 15 Czech integrated transport systems. It brings a treatment of differencing of the public passenger transport structure from the point of view of whole state. There are a lot of relations over the borders of relatively small integrated transport systems.

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ИНТЕГРИРАНЕ НА ОБЩЕСТВЕНИЯ ПЪТНИЧЕСКИ ТРАНСПОРТ В РЕПУБЛИКА ЧЕХИЯ

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Резюме: Докладът разглежда процеса на интегриране в обществения пътнически транспорт в Република Чехия, което води до създаване на интегрирани транспортни системи. Характеризират се някои различия между интегрираните транспортни системи в Република Чехия, а в края на доклада се дават кратки забележки за ролята на железопътния транспорт и за използването на транспортното моделиране чрез планиране на интегрирани транспортни системи.

Ключови думи: интегриране, обществен пътнически транспорт, транспортно моделиране.