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ANALYSIS OF POSSIBILITIES FOR IMPLEMENTATION OF INTEGRATED TRANSPORT SYSTEMS IN THE CONDITIONS OF SLOVAK REPUBLIC

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The integrated transport systems are the solution of decreasing utilization of public passenger transport in many cities and areas around the cities not only in the countries of European Union. The statistics numbers about using the public passenger transport in Slovakia have the decreasing tendency in the last 10-15 years. There were performed some experiments to create the integrated transport systems in Slovakia but they had not been developed anymore. The presented article will analyse the conditions for implementing the integrated transport systems in Slovakia. It will point out the key elements in creation of integrated transport system to be attractive for passengers and to be advantageous to the transporters and give the suggestions for solutions.

Keywords: *integrated transport system, public passenger transport, tariff system*

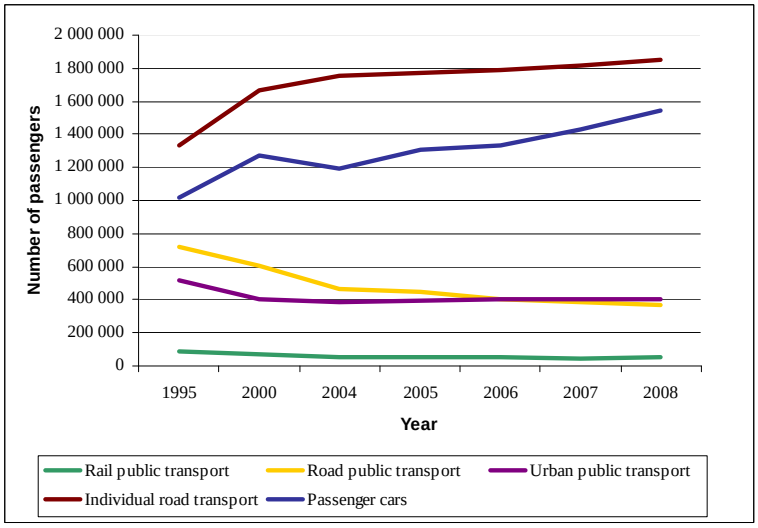
1. Introduction

The number of passengers using the public transport for their everyday journeys has being decreased during the last years in Slovak Republic. This development is very similar to the development in most of countries in Europe in last decades.

Table 1. Comparison of passenger transport by mode in Slovak Republic

	1995	2000	2004	2005	2006	2007	2008
Rail public transport	89 471	66 806	50 325	50 458	48 438	47 070	48 744
Road public transport	722 510	604 249	461 772	449 456	403 270	384 637	365 519
Urban public transport	515 593	404 539	383 118	395 064	400 673	403 466	399 425
Individual road transport	1 333 334	1 664 342	1 750 171	1 769 147	1 792 000	1 812 245	1 847 112
Passenger cars registered in the Slovak Republic	1 015 794	1 274 244	1 197 030	1 303 704	1 333 749	1 433 926	1 544 888

Diagram 1. The development of passenger number in public passenger transport in Slovakia



The development of number of passengers has decreased in railway public transport, road public transport as well as in urban public transport. On the other hand the individual road transport has increased. This development is caused by the increasing level of living standards. The individual road transport offers more advantages for inhabitants while the public passenger transport services are not so attractive because of travel time, accessibility (time, space) but mainly the quality of travelling. The preference of public passenger transport is still remaining at a low level. And last but very important thing for passenger decision-making to use or not the public transport – the price. The prices in the case of all modes have increased dramatically in the last 15 years. These all facts influenced the changeover of passengers from public to individual transport.

2. The Experiments of Integrated Transport Systems in Slovakia

In the last ten years the experiments to create integrated transport system have been done in some cities. Some of them are still continuing and even there are the plans for their full operation. In these days there is the integrated transport system in the different stage of development in 2 cities – Bratislava and Žilina. There the experiment of integrated transport system has been done in Košice but it is not in service for now.

The common features for all the experiments of integrated transport systems in Slovakia are as follows:

- the integration was applied only on chosen lines of urban transport, railway transport and bus transport,
- the integration covered only small part of area,
- the integration was based mainly on using one tariff for time ticket, the transport integration and tariff integration was not developed further.

On the base of above mentioned it can be concluded that the integrated transport systems in Slovakia are not the integrated transport system in the true sense.

2.1. Bratislava

The first attempt at integration on the area of Bratislava was in year 2000. In that time the passengers could use the net season ticket for journeys by urban public transport and railway transport. Later the suburban bus transport has been integrated but only few lines. This situation has been lasting practically till now. In 2005 the company “Bratislava Integrated Transport” proposed the aim to create and operate the integrated transport system on the area of whole Bratislava region. In 2007 the document “The Concept of Bratislava Integrated Transport” was processed. In this document the process of integration is elaborated such as the tariff, transport integration, the technical equipment, economic integration and system with main focus on revenues dividing.

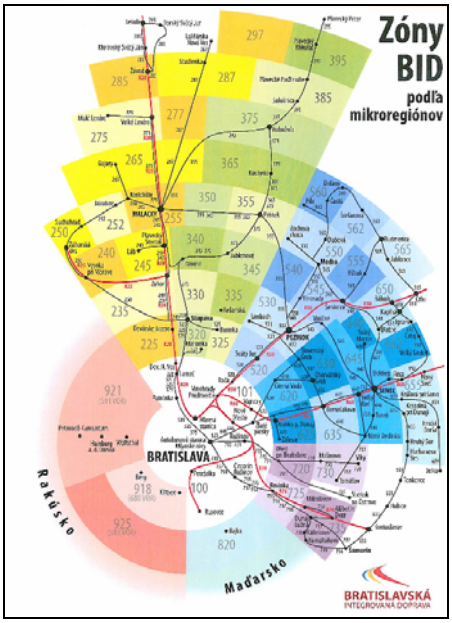


Figure 1. Proposal of zones in Bratislava integrated transport [5]

In the last two years the preparations for system start have been realized but the start as such is still postponed. There are mainly political and economical reasons, which have the influence on the system's start-up.

2.2. Žilina

The Žilina regional integrated transport system has been created mainly for the reason to revive the railway line from Žilina to Rajec (the town about 20 km southwards). This line is interconnected with the urban public transport. The passengers can use single and also tickets for a season. The area is divided into 7 zones (Figure 2). The integration is oriented mainly on tariff integration.

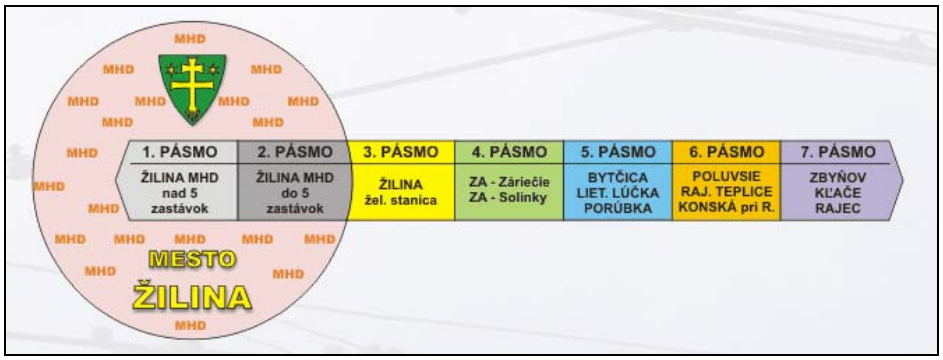


Figure 2. The zones in integrated transport system in Žilina [6]

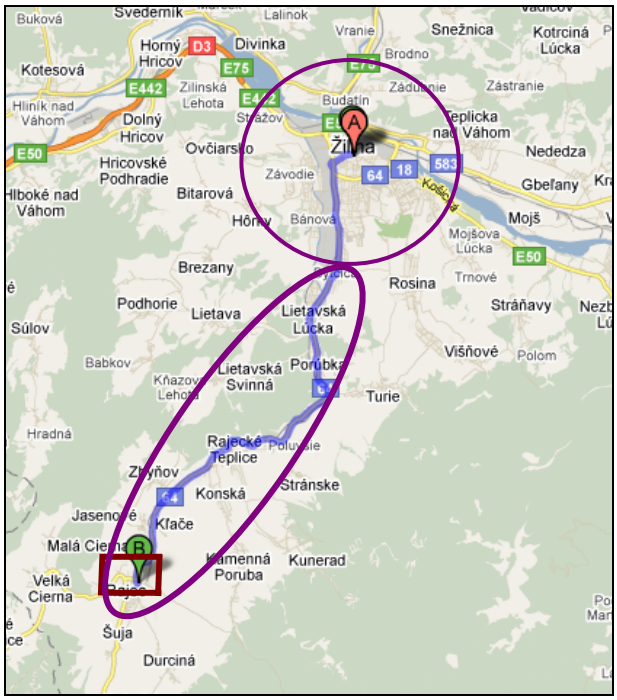


Figure 3. The area of Žilina integrated transport system

2.3. Košice

In Košice, the second largest city of Slovakia, the experiment of integrated transport system was focused on the employees of US Steel. Similar as in Žilina, first of all the urban public transport and railway transport was integrated; later the suburban bus transport was integrated too. But the project was terminated because of unfavourable economic results.

3. The Current Conditions for Creation Integrated Transport System

3.1. The legislation about the passenger transport in relation to integrated transport systems

Until recently the law of Slovak Republic did not support the creation of integrated transport systems. The amendment of Act 168 from 1996 about the road transport from year 2007 defines the integrated transport system and sets the duty for regions and municipalities to support the creation of integrated transport systems.

"The region or municipality supports the creation of integrated transport system in passenger transport. Integrated transport system means the connection of railway transport services with urban transport system and suburban bus transport into the one system of lines in the way that it brings the advantages of unified tariff, transport conditions and unified transport documents."

The similar new passage containing the support for integrated transport systems is included in the act for railway transport:

"Integrated transport system means the connection of railway transport services with the system of urban transport and suburban bus transport into the one system in which the lines are interconnected and the connections are harmonized. This is based on unified time-table. Ticket sell system is unified as well. Integrated transport system has to be able to perform the journeys on the interconnected lines with only one transport document."

It appears from above mentioned that for now there are only basic support defined. More detailed elaboration of each part of integration, the process of integration, the conditions for all involved parts are absent in the both acts.

The government of Slovak Republic issued some documents relating to public passenger transport. In 2002 it was the conception of regional transport policy creating. The integrated transport system is mentioned there as one of the most effective ways for the share of public passenger transport to be maintained or increased.

Another support of integrated transport system is included in the document "Transport Policy of Slovak Republic till 2015" from 2005. One of the aims is to provide the support of inhabitants' mobility by developing and operating of integrated transport systems. Integrated transport should provide suitable, safety and economic transportation of passengers. It is necessary to create unified transport conditions, tariff, transport documents, coordinated time tables, complex information transport systems and relevant transfer terminals. The realization of integrated transport systems should be at two levels, either on the area of city and the suburban area, or on the region area.

In 2007 the Ministry of Transport, Posts and Telecommunication of the Slovak Republic agreed the Operational programme Transport 2007 – 2013. It is the programme document for drawing from EU funds in the transport segment. The infrastructure of integrated transport system is one of preferred axis in this document. As the more concrete fact it is mentioned that the strategy is focused mainly on integration of public railway passenger transport, its support and preference in two largest cities of Slovak Republic – Bratislava and Košice. The railway infrastructure should be the base for transport system and the other transport modes.

The government of Slovak Republic agreed the Resolution on the development of public passenger transport. Integrated transport system is proposed as the one of provisions whereas the legislative support and the creation of transport integrators are another provisions included in this document. The legislative support means:

- to set down the duty to integrate the public passenger transport at the regional level and the subsidies determine by integration;
- to set down the method for allocating the financial resources for integrated transport systems and limit the number of parallel lines according to transport area service;
- to enable to create the transport integrator including to set down its competences;
- to adjust the competences of regions in the area of regional railway transport.

The activities which should be provided by integrator should be also set down by legislation.

3.2. The tariff legislation

The tariff integration has the key role in the integration process. On the one hand the tariff and tariff conditions should be set to make the system attractive for passengers, on the other hand it should provide the revenues for all the involved transporters. Within the tariff integration it is necessary to integrate the different tariffs of all involved transporters, the tariff documents and the transport conditions.

The integration of different tariffs has to be in compliance with the legislative framework. The key problem in Slovak Republic regarding to tariff is that the maximum prices for suburban bus transport, railway transport and urban transport are fixed by different administration. From 2005 the prices for suburban bus transport are regulated by regions. The prices for railway transport are regulated by the office for regulation of railway transport. Now the process of movement of the competences from the office to the regions is realized. But in this time the regions do not have the full competence to set the prices for railway transport. The urban transport is regulated by the municipalities.

In Table 2 are showed the differences in the current prices between the suburban bus transport (SBT), the same transport but the price on the base of usage of transport card (SBT-TC) and railway transport (RT). The prices are for single ticket. Also there are more differences regarding to the assortment of season tickets, special tickets and their prices in the tariff of each transporters.

Table 2. Comparison of prices between suburban bus and railway transport

The comparison of prices in suburban bus transport and railway transport			
Distance (km)	SBT (Eur)	SBT – TC (Eur)	RT Eur)
1 - 5	0,50-0,60	0,37-0,43	0,26
6 - 10	0,60-0,65	0,43-0,53	0,40
11 - 15	0,80-0,90	0,66-0,80	0,60
16 - 20	0,90-1,00	0,80-0,86	0,80
21 - 25	1,20	1,06	1,06
26 - 30	1,50	1,36	1,18
31 - 35	1,70	1,59	1,38
36 - 40	1,80	1,69	1,58
41 - 45	2,00	1,86	1,92
46 - 50	2,30	2,12	2,18
51 - 55	2,50	2,36	2,52
56 - 60	2,60	2,49	2,72
61 - 65	3,00	2,85	2,98
66 - 70	3,00	2,85	3,18
71 - 75	3,40	3,19	3,72
76 - 80	3,40	3,19	3,72
81 - 85	3,90	3,75	4,18
86 - 90	3,90	3,75	4,18
91 - 95	4,30	4,15	4,78
96 - 100	4,30	4,15	4,78

Data sources: [3][4]

3.3. The present conditions - conclusion

As resulted from above facts the legislation gives the very common base for the creation of integrated transport systems in Slovak Republic. There are still many areas and problems, which have to be solved and which have to have the support in the legislation. The other problem is the goodwill of transporters, regions, municipalities for cooperation and agreement in the key parts in the process of the creation of integrated transport process.

4. Solutions – Future Development

4.1. Advantages for passengers

The basic task of integrated transport system is to offer the advantages for passengers to prefer the public transport against the individual automobile transport. The main advantages should be:

- simple and intelligible system for passengers,
- the sequence of all the lines and coordinated time table,
- the one ticket from the origin to the destination regardless of the transport mode or transporter,

- the advantageous ticket prices,
- unified selling, dispatching and information system.

The experiences from the countries in which the integrated transport systems are operated for many years shows that these advantages are very attractive for passengers. When the system is clear and intelligible for the inhabitants and it brings mainly the price and time advantages, the increasing number of passengers is the result.

4.2. The creation of integrated transport system in Slovak Republic in the future

The basic problems of creating the integrated transport systems were mentioned in the previous chapter. The following two main aims should be fulfilled:

1) more detailed support for integrated transport systems,
2) one decision-making place for setting the prices.

1. For more detailed support it is necessary to create and admit the act about the public passenger transport. This act would solve the issue of the public passenger transport and also it would include the issue of integrated transport systems. There were some attempts at the act about public passenger transport but they were not successful. Till this time the act about road transport and railway transport have been only revised.

The act about the public passenger transport should include the following parts regarding to integrated transport systems (ITS):

- the process of creating the integrated transport system:
  - the creation of society which will provide the management of ITS,
  - the legal form of society,
  - the necessary steps for creating ITS,
  - the discretions and duties for all involved at the process of preparation, etc.;
- the operating of integrated transport system:
  - the tasks and competences of ITS coordinator,
  - the creation of prices and tariff and transport conditions,
  - the transport coordination,
  - the discretions and duties for all involved,
  - the way of revenues diving, etc.

2. The coordinator (society or region) should have the competence to set the prices for all transport modes involved in the integrated transport system. On Figure 4 the present state is showed; on Figure 5 the proposal of solution is displayed.

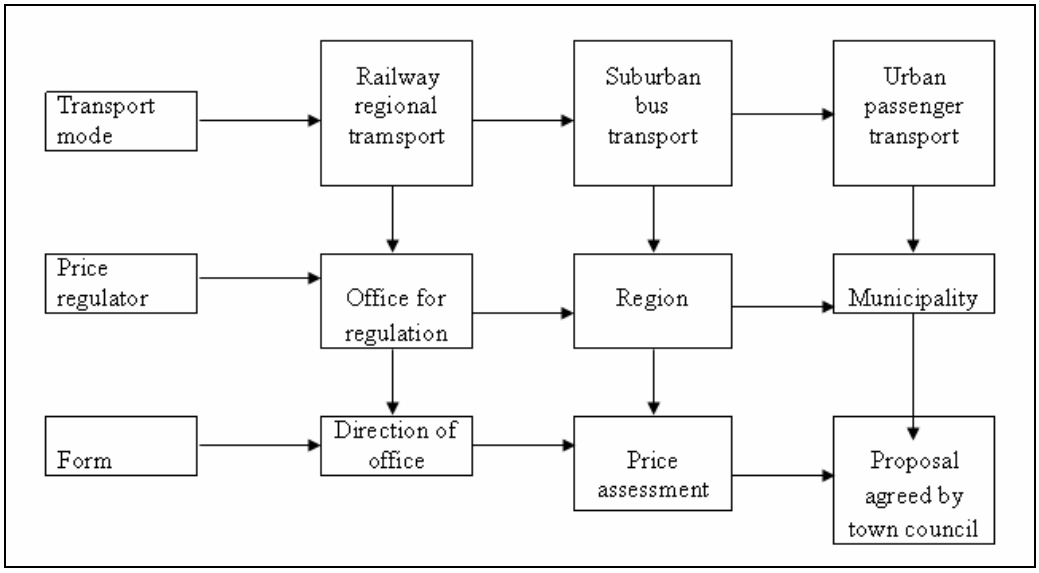


Figure 4. The present state of the price setting

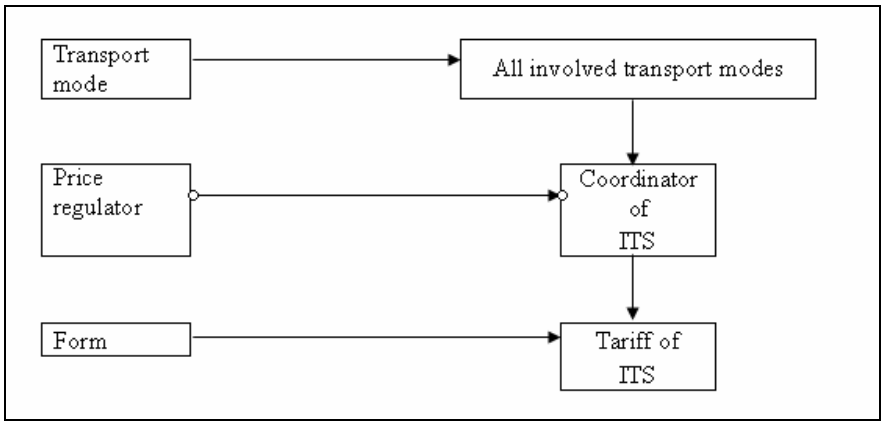


Figure 5. The proposal for tariff coordination

5. Conclusions

The process of integration is very difficult. The different subjects with their own conditions and approaches have to agree the common conditions. This is the key part that the success of whole system depends on. This would not be able without the legislation framework. The legislation in the form of act about the public passenger transport should support the creation of integrated transport system and give the important base for the process of creating and operating.

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