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## WELL-OPERATING TRANSPORT SYSTEM AND INTEGRATION OF PUBLIC MASS TRANSPORT

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**Abstract:** *Requirements placed on moving people in towns are getting bigger and bigger. The increased number of cars in town agglomerates and their close surroundings causes traffic jams and leads to formation of traffic collisions. A well-operating transport system is therefore being more and more disturbed. In such a situation one has to focus on the public mass transport and its integration with the use of other means of transport.*

**Key words:** *mass public transport, transport integration, transport service*

### INTRODUCTION

Towns, their production and economic potential require high number of labor force. In many cases town inhabitants cannot fulfill these requirements, which is due to range and structure of their qualifications. Those is why people from broader surroundings and villages join them and form a supplementary but sometimes even a crucial source of labor force. Furthermore there are requirements of the citizens on education, culture, medical care, office services, etc. which are impossible to be fulfilled in their domestic area. These requirements place higher and higher demand on the transport service of a town and its surrounding.

### 1. TRANSPORT SERVICE

**Transport service** is defined in the Road Traffic Act and in the Rail Act. But the definition itself is very simple. It focuses on assurance of adequate conveyance of people in the course of seven days of week, mainly when commuting to work, schools, medical centers and back. Transport service has a form of a public service. **Other transport service** means assuring of transport needs of a municipality's territory above the framework of the act. To assure the additional transport service the municipality makes public service obligation with the contract carrier and from its own budget it covers the carrier's loss accrued

when fulfilling the public service obligation. One part of its service is urban mass transportation.

The state has to define what the public interest in field of public transport is. It has to state how the public services in a certain territory are going to be assured so that they will make balanced inhabitation possible. EU principles declare that each inhabitant who is a regular tax payer according to equal criteria has the right on adequate transport service no mater in which part of the country he/se is residing.

Defining of the number of connections of the basic transport service has two dimensions: spatial and temporal. The need of commuting in certain time intervals makes it possible to combine the connections which are essential for assuring transport service. It bases on analyzing of the regular working hours, time of classes, surgery and office hours. Well operating transport system has to take into consideration the size of the municipality, the structure of its inhabitants, its location, the distance of the municipality in relation to a head municipality, the range of civic amenities, the range of job opportunities and the number of people to be conveyed.

A well-operating transport service should be judged form the following points of view:

- from **the spatial point of view**, defined as the ability to carry the commuter inside the wished area, is characterized by:

- accessibility, density and arrangement of the stopping places,
- accessibility of the final destination (without having to change, with a change),
- the density of the road network,
- from **the temporal point of view**, defined as the ability to convey the passenger in the wished time of the day, in an acceptable transport time, is characterized by:
  - the operation time of a line in course of work days, weekend days and public holidays,
  - the regularity, i.e. the interval between the traffic connections, or the offer of a number of connections in the time of the line operation,
  - time accessibility of the final destination of the journey,
  - from the point of view of **the transport capacity of the connection**, defined as the offer of the free seats in line transport means in the wished time and direction, is characterized by:
    - the use of the transport capacity in a given journey profile,
    - the parity of the maximal intensity of the traffic flow and transport capacity of the connection,
    - from the **financial point of view**, characterized by the transport charge levels and discounts stated for different inhabitants' groups and by the possibility of the free of charge transportation.

In most towns and their agglomerations there are usually four basic forms of the passenger transport in use – urban mass transportation, regular bus/coach connection transport, individual transportation and passenger railway transport – in many cases without any mutual coordination. The increased number of automobile transportation and the development of the entrepreneurial activities in a region cause enormous traffic burden. Towns do not have sufficient capacity of roads and in many cases not even the space for enlarging those existing ways. For environmental needs it is of vital importance trying to keep the maximum number of passenger mass transportation together with a legislative, organizational and economic support of the development of the regional integration of the public mass transportation.

## 2. INTEGRATION OF THE PUBLIC MASS TRANSPORT

The integrated passenger mass transport system is a system of various transport means (including controlled follow-ups to IBT system), established to useful, economy and single transport service of the area of interest from the

point of view of economic and non-economic needs of the citizens and business companies. Generally said, it is a temporally and spatial coordinated system of mass transportation and a use of a common ticket no matter who the carrier is. The aim also is to create a positive influence on social division of transfer labor force between the public mass transport and individual automobile transport. Positive effect on the environment, fuel consumption, reduction of traffic congestions, improving quality of the transport service of the surrounding are also expected.

The aim of integrated passengers' transport systems is creation, organization and controlling of the whole system of the urban mass transportation in relation with other big towns. Essentially it is the traffic integration inside a town area with its surroundings or in a region (district) characterized by intense transport relations of the citizens with orientation towards a town regional center. The integrated public mass transport means the assurance of the well-operating transport system of a territory concerned:

- by the individual carriers in the road traffic together,
  - by the carriers in road traffic altogether with carriers in a different kind of traffic ,
  - a single carrier operating more kinds of transport, as long as they share the fulfilling of the contract on carriage according to common carriage and tariff conditions.
- Integration in this sense is based on:
- combined use of various kinds of transport to satisfy the passengers' transfer needs,
  - coordination in transport-operating field, leading to assuring of optimal relations among connections and transport means operated by the concerned carriers,
  - joint or mutual interacted system providing related services,
  - coordination in the tariff field which enables to use the same tariff system among those concerned carriers inside the operated area,
  - cooperation in field of economy, organization and management among carriers and other subjects responsible for public mass transport, leading towards assuring optimal relations between costs and revenues among the concerned carriers.

It is vital to integrate transport services and to facilitate efficient and effective door-to-door-carriage of passengers. One of the crucial moments is the intermodality. Intermodality

enables various kinds of transport to be used as a single traffic chain so that the citizens can choose which kind of transport they are going to use. When considering the existing options they take into consideration price and quality criteria, above all comfort, the need to change, time needed to change the transport means and the total time when commuting from door-to-door.

The complex model of an integrated transport system should solve these main problems:

- Interconnection of single subsystems and their mutual relations.
- Consolidation of passengers' dispatch and abandonment of sales revenues eventually costs among various subsystems.
- Coordination of all kinds of transport and their mutual relationships.
- Modernization of current and building of new transport systems.
- Satisfying the transport needs with minimal costs incurred (optimal transport service with environmental quality maintenance and with corresponding technology of transport).

Transport within the framework of an integrated transport system (ITS) of the passenger transportation is being assured with help of various means of transport – those by rail, underground, tram, trolley buses, coaches, cable railways, and other unconventional means or vessels. The integration itself has to involve links to on-foot, bicycle and individual automotive transport in forms such as: P&R (Park and Ride, a system of trapping free parking places), K&R (Kiss and Ride, a system of a safe change between individual and mass transport without parking of automobiles), B&R (Bike and Ride, a system of links between bicycle and mass transport), P&G (Park and Go, a system of pedestrian zones with the possibility of parking one's car close to the final destination of his/her journey).

Integrated transport system usually uses a zonal or area through tariffs. Already in 1965 The Traffic Union of Hamburg establish a public business of a special kind using a slogan "A single ticket – a single timetable". Integrated traffic system has to fulfill an organization-economic, tariff and transfer framework (legislation, financing, consolidation of transfer and tariff conditions and dispatch systems) and a conveyance framework (coordination of transport subsystems and timetables).

Integrated transport system starts to develop from the municipality. In many cases the owner of towns' conveyance companies is a self-governing municipality body. In connection with the

monopoly position of the urban mass transport companies on a towns' transfer service market it is presumed that other carriers are going to enter the market. It is possible to open the market for new entrepreneurs only on the basis of the self-governing body decision. In the Slovak Republic for the field of public mass transportation "Združenie prevádzkovateľov hromadnej dopravy osôb v mestských aglomeráciách Slovenskej republiky" - Association of Carriers in Passenger Mass Transport in Town Agglomerations in the Slovak Republic (further only association) and „Zväz autobusovej dopravy“ - Bus Transport Union (further only union) were established. This association and union work as independent, volunteer and nonpolitical organizations and can be characterized as professional and interests organizations. They join the carriers in passenger mass transport in town agglomerations in the Slovak Republic. Their members are other organizations and subjects which operate and perform further activities in field of public mass transport, such as repair services, activities concerning education and supply, etc. They are both legal entities. In legal relations they act under their names and carry the responsibility resulting from these relations.

The main activities of these organizations are support, mutual help and cooperation when assuring the operation of public mass transportation in the Slovak Republic. The association and the union help to solve problems which arouse in the passenger mass transportation whereas they cooperate with the head bodies of state administration and local self-governing bodies to create new acts of law and other legislative measures which influence the entrepreneurial activities in public mass transport and initiatively they participate in them. They protect common and specific interests of their members and create unnecessary conditions for them both internal as well as external. They cooperate with organization of a similar kind in inland as well as abroad; they help to create conditions for a straightforward cooperation of their members with partners in different countries.

## CONCLUSION

One part of a comprehensive development of a region, or municipality and its inhabitants' needs residing at this territory is an adequate satisfaction of their transport needs – an effectively operated transport service. Quality transport service of a territory supports sustainable mobility of the citizens and its

adequate range. Public mass transport is nowadays modified by a legal enactment according to different types of transport. Bus transport (urban, suburban, long-haul, international, irregular) is being modified the Road Traffic Act. Railway and urban rail transportation (trams, trolley buses, underground, cable railways) modifies the Rail Act. In such a situation it is possible to apply various approaches towards organization, financing and integration of transport systems from the office level those offices responsible for ordering and making contracts on efforts in public interest and offices obliged to provide transport licenses.

Transport policy of the Slovak Republic for the years 2005 – 2013 bases on that the transport service has a global, European, regional and local size. Single levels of this process have to be interconnected and the principle of subsidiary has to be applied. Problems have to be solved at the lowest possible level where the solution can be effective. Society requires higher mobility of people and goods in links to the enlarged European Union. Starting points of the transport policy in the field of integrated transport systems are as follows:

- Public transport operates on a basis of separated transport systems, whereas integrated transport systems (ITS) are organized only in restricted territories, with restricted function and only without a bigger links with other districts. In many parts the integrated system is only a superstructure of the system (which enables to use urban and suburban transportation) but not a

principle which links all other types of transport on the whole territory of a region.

- Passenger rail transport and public connection bus transport often provide services with lower quality and not sufficient mutual connectivity which helps to prefer integrated buss transport (IBT) from the citizens' side.

- Traffic in towns is not solved systematically and there are not adequately applied measurements on satisfaction of town centers, including creation of conditions for motorbike and on-foot transportation.

- Proportion of telematics on management and assurance of transport and carriage processes does not match the needs.

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## ЭФЕКТИВНО-ФУНКЦИОНИРАЩА ТРАНСПОРТНА СИСТЕМА И ИНТЕГРАЦИЯ НА МАСОВИЯ ОБЩЕСТВЕН ТРАНСПОРТ

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**СЛОВАКИЯ**

**Резюме:** Изискванията за движение на хората в градовете стават все по-високи. Увеличеният брой коли в градските конгломерати и около тях причиняват задръствания и водят до сблъскване на коли. Нарушава се все повече и повече ефективно-функциониращата транспортна система. При това положение следва да фокусираме вниманието си към обществения масов транспорт и неговата интеграция с използване на други видове транспорт.

**Ключови думи:** масов обществен транспорт, транспортна интеграция, транспортно обслужване.