THE PILOT TRAM-TRAIN ROUTE FINDING IN THE OLOMOUC REGION

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Abstract: The paper presents a part of complex research, which deals with Tram-Train application in Olomouc region. The main goal of this paper is the proof, that Olomouc region has a suitbale pilot route for Tram-Train system. This region and its transport situation are shortly introduced. The regional geographical and infrastructure suitability for TramTrain system application is shown. The possible Tram-Train pilot route is chosen by using SWOT analysis. As a result, the recommandation for furure research steps is defined.

Key words: Tram-Train, Olomouc region, pilot route, public transport

1. INTRODUCTION

Public transport in the Czech Republic still faces an increasing rate of individual transport use. As a result passengers are decreasing in Public Transport. The most visible is the decrease in Regional Public Transport by reason of low frequency of connections and unsatisfactory passenger equipment.

Most European states have started to face this effect by implementation of transport service quality improvements and integrated transport systems, which are already successfully operated in many cities in the Czech Republic. The other step within integrated systems should be implementation of the Tram-Train concept.

2. BASIC INFORMATION ABOUT THE OLOMOUC REGION

Olomouc with its population of about 105 000 is the fifth largest city in the Czech Republic. The city is the centre of the Olomouc Region and it is an important transport junction: the Third Railway Transit Corridor (TEN-T Conventional line), four regional railway routes and high speed roads R46, R35. There are trams and buses operated in the city transport. Regional buses are integrated with the city transport in

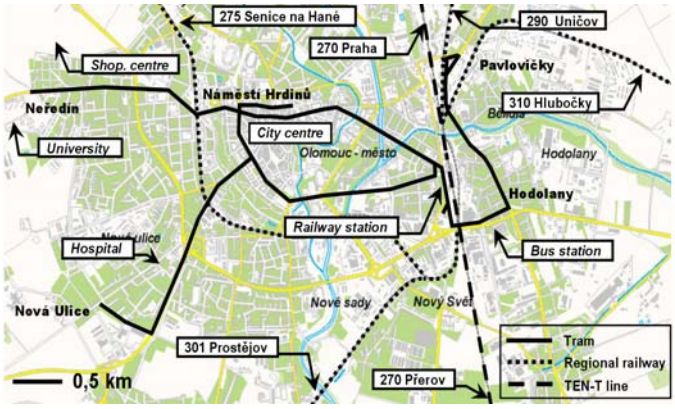

Fig. 1 Railway and tram lines situation in Olomouc [1]

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the “Integrated transport system of the Olomouc region” (IDSOK). Partners in IDSOK are the City Transport Company (DPMO, a.s.), Connex Morava, other bus companies and Czech Railways (routes in the north of the region). The main railway station in Olomouc is situated 2,5 km away from the city centre (bus station another 500 m) and both are connected with the centre by tram and bus. Most passengers arriving in Olomouc by train or regional bus have to use city transport to get to the centre, hospital, shopping centres or schools (see Figure 1).

Other important regional centres are especially Prostějov and Přerov (both more than 47.000 inhabitants). They are the administrative, industrial and cultural centres of their area. Smaller and less important are Litovel, Šternberk and Uničov (about 10.000 inhabitants each).

3. THE REGION SUITABILITY FOR TRAM-TRAIN SYSTEM

The main goal of this partial research is a theoretical finding, if Olomouc region has a suitable pilot route for Tram-Train concept and could be marked as a Tram-Train concept candidate. The result of the research will be used in the complex proof of Olomouc region suitablity for Tram-Train concept, which is solved by using Checklist´s Criteria method[2] defined by van der Bijl and Kuehn. The conclusion of the complete research will be published during the year 2006.

Because of the economic and political conditions in the Czech Republic the possible Tram-Train candidate city has to already have tram and regional railway service (new railway route or even new tram system construction is in the nearly future impossible). The Olomouc region has regional railway and tram standard gauge network and in addition there are another strenghts for Tram-Train system:

- most of the routes connects Olomouc with important regional centres with minimal population of 10.000,
- central bus and railway station distant from the city centre and from the other passenger objectives (hospital, shopping centre, university, offices),
- possible tram and train system infrastructure connection.

As a result, the Olomouc region has infrastructure and geografical precondition for Tram-Train application. This fact is sufficient for theoretical proof of suitable route existence.

4. THE FINDING OF SUITABLE PILOT TRAM-TRAIN ROUTE

There are six railway directions from Olomouc into the region. The connection Olomouc – Červenka – Litovel and Olomouc – Přerov (both track nr. 290) will not be

[2] further information available online <http://www.lightrail.nl /TramTrain/tramtrain.htm>

counted for Tram-Train system concept because of TEN-T Conventional line service. Therefore, the suitable Tram-Train route has to be found on the remaining routes:

- Nr. 301 Olomouc – Prostějov – (Nezamyslice)
- Nr. 275 Olomouc – Senice na Hané – (Prostějov),
- Nr. 290 Olomouc – Uničov – (Šumperk)
- Nr. 310 Olomouc – Hlubočky – (Krnov).

The finding criteria were especially:

- passenger flow increase on the route,
- regional benefit,
- construction difficulty ,
- track condition,
- population in the regional railway area.

The basic tool for pilot route selection was an analysis of current conditions. The analysis was made for all railway routes from Olomouc to the surrounding region (see Table 1) and compared with bus connections (see Table 2).

Table 1 Possible Tram-Train route characteristics

Route	Stage Olomouc to *(end of the route)*	Length	Supply system	Number of tracks	Track Condition
275	Senice n. H. *(Prostějov)*	19 km	None	1	bad
290	Uničov *(Šumperk)*	29 km	None	1	bad
301	Prostějov *(Nezamyslice)*	20 km	3 kV DC	1	good
310	Hlubočky *(Krnov)*	15 km	None	1	bad

Table 2 Connection and passenger density (bus and train compared)

Olomouc to	Connection density per work day from/to Olomouc [2]		Average travel time in minutes [2]			Average passengers flow density by railway in one direction between Olomouc and first station in region/end-station in passengers per work day [3]	Population of region excluding city of Olomouc [4]	Passenger flow increase in the case of Tram-Train system application
	railway	bus	railway	bus	car			
Senice n. H.	12/14	7/8	35	50	20	709/659	13.946	middle
Uničov	23/23	14/13	41	56	35	3134/1624	38.387	high
Prostějov	25/25	49/47	23	31	15	1620/1400	54.744	low
Hlubočky	20/20	14/13	30	25	20	2225/1600	10.416	middle

After analysis of current situation a SWOT analysis of the possible Tram-Train application impact on each railway route was undertaken (see Table 3).

Table 3 The SWOT analysis strenghts and weaknesses

Route	Olomouc to	Strengths	Weaknesses	Resume
275	Senice na Hané	• Traffic recovery in the agriculture west part of region • Tram system crossing near Olomouc city centre • The city quarter Hejčín, Řepčín and ironworks connected by tram • More connections per day by using trams with lower capacity • Flat land route	• Infrastructure costs • Small towns (Horka na Moravě and Senice na Hané with 2.000 inhabitants) • Route in bad condition • The consecutive heavy-rail service between Senice na Hané and Prostějov has to be operated • Ironworks employees reduced	This route should be converted to Tram-Train, but only with low capacity diesel vehicle operation
290	Uničov	• Attractively connecting two regional cities Šternberk (13.967) and Uničov (12.385) with Olomouc • Planned track electrification before 2020 by Czech Railway • Stations situated in the centre of towns or villages • Simple connection to Tram system in Olomouc possible • Sufficient passing points • More connections per day by using trams with lower capacity and operational cost than heavy rail vehicles • Flat land route • Exclusive Tram-Train operation (passenger flow Olomouc – Šumperk should be transferred via Zábřeh na Moravě)	• Infrastructure costs • Direct connection between cities by road – road traffic is much faster at present • The consecutive heavy-rail service between Uničov and Šumperk has to operated	**Route with the best conditions to be a pilot Tram-Train project**
301	Prostějov	• Possible new tram system in Prostějov connecting main station with the city centre • New long-planned tram track connection of suburb Nové Sady with Olomouc centre, which brings Tram-Train service directly to the city centre • Track Olomouc – Prostějov already electrified • Flat land route	• New tram routes construction costs • Route sharing with heavy-rail • Single track • Both cities are individual centres -,there is not much principal centre to region linking • Direct connection between cities by high-speed road – road traffic is much faster at present • Low population in area without Prostějov city	This route is more suitable for “S-Bahn” model application
310	Hlubočky	• Simple connection to Tram system in Olomouc – Pavlovičky (tram – railway crossing) • Industrial area in Hlubočky • Tourist area in Mariánské údolí	• Route in bad condition • Fewer passengers than on the route nr. 290 • Railway traffic Olomouc – Krnov – (Opava)	The Tram-Train application should be simple by using Diesel tram, but the route specification is not suitable for pilot route because of low passenger flow

The analysis gives basic information about the current situation of regional railway routes in Olomouc region and the routes suitability for Tram-Train application. It is evident, that regional railway has very important function in the region.

The infrastructure and geografical precondition mentioned in the chapter 3 and the result of the analysis proved that there should be the Tram-Train pilot route with good precondition in the Olomouc region. As a result, the city of Olomouc could be marked as a Tram-Train concept candidate city.

5. CONCLUSION

The paper gives an important conclusion for the complex research of Olomouc region Tram-Train suitability: Olomouc has a suitable Tram-Train route. The Tram-Train concept could be theoretically applied onto all routes in the region, but the route nr. 290 has the best precondition as shown in analysis. As a result, the continuation of research is recommended.

REFERENCES

[1] *Atlas.cz Mapy* [online]. [cit. 2006-03-26]. <http://mapy2.atlas.cz/ >.
[2] *IDOS timetable* [online]. [cit. 2006-03-27]. <http://www.idos.cz/ >.
[3] Technical economical study of integrated transport system of Middle Moravia with special aspect to railway traffic. Brno: ATP, SUDOP Brno, s.r.o., MB Progetti.
[4] *Inhabitants count in Olomouc region* [online]. [cit. 2006-03-06]. <http://www.czso.cz/xm/redakce.nsf/i/mesta_a_obce>.

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