

THE NEW CONCEPT OF DYNAMIC TRANSPORT PLANS

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Summary: The paper deals with a new concept of dynamic transport plan. As we know in the current status not all cities have a key strategic documents for the development of transport. The concept of dynamic plan for responding to any changes in the area, traffic and thus better adapt transport system for requirements in the future.

Key words: dynamic transport plan, GIS, transport modelling.

INTRODUCTION

The authorities even in state, regional or municipality level have the legal opportunity to state the transport policy, actions and various measures. For planned action in area of transport there are proposed the strategic documents. Strategic documents represent the obligatory documents which define the role and importance of transport infrastructure, usage of different modes of transport, etc. They should even meet the requirements and goals stated by national or international transport policy goals, for instance the EU legislation states the directions of urban transport toward to the sustainable mobility (19). In order to have these documents the authority should call for public tendering in order to meet the requirement of legislation. From the free competition is picked the team that will conduct the plan. The transport plan so called the master plan cover the all spectrum of transport issue within urban or regional or state area.

The disadvantages relay in quite long time of processing and finishing. That means the parameters that the initial status of plan took into account could a change. This change can have the effect on the final plan in sense that it is not actual. The disadvantage represents the fact the price of such kind document is quite high and the authority can not spend each year the money for updating. Other disadvantages represent the static feature of plan. Even the current requirement are changed the plan represent the vision or expected status.

1. THE CURRENT STATUS

1.1 GIS application

The Geographic Information System (GIS) is used to provide the various informations about the area in order to inform about the parameters which are analysed. The GIS is possible apply on wide scale of research areas and topics as geography, economy, industry, demography, transport, etc. (5). Moreover it is possible to find out the relationship among the cross industries. There are good examples of application of transport infrastructure analysing

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(7,15). Another application are focused on the inhabitants behaviour, see Fig.1 (5, 13, 17). GIS is also suitable for analysing the public transport systems (8, 12), for estimation and analysis of public transport station or competitiveness among various public transport systems (6,11). The municipalities also can know about the traffic pollution (3, 9). They are also helpful to evaluate for example the vulnerability of transport network (16).

As a conclusion we can see that the GIS application have real impact on the decision for transport planners (3) and also for authorities responsible for transport (25). The most powerful feature of GIS is ability to visualize data on the particular area, see Fig.1.

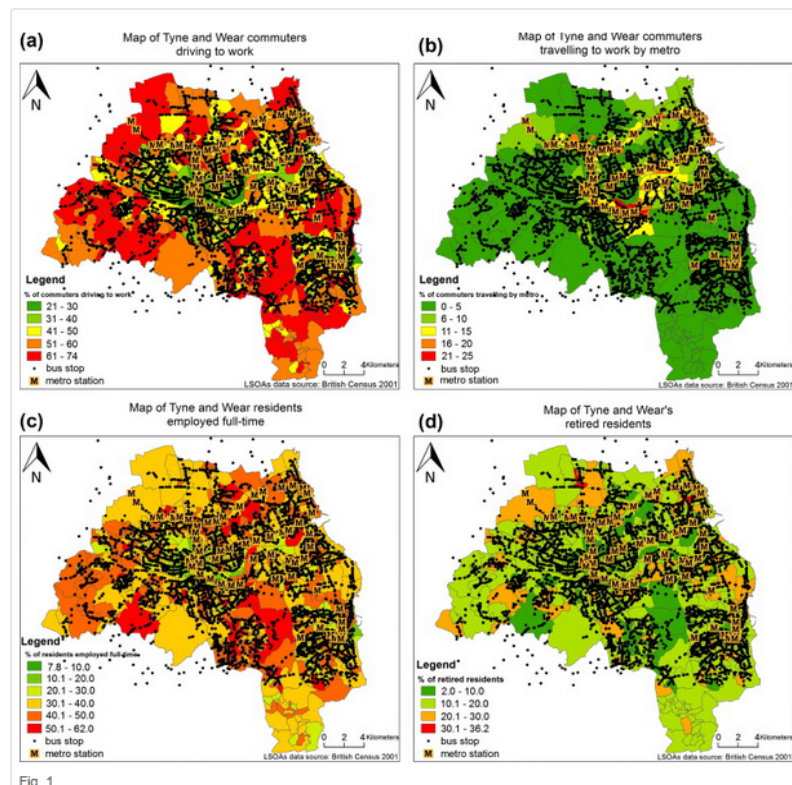


Fig. 1.

Source: (15)

Fig. 1 - The example of application of GIS in Household survey results

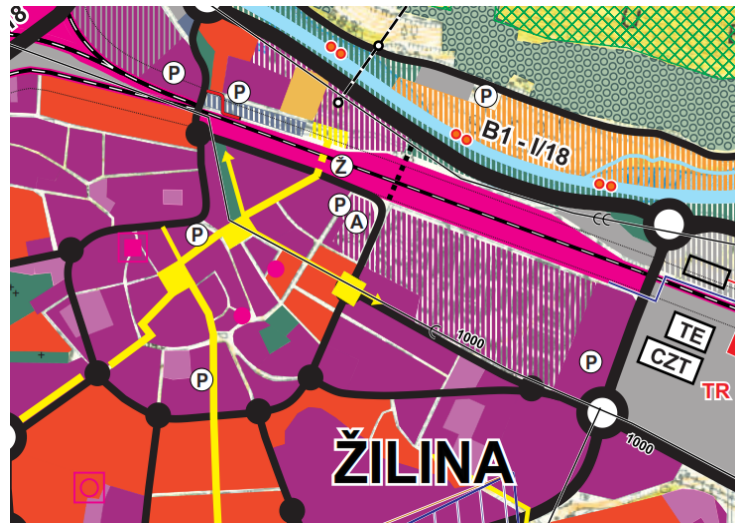
1.2 Transport models

The transport planners and engineers are using the various transport planning softwares for modelling the demand of transport or evaluate the transport infrastructure, demand (1.) or freight demand (14, 27). There are also various softwares that allow model the transport demand as example PTV VISUM, OmniTrans, CUBE, EMME2 etc. Some softwares allows the integration between GIS and demand modelling (TRANSCAD).

2. THE CONCEPT OF DYNAMIC PLAN

Taking into account the static characteristics of master plan and call for new and dynamic responsive documents, it is proposed the new concept of dynamic transport plan. Let's make sure what we understand under the term of transport plan (21-24). The transport planning this case represents the master plan for urbanized area. It can be part of urban master plan and it also states the main condition and regulation for development of transport systems

in solved area. For instance you can see on following figure the part of proposed transport in city of Zilina. The transport is solved as the part of Urban Master Plan in 2012, see Fig.2.



Source: (26)

Fig. 2 – The transport in Urban master plan of city of Zilina 2012

The new approach consists in innovative application of GIS in context of transport. What does it mean? The transport infrastructure and status will be changed regarding the changes in land-use, traffic demand and traffic flow that have impact on solved area. Moreover the characteristics as the real estate ownership and various obstacles are considering in order to plan the future action on the real basis. The main difference between current static and proposed dynamic plan are stated in the following table 1.

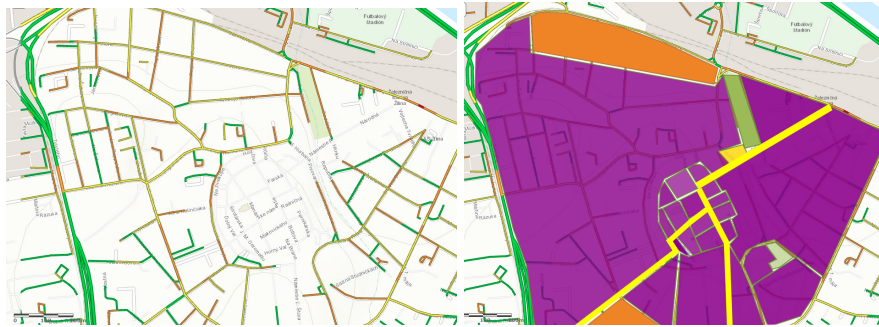
Tab. 1 – The main difference between common and dynamic transport plan

	Common transport plan	Dynamic transport plan
Feature	static	dynamic
Regular update	no	yes
Crossindustry relationship	no	yes
Time relevance	no	yes
Transport demand modelling	no	yes
Saving the public finance	no	yes

Source: Author

But the dynamic feature does not mean it is changes every minute, or second like the traffic monitoring system. The dynamic in this context means that the plan react on the changes in urban and also it takes into account the changes in transport demand (for example the decreasing of public transport in particular area linked with population (youth, seniors, etc.)). The dynamic plan can be much more useful in implementing of proposed action or in process of reaching the proposed status because it will provide the most actual information about the situation in transport. Moreover such kind of transport plan will consists of GIS

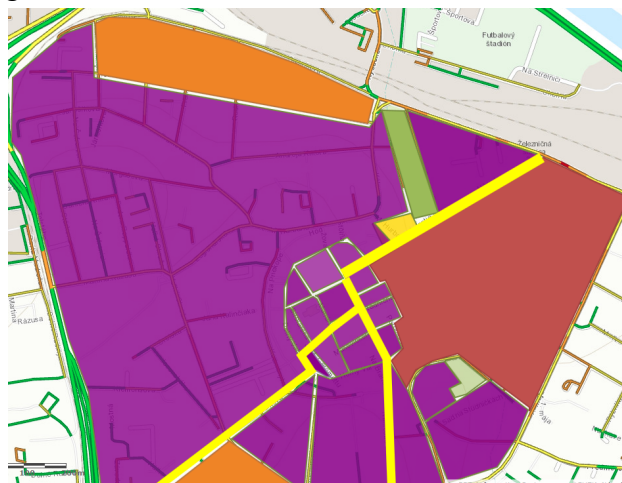
application and also on Transport model methods, so the user could immediately know the future impact and actions. This concept is also possible use for proceeding of Urban master plan with various areas. The main advantages will also represent the fact of lower requirement of public finance to work out the new plan maybe with new team and in longer time. The small example of the concept is described below. The information about the future urban regulation are stated by Urban master Plan where the particular colour means the urban regulation. Moreover the main pedestrian corridors (yellow) are drawn. This application uses the traffic layer which can be mixed with regulation of dynamic transport plan, see Fig. 3.



Source: Author

Fig. 3 - The application of GIS and Traffic layer in Zilina

If there will be for example the need for change in regulation, the plan can be easily modified or edited, see Fig. 4.



Source: Author

Fig. 4 - The easily applied changes in the plan

This small example demonstrates the possible application of developing such kind of transport plan. In addition the dynamic plan is possible to extend about various features and visualising regarding the requirements of users.

The dynamic transport plan is suitable for:

- Development of any urban master plan with transport solving,
- Developing of action plans,
- Developing of Sustainable Urban Mobility plans,

- Evaluation of public transport changes in area,
- Evaluation of traffic in area,
- Evaluation of parking issue,
- Evaluation of non – motorizes transport,
- Evaluation of environmental impact of transport, etc.

The above mentioned areas are just the main areas where is possible to implement the results from dynamic transport plans. As good reason for developing such kind of plan is the fact that the information technologies will improve and this will allow gain more and more various data. This will have a noticeable impact for transport problem solving in future.

CONCLUSION

The paper describes and proposes the new feature of master transport plan. The current changes in land – sue are big challenges for transport planners and urbanists to prepare and propose the efficient land usage in context of future urban development. Therefore here is described the new approach and concept of dynamic transport plan which can help to use the various data from information technologies in order to proper understand to the relationship in the area. This can have a very important effect on the future mobility in the cities. The role of new technologies is useful and necessary and it can therefore represent the big help for all authorities that have competence in decision of future transport in urban.

ACKNOWLEDGEMENTS

This contribution/publication is the result of the project implementation:

Centre of excellence for systems and services of intelligent transport, ITMS 26220120028 supported by the Research & Development Operational Programme funded by the ERDF.



Agentúra
Ministerstva školstva, vedy, výskumu a športu SR
pre štrukturálne fondy EÚ

"Podporujeme výskumné aktivity na Slovensku/Projekt je spolufinancovaný zo zdrojov EÚ"

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