Contributions Regarding the Creation of the Digital Map of the Public Transport in the Metropolitan Area of Cluj

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Abstract

A special importance in the stimulation of the public transport use, is the increase of the informing degree of travellers with regards to the transport networks. The paper presents technical data regarding the making of the digital map of the public transport in the metropolitan area of Cluj. The digital map was created by the authors, using data from Open Street Map site and data collected with the help of GPS, made available by Public Transport Company Cluj-Napoca S.A. The digital map created for public transport in the Municipality of Cluj-Napoca and Metropolitan Area of Cluj, with detailed maps routes, offers to users, information on public transport which leads to the efficiency of services and passengers' safety, increasing mobility and sustainability of Cluj-Napoca city.

Keywords: digital map, public transport, travellers' informing

Introduction

In order to satisfy the requirements of a safe, quick and comfortable travel of population it is necessary to inform the travellers about the public transport network by the use of a map containing the public transport routes, (Banciu *et al.,* 2003). The urban public transport represents a public service made available for the population of the city, generating certain advantages such as: decrease of toxic pollution, urban space occupation, efficacy of the transportation. The main characteristic of the urban public transport consists in the necessity of executing an optimal offer when the need appears. In order to stimulate the use of public transport, it is necessary to organise it so as to ensure the development of travel with an adequate degree of safety and comfort. An important role in this regard is the increase of the travellers' information degree, with regards to the transport network, circulation schedules of the lines or the possibility to choose the optimal travelling route.

Aims and objectives. One of the priorities of Public Transport Company Cluj-Napoca S.A (CTP-Cluj-Napoca) regarding the improvement of the local public transport services, is to offer to travellers useful information with regards to the public transport. The paper presents technical data regarding the making of the digital map of the public transport in the metropolitan area of Cluj.

Materials and methods

The map of the public transport in the Metropolitan Area of Cluj was created so as to offer the possibility of being visualised by accessing the CTP Cluj-Napoca website, using the internet connection from PC, smartphone or tablet. Also, the map may be listed and posted and can be found on travel tickets selling machines, located in certain public transport stations in the municipality.

The digital map was created by the authors, using data from Open Street Map site, these being
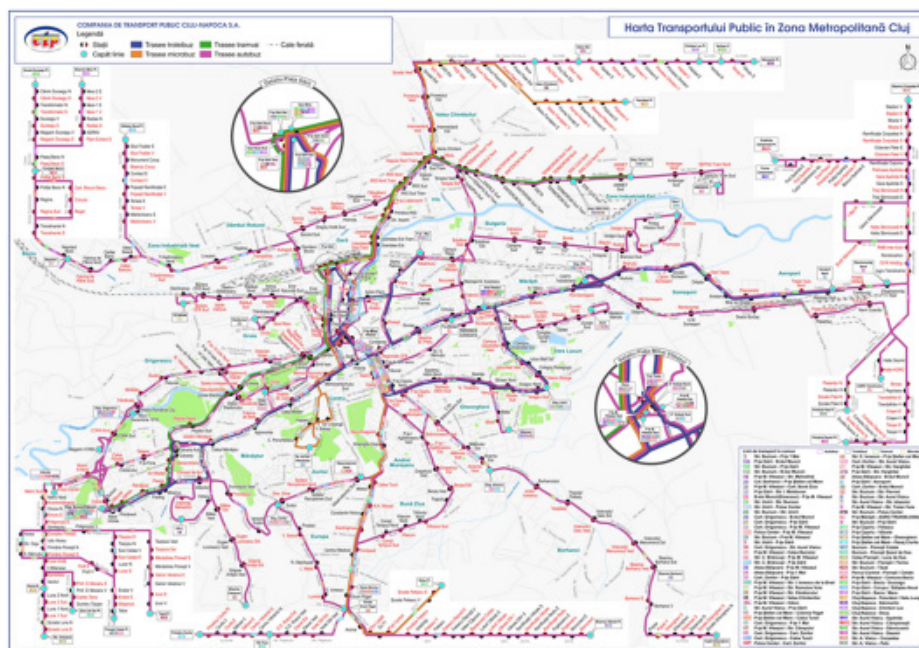
Figure 1. Public transport map in the metropolitan area of Cluj (CTP Cluj-Napoca)

„open source" data. In order to download them, the Open Street Map plugin was installed in QGIS (Open Source Geographic Information System), (QGIS). The downloaded data were gross data, of which only the data necessary to the execution of the public transport network map has been selected (for instance: street, water cruse, vegetation, railways).

For the creation of maps, CTP-Cluj-Napoca made available to the author, data collected with the help of GPS (Global Positioning System) for the routes, localisation of stations, travel tickets selling machines and ticketing system selling centres, in order to be used in the execution of the digital maps. For the finalisation of the maps, the necessary visual elements have been added, by using Inkscape, a vector graphic editing application.

Results and discussion

Starting on July 2015, CTP Cluj-Napoca launched a new website on internet, offering detailed information regarding the transport lines, timetables, fees and associated maps. On the company's site, www.ctpcj.ro, the current public transport maps in jpg. and pdf. format can be found (Fig. 1), including details related to the entire transport network and offering information to travellers, meant to increase the quality of the transport services and to promote the use of the public transport.

On the public transport map, planimetry elements can be found, such as physical and geographical elements (water courses, lakes in the municipality, green areas) administrative details (neighbourhoods of the municipality), street network. On the detailed map of the transport lines, the main touristic and cultural objectives, objectives of public interest, hospitals, churches and education units near routes have been marked. Also, the map contains other elements, such as: title, legend, North arrow, labels and explanations.

In order to identify the different transport lines forming the urban public transport network, the stations, the lines end points or travel tickets selling machines, a symbolic language was used, explained in the legend. In order to differentiate the means of transport or the stations located in different directions, different colours have been used, for a better recognition. The routes in the metropolitan area have been represented on the public transport map as a scheme, detailed maps being assigned to each metropolitan transport line.

Conclusion

The map created, together with the detailed maps of the transport lines, has a simple and user-

friendly design, offers to users information related to the public transport lines and routes, location of stations, lines end points, travel tickets selling machines, all these leading to a better organisation of the travels, to the choice of the optimal travelling route and to the increase of the attractiveness of public transport services.

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