The Multiperspective Visualisation of the Spatial Behaviour of Smartphone Users

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Extended Abstract

Smartphone users perceive urban space through map applications, but decidedly more frequently through the lens of the smartphone. The widespread photographing and the subsequent placement of pictures on social portals is an important method of conveying spatial information. The research object is to obtain information on the temporal and spatial behaviour of smartphone users and the perception of such pedestrians in urban space as regards the geometry of routes traversed in time, and taking pictures of objects and events that are of interest to us. The essence of the activity was to elaborate multiperspective visualisations enabling an analysis and interpretation in many different aspects. The most important objectives when elaborating visualisations include capturing the dependence between the intentions of the pedestrian and the route actually traversed thereby (Golledge 1999), the type of photographed objects, and a comparison of the geometry of routes and times for numerous pedestrians, who have the same starting and end point.

A group of 30 smartphone users were invited to take part in the experiment. Each participant separately received the following task: to walk from the central station to the town hall using a freely selected route and take photographs of interesting objects. The routes recorded in GPS receivers and a breakdown of individual responses to questions before and after execution of the task constituted the basis for the execution of four visualisations:

• **map** with 30 routes and track points (classification of routes according to five preferences provided by participants: the shortest route, map-based navigation, tourist attractiveness, habits, light signalling systems);

• **space-time cube** (classification as above);
• **vertical column diagram in a linear composition** – routes and track points, and the number of photographs taken according to the types of objects;

• **cumulative flow cartodiagram** – the most preferred sections, stops/stopovers according to the number of track points; attractive objects according to the number of photographs.

Each of the elaborated visualisations presents spatial data from a different perspective and visually strengthens other aspects of the behaviour of participants of the experiment. The majority preferred traversing the shortest route to the target location, however the presentation on visualisations of determinants of urban space considerably clarifies the deviations from the initial intentions of smartphone users. The authors would like to put forward the following questions for discussion at a conference: to what extent should cartographic visualisation simplify the perception of the behaviour of pedestrians in the city? Does the complementarity of visualisation make it easier to analyse the specificity of behaviour of smartphone users in urban space?

**References**