The cartographic visualizations of the population movements during mass events with the use of drone (UAV)

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Extended Abstract

Cartography, both analog and multimedia, is facing a big challenge in the visualization of population movements during mass events. The aim of this study is to demonstrate some possible methods of the cartographic visualizations of these movements on analog and online maps. The basic material for the visualizations were images taken using a drone.

Drones, or unmanned aerial vehicles (UAVs), are increasingly used in many areas of life. Thanks to their small size and the possibility of mounting cameras on them, they are being used more and more widely to obtain spatial information in the form of high resolution images. This allows, among other things, the monitoring of spatial and temporal variability of short-term phenomena. One of such phenomena are mass events, where a lot of people are gathered on a relatively small area in a short time unit. Thanks to the acquisition of images from the air at specified time intervals, it is possible to register the movement of the participants of the event.

The year 2015 is the International Year of Map. On this occasion, on 23 April the Department of Geography and Geology of Adam Mickiewicz University in Poznan celebrated a National Geographer's Day. One of the highlights of the day was a big barbecue organized on the clearing next to the Department. It was a perfect occasion to take advantage of a drone to obtain photographic material presenting the movement of participants. The event lasted from 4 pm to 11 pm. The flight mission lasted over four hours and during that time the UAV acquired, in several batches, over 2000 images. The photos were used to determine the main directions of the move-

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ments of the participants. Besides, the use of appropriate visual variables (Bertin 1967, Carpendale 2003) presenting the motion allowed the development of a set of static cartographic visualization.

References

Bertin J (1967) Semiology of graphics: diagrams, networks, maps. University of Wisconsin Press, 1983 (first published in French in 1967, translated to English by Berg WJ in 1983)

Carpendale MST (2003) Considering Visual Variables as a Basis for Information Visualisation. Department of Computer Science, The University of Calgary. http://pharos.cpsc.ucalgary.ca/Dienst/UI/2.0/Describe/ncstrl.ucalgary_cs/2001-693-16. Accessed 9 June 2008