PHOTOGRAMMETRIC TECHNOLOGY FOR URBAN AREA DEVELOPMENT

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The development of urban areas requires accurate and high-quality spatial data (SD). State programs and regulations define the requirements for them: relevance, informativeness, versatility, ease of use and prompt and cheap monitoring. Existing SD in the form of topographic plans and orthomosaics do not meet these requirements for urban areas. World experience shows that a 3D city model could solve this problem, but the costs of creating it today are large and comparable to the cost of a 1:500 scale topoplane. A new type of spatial data – a single 3D stereo model of the territory is a real alternative, since it meets the previously specified requirements, and the costs of creating it are significantly lower than other SD. Therefore, in this paper, the goal was to consider the use of a single 3D stereo model in the management of urban areas, as well as the use of the stereo photogrammetric method on specific examples. It is shown that the stereo model is an optimal product of spatial data, which is created quickly and cheaply and can be used multifunctionaly. The stereo model is used to solve such tasks as operational management of the city, without entering the territory, performing cadastral works, including complex cadastral works, performing an inventory of urban infrastructure objects, determining the volume of major repairs of apartment buildings, creating vector models and integrating projected BIM models into existing infrastructure, etc. The 3D stereo model was presented at Russian and international exhibitions and forums, such as INNOPROM and "Traditions and Innovations", dedicated to the 10th anniversary of Rosreestr, in the period from 2017 to 2021, where it received recognition. In addition, the stereo model has already been introduced in the Republic of Bashkortostan, the Kaliningrad and Sverdlovsk regions, the city of Izhevsk, Sarapul and others. The creation and use of the stereo model is based exclusively on the Russian hardware and software complex, which allows it to be implemented for managing cities on the territory of the Russian Federation.

Keywords: stereo model, city management, unmanned aircraft, photogrammetry, BIM, urban planning, cadastre

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Received 03.12.2021