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Spatial information recording procedure involving methods of close range photogrammetry as applied to archaeological researches

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Abstract

© SGEM2015. To date, the already existing traditional methods of archaeological field data classification and archiving do not meet modern requirements in the context of accuracy and convenience. The purpose of this study is to create and test more effective methods based on close range photogrammetry and GIS, which can be used to record all the stages of archaeological excavation process. Within the scope of the pilot project covering the territory of Bulgar ancient town (heritage asset), four methods of close range photogrammetry were used to depict all the excavation objects: 1) technique of central axis; 2) technique of perspective route photography shooting; 3) technique of fixed angles; 4) technique of suborthogonal photography shooting around perimeter. To reduce the cost of the survey, amateur cameras were used. Photogrammetric measurement results are: orthophoto, digital terrain model, threedimensional model covered with surface texture. These data eliminate the need of sketching excavation objects and performing leveling. Success depends only upon the correct choice of the positioning method. The method proposed in this paper is a finished tool which can be used by archaeologists. During the pilot test it became possible to minimize cartographic activities. Quality of the result obtained using photogrammetry and GIS was significantly higher in comparison to manual processing outcome.

Keywords

Archaeology, Data quality, GIS, Photogrammetry