VIRTUAL MODELING IN GEOINFORMATION TECHNOLOGIES

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Abstract: this paper discusses the methods of data visualization in geographic information systems. For the full human perception of spatial data, they must be expressed in the form of a two-dimensional or three-dimensional models. The aim of the study is an overview of such models and their application in practice.

Key words: geographic information system; digital map; layer; a virtual terrain model; a video file.

Spatial data in geographic information systems is stored in the form of digital models for the perception of their person there is a need for data visualization. Usually this refers to their cartographic visualization. The object – described digital models of real spatial objects. The author used materials from open sources: textbooks, articles on Geoinformatics, and also specialized sites. Were used such methods as analysis and comparison of data from different sources. The terrain covered in the works [2], [7]. The work in [6], entirely devoted to this subject. Consider used in Geoinformatics virtual terrain model.

A virtual terrain model is a mathematical terrain model (containing information about the topography of the earth's surface, its spectral brightness and the objects located in this territory), intended for interactive visualization and having a sense of presence on the ground [7].

The virtual model of the area is now very diverse, and the range of their use is very wide. For a realistic representation of the area of modern virtual model must include the following information [2]: data about topography (digital elevation model); the raster images of the earth's surface (scanned maps or images); vector data; signature; three-dimensional objects (models imported from other programs); additional bitmaps or animations.

When you create a virtual terrain model there is a need to display special objects, such as houses, trees, etc. This leads to a more realistic model. Miscalculation of special objects is very demanding on computer resources.

Creating three-dimensional models does not require extensive training, enough to have a two-dimensional map and the elevation matrix. That data can be used to construct a three-dimensional elevation model of the selected area. To build a volumetric model in accordance with the objects located on the map, needs a library of three-dimensional images of objects added to the

classifier of any card.

For example, three-dimensional terrain model in GIS "Map 2011" [8] is a surface constructed with consideration of the terrain, which can be overlaid image vector, raster and matrix maps, and has three-dimensional objects corresponding to the objects a two-dimensional map. To view the finished 3D terrain models created in the GIS "Map 2011", and work with them, you can use the GIS "Navigator 2011" [8], which is designed to display three-dimensional models, two-dimensional vector maps, rasters, matrixes, navigation in 2D - and 3D-maps by connecting the GPS receiver and print maps.

The main practical application of virtual modeling ([2], [7]):

1) Cultural-historical model, realistic restoring various historical eras, events, landscapes (it can be used in museums, schools, universities).

2) Planning of major economic projects.

3) marketing and Promotional activities.

Currently focused on increasing the efficiency of digital information about the area in automated control systems, navigation systems, and simulators [8].

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