

Approaches and Solutions for Creating Atlases in Geographic Information Systems

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Abstract

Geographic information systems (GIS) are widely used to create various cartographic works, despite the fact that they are inferior in design to publishing systems. When compiling atlases, GIS are currently used to perform individual cartographic processes such as the development of spatial and thematic databases, creation of thematic maps, generalization of objects, creation of typical cartographic foundations and individual thematic maps, construction of various thematic surfaces, etc. It should also be noted that many common GIS have a special functionality that allows one to cut (insert) the map into the pages of an atlas, enabling the creation of multi-page cartographic works such as city atlases, road atlases, etc. Geographic, complex and thematic atlases are characterized by complex structures and diverse relationships between their sections. Therefore, the use of GIS is limited in terms of creating these types of atlases as independent cartographic works with holistic structures and full content. Also, depending on the selected GIS, its technological and functional capabilities, there are different processes for creating atlases. Currently, the most common is the page-by-page approach, where the design of each atlas map is conducted in a separate working set, and the integration of the resulting maps and the atlas is performed at the final stage, after the output of ready-made layouts from the software.

This report examines the features, advantages and disadvantages of using QGIS, ArcGIS and MapInfo Pro when creating atlases of various types (geographic, complex and thematic). Schemes for the potential organization of such atlases are presented and technological schemes for their automated creation in the considered geographic information systems are proposed. As a result, approaches and solutions for improving geographic information software are formulated.

These proposals will ensure the fulfillment of all necessary requirements for the development of atlases, primarily at the regional level of mapping.

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