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DEVELOPMENT OF CADASTRAL MAPS AND PLANS IN THE GEOINFORMATION SYSTEM

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ABSTRACT

In this article, three subsystems can be distinguished in the structure of the automated system of cadastral cartography: photogrammetric subsystem; subsystem of vector mapping and orthophotoplans; Let's get acquainted with the processing of digital cartographic data.

Keywords: GIS, geography, geology, geodesy, cartography, cadaster, map, plan.

INTRODUCTION

Geoinformation systems have been influencing ancient sciences such as geography, geology, geodesy, cartography and many other fields. Emerging sciences and technologies based on the experience, traditions and ideas of these fields, in turn, contribute to their development. Providing fast and accurate, accurate and complete information Geoinformation systems play an important role in managing regional and regional development, in making appropriate decisions. Geodesy, cartography and cadastre widely use the advantages of GIS to solve their problems.

The purpose of this article is to reveal the connection between the rapidly developing fields of geodesy, cartography and cadastre, as well as GIS. For this purpose, a brief description and history, their relationship with other disciplines are described. The reason why geography focuses on the cartographic basis of information systems is to help them understand the pros and cons of using these technologies.

The most effective and complete tool in the implementation of cadastral maps and plans in modern GIS technologies are specialized software and hardware systems, which we will call below the automated system of cadastral cartography.

In the structure of the automated system of cadastral cartography can be divided into three subsystems: photogrammetric subsystem; subsystem of vector mapping and orthophotoplans; digital cartographic data processing subsystem. Each of these subsystems, in turn, consists of

jobs. Workplaces are a set of hardware and software that ensure the implementation of certain technological processes and operations.[1-5]

MATERIALS AND METHODS

Requirements for jobs scanning cartographic materials. Functional requirements. This workplace should have the following functional capabilities:

- Scanning of multicolor maps;
- Scanning of black and white maps;
- Raster image filtering;
- Color and photon separation (for black and white images);
- Analysis, filtration, binaryization of raster image histograms;
- Conducting the coordinates of cartographic materials and calculating their deformation, geometric correction of images;
- On-screen visualization, scaling and panorama of raster images;
- Export of raster images for vectoring to workplaces;
- Photometric and geometric calibration of cartographic scanners.[1-3]

Cartographic scanner requirements:

- Input document format - up to A0 (ISO);
- Ability to scan color maps and multicolored materials;
- Ability to work with bright and opaque materials;
- Hardware resolution - not less than 500 points per inch;
- geometric accuracy - the relative position of the points should not exceed 0.1% of the length of the mean square line, mathematical correction after scanning - should not exceed 0.01% of the line length;
- Number of color gradations - 256 color gradations (8 bits / pixels) for black and white images and 256 gradations (8 bits) for each channel of RGB, as well as 24 bit color images for each pixel;
- Hardware or software color separation;
- Optical density range should not be less than 0.1-2.5 D.
- Scanner calibration and verification tools.[1-5]

Vector requirements for mapping and orthophotoplan workplaces. Functional requirements for vector mapping and orthophotoplan workplaces. Vector mapping and orthophotoplan workplaces should ensure the following processes:

- Manual or semi-automatic vector raster binary image;
- Manual vectorization of multi-tone raster images;
- Editing vectorization results - correcting and re-measuring the numbering results in the dialog; methods of joining points on a line (shear, curve, closed, arc); contours (lines); division of contours;

merging lines into lines and dots; put dots; automatic control of topological accuracy of the contour model; known coordinates

marking with dots; delete individual points, lines, line fragments;

- Visualization of the result of vectoring on the screen;
- Shape, thickness and color of lines, good graphics use of symbols for conditional symbols;

- Export for processing and publication of vector data in subsystem workplaces.

RESULTS AND DISCUSSION

In recent years, geography has been making extensive use of field-based, geopositional and satellite data in information systems. Field data include data obtained using geodetic instruments, topographic surveys. A special program called "Coordinate Geometry" (COGO) crushes data into a format for geographic information systems. When using a geoposition system, the accuracy of the data increases if at least two receiving devices are used. This method is called the "differential method" and is useful in determining the coordinates of important points. Receiving tools have the ability to convert the received data into systems of different coordinates and altitudes. Some geopositional and geographic information systems are designed to be shared. This guide does not address this issue much.

There are also opportunities to use aerial photographs and data from satellite satellites in geographic information systems. SPOT can be used as an important source due to the fact that images from the satellite are spread over the Internet. Images in different solutions allow separate houses to be separated from each other and are suitable for solving different tasks.

The coding process is only part of the process of entering information into a geographic information system. As a result, information about the coordinates of the points is generated. Information about each element stored in the geographic information system must also be entered into the computer's memory. It is known that this information must be entered digitally. If we look at the map, it shows different information using different methods. For example, for rivers, their names, depth, width, speed, bridges and other structures are given. You also need to teach your computer to understand this information. In the past, we talked about attributes, and they are stored as a simple file, in other words, a simple table and the rows of this table are the elements shown on the map, and the columns are the pointers of the elements.

For example, the rows give the names of the rivers, and the columns show the characteristics of each river, such as speed, latitude, altitude, and so on. Before entering attributes in the geographic information system, it is necessary to determine the order of their imaginary description. For example, how the name is given, how many numbers need to be allocated, how many columns contain information, and so on.

The attribute table is saved as a file. A is a numeric or text pointer corresponding to the attribute, B is the name and pointer of each attribute, V is a record, all attributes of any detail Each attribute has its own pointers and when entered correctly Several issues need to be addressed.[1-6]

CONCLUSION

Today, the development of geographic information systems is influenced by scientific and technical achievements, on the one hand, and theoretical and practical research in the field of geodesy and cartography, cadastre, on the other. We hope that theoretical and practical research in this area will begin in our country and in the future they will develop rapidly.

Today, GIS is a powerful tool that has played an important role in managing data-driven regional development and the use of natural resources. Not limited to mapping and atlasing, they increase research and management productivity.

The development of geographic information systems (GIS) depends mainly on data, hardware and software. The types of data and ways to collect them are increasing, they are improving in terms of completeness, accuracy, detail, modernity. One of the most pressing issues in our country is the creation of such a database, the establishment of exchange standards and its dissemination. Due to the joint use of GAT and geoposition systems, new opportunities are being created to increase the speed, accuracy and efficiency of data collection. Improvement of technical means, in turn, leads to an increase in the efficiency of the GAT. Over the past 10 years, the technical capabilities of the Internet, mobile communications, computers and data carriers have increased significantly. As a result, there are more and more ways to program, manage data, and create new types of geoinformation systems.

New methods and techniques are being developed in the field of programming, creating several advantages, such as increasing the variety of graphical interfaces and menus to facilitate the work of the user from a personal computer. The possibilities of joint processing of vector and raster data in geographic information systems are increasing.

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