MAIN COMPONENTS OF GIS

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The main components of the GIS include: technical, software, information support. The requirements for the GIS components are determined, first of all, by the user who is faced with a specific task (accounting for natural resources or managing the infrastructure of a city), which must be solved for a specific area that is different in natural conditions and the degree of its development.

Technical support is a set of hardware used in the operation of a GIS: a workstation or a personal computer (PC), information input / output devices, data processing and storage devices, and telecommunications facilities.

A workstation or PC is the core of any information system and is designed to control the operation of GIS and perform data processing processes based on computational or logical operations. Modern GIS can quickly process huge amounts of information and visualize the results.

Data entry is implemented using various technical means and methods: directly from the keyboard, using a digitizer or a scanner, through external computer systems. Spatial data can be obtained by electronic geodetic instruments, directly using a digitizer and a scanner, or from image processing results on analytical photogrammetric instruments or digital photogrammetric stations.

Devices for processing and storing data are concentrated in the system unit, which includes the central processor, RAM, external storage devices and the user interface.

Data output devices should provide a visual representation of the results, primarily on the monitor, as well as in the form of graphic originals obtained on a printer or plotter (plotter), in addition, the implementation of data export to external systems is obligatory.

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Software - a set of software tools that implement the functionality of GIS, and software documents necessary for their operation.

Structurally, GIS software includes basic and application software.

Basic software includes: operating systems (OS), software environments, network software and database management systems. Operating systems are designed to manage computer resources and processes that use these resources. At present, the main OS: Windows and Unix.

Any GIS works with data of two types of data - spatial and attribute. To maintain them, the software should include a database management system for those and other data (DBMS), as well as modules for managing data input and output facilities, a data visualization system and modules for performing spatial analysis.

Application software tools are designed to solve specialized tasks in a specific subject

area and are implemented as separate applications and utilities.

Information support - a set of arrays of information, coding systems and information classification. Information support consists of implemented solutions by type, volume, location and organization of information, including the search and evaluation of data sources, a set of data entry methods, database design, data maintenance and meta-maintenance. The feature of storing spatial data in GIS is their division into layers. The multi-layered organization of an electronic map, if there is a flexible layer management mechanism, allows you to combine and display a much larger amount of information than on a regular map. The data on the spatial position (geographic data) and the associated table can be prepared by the user or acquired. For such data exchange, the spatial data infrastructure is important.

The spatial data infrastructure is determined by legal documents, mechanisms for organizing and integrating spatial data, as well as their availability to different users. The spatial data infrastructure includes three necessary components: basic spatial information, spatial data standardization, metadata bases, and a data exchange mechanism.