

## ADPTATION OF GEOGRAPHICAL INFORMATION SYSTEM IN NET WATER-SUPPLY AND SEWAGE ENTERPRISES

Рассматриваются принципы действия и функции систем обработки географической информации (геоинформационных систем – ГИС), являющихся новым средством анализа и обработки данных по пространственным объектам и преобразования цифровых данных в карты, модели трехмерных уравнений или логические выражения.

The paper studies the concept and the functions of Geographical Information Systems (GIS), which is a new tool to analyse and interpret data on spatial objects and process digital data into maps, models of three-dimensional equations or logical expressions.

### 1. What is GIS.

This new tool, which it makes possible automatic analysis and interpretations of datas about spatial objects, crossing from digital datas to maps, models of three-dimensional equations or logical expressions. From functional side, GIS is the operator of digital collections of maps. Geographical Information Systems is collection of thematic maps or whole atlas as well as that is results of theirs processing schedules and graphs.

Geographical information systems can be defined by the group of function, to which belong following operations on datas:

- Introduction of datas,
- Storage and management,
- Transformation,
- Lead out of datas.

### 2. Models of spatial datas.

Way of performance of geographical variety in base of datas is model of spatial datas. There are two ways of performance datas: bit-map and vector. The same phenomenon or object can be introduced in different way. Choice of model depends from of nature objects and phenomena in real world. It can result also from earlier decision, e.g. of shopping of satellite's pictures or possessions of definite software.

### 3. Create of data base.

It is estimate that create of data base absorbs about 80 % of costs. Expensive is software of computers and training of staff also.

Create geographical (spatial) bases of datas runs in a dozen stages.

### 4. Gaining the datas.

Gaining the datas are from such sources as: paper maps in different scales, card indexes, paper records, computer records, bought datas from statistical organization and postal, pictures or gaining from systems CAD.

### 5. Layers.

Real world may be introduce through of levels of maps or set of paintings, which give back his complexity e.g. of water-supply's net, sewage, way of use of terrain etc:

### 6. Adaptation of GIS.

Gis finds use in varied, often in different from itself fields. Despite, from we could not be aware of existing GIS in our everyday life already. And surely area of his presence will be in closest time enlarged.

### 7. Initiation of GIS.

Software – it is set of function and indispensable tools to accumulating, analyses and introduction of datas.

Equipment – computer system, on which software GIS is,

Datas – they motivate sense of existence GIS. To GIS had sense has to contain geographical datas, this set of identified datas is unambiguously through them location and geometry.

People – for which it is design. It is used by experts creators' him and users for which is design.

## 8. Adaptation GIS in water-pipes and sewage system.

Computer aid of realized assignments in enterprise replenishes using from geodesic digital map. Possible is steering of projection content of digital map (displayed layers), being background for infrastructure of water-supply's net or sewage as well as using from easy access to datas of descriptive individual elements of this net.

## 9. Assignment of GIS.

- register and exploitation of water-supplies' net and sewage,
- modernization of extensions and repairs of water-supplies' net and sewage,
- protection environments and hydrogeology,
- service current and future addressees.

Using GIS system accelerates and improves realization of executed assignments in enterprise as well as it causes rationalization of basic assignments in organizational section system. It concerns of access to current datas about water – supply – and – sewage net, it modernization of flow of information between organizational section as well as create of formal documents. Immediate access to necessary accumulated information in data base as well as organized been guided process of modernization of information this basic guaranteing of system elements of him effective utilization at maintenance of high level of safety of datas and reliabilities of working. Access to any kept information in system is possible in every organizational section of enterprise immediately, without necessity of inspecting of Centre Documentation Geodesy-Cartography in aim of obtainment copy of map (it was been possible to print it from every working position in the whole or interesting fragment in few seconds). In aim of getting of information e.g. about datas of section of water-supply's net suffices to show this section on map and automat

show this section on map and automatically detailed descriptive datas will become displayed.

Base of datas is irreplaceable tool of work for water-supplies' enterprises and sewage. On basis of put in datas with informations descriptive execution different kind of analyses, making of calculations and execution of simulation are easier.

At utilization of computer system of management of technical equipment of terrain we have to remember about some rules:

- Introduction of datas is most time-consuming and expensive stage of work. Therefore most important is, to process this became well planned and executed. Costs in initial stage of initiating GIS turn in fullness in perspective of some years.

- Introduction of credible information is basis of proper working of system. Largest attention should be paid onto preparation, verification and modernization of maps. Every mistakes, vaguenesses should be explained already on stage of accumulating of datas.

- Initiating GIS in enterprise is complex process and dependent from many factors therefore very essential choice is proper initial firm, which not only will assure efficient starting of system, but also essential connected care from later functioning and development of system.

- Net water-supply and sewage they are objects, which parameters change with outflow of time and therefore necessary is making of periodical verification of hydraulic models. Taking of decision on basis of invalid datas can be cause of large economic losses.

- Automating of calculations even in 100 % it does not release user from undertaking interpretation and optimum decision. Man always takes decisions, computer only it facilitates and it accelerates work.