

Use of Geo-Information System in Creating Topological Maps

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Abstract

The article provides information on the use of GIS in the creation of land use maps using modern technologies for increasing, restoring, assessing and managing the productivity of irriGISed agricultural lands, including space imagery, geoinformation technologies and automated databases.

Keywords: Cadastre, land plots, geographic information systems, geoinformation cartography, thematic maps, cadastral maps, inter-farm land management projects, intra-farm land management projects, modern computer technologies.

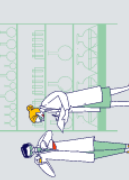
INTRODUCTION

Improving the productivity, restoration, assessment and management of irrigated lands in agriculture is carried out using modern technologies, including space images taken by earth-orbiting satellites, geo-information systems technologies and automated databases.

After the independence of our republic, a number of reforms were implemented in order to more fully meet the demand of the population for food products.

Especially in this regard, the changes taking place in the agrarian sector, creating new forms of economic management, sharply increase the volume of land development works. During this period, the increase in the information supply of land construction works created the need to improve it in terms of quality.

Regarding the introduction of modern technologies in the field of land management, the State Chamber of Cadastres under the jurisdiction of the cadastral agency under the State Tax Committee of the Republic of Uzbekistan, the Kashkadarya Regional Department, the State Scientific and Design Institute "UZDAVERLOYIHA" within the Ministry of Agriculture of the Republic of Uzbekistan "Qashvilerloyiha" department has implemented many measures. In particular, information communication and geoinformation technologies were applied to the field in the activities of effective land use, assessment of land resources, prevention of neGISive processes and elimination of consequences, creation of a unified system of state cadastres.



Geographical Information Systems (GIS) Geographical information systems (GIS, then the word GIS is used in the commonly accepted phrase) are created in the framework of earth sciences and on the basis of information technologies - they are topographic, geodetic, land resources and other cartographic information about objects and phenomena of nature and society. is an automated hardware and software complex that provides information collection, processing, storage in EC memory, updating, analysis, and further processing.

Now there is a need to create new thematic maps (topography maps, resource maps, ecological maps, cadastral maps and other maps) in cartography. Currently, informatics (data set) is being used in all aspects of our society, including currently, science is connecting with each other through mutual relations, and great success is being achieved in solving problems that are difficult to solve. As a result, new sciences are entering the field of cartography. The use of informatics in the sciences of land formation has given rise to a special direction - the field of Geoinformation.

Prof. Geoinformation. A.M. Berlyant describes it as follows: it is a scientific field that studies the structure, interrelationship, dynamics (its change in time and space) of the geosystem by means of computer modeling. This field is used not only in geosystems, but also in technology and manufacturing. GIS (Geographic Information System) is an automated hardware system, a scientific field that collects, processes, stores, describes and distributes geoinformation coordinated in space and time.

"Geoinformational cartography is a branch of cartography. automatically creating and using maps that are a model of the geosystem, learning and using them on the basis of GIS technology and geographical (geological, ecological, socio-economic, etc.) knowledge," explains prof. A. M. Berlyant (1).

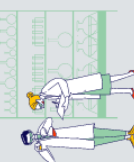
Currently, in modern cartography, various special automatic equipment is used for drawing up maps and preparing them for printing. These are machines for creating cartographic images, electronic coordinates, automatic color selection equipment, etc.

In all GIS methods of data collection, processing, storage, updating, analysis and implementation of these processes by means of technical means on a computer or a special program capable of sufficiently processing image properties are considered.

Therefore, GIS is a well-developed system based on a large database of natural networks collected by various methods.

The GIS technology of creating topographical maps includes not only the creation of a layer of thematic maps, but also their editing. To explain the layers simply, they are in the form of a set of white transparent sheets, each of which contains geographic base objects (land areas, linear elements, hydrography, settlements, administrative boundaries, roads, etc.) separately. are depicted separately, in addition, elements of the special content of the card can also be represented. Such transparent sheets placed on top of each other form a cartographic image.

GIS serves to find a scientific and practical solution to their analysis, evaluation, forecasting and inventory in territorial organization of society and environmental management. The basis of GIS is the automatic cartographic system, which is the main source of information and the cartographic image of the regions.



Maps, aerial photographs, statistical, cadastral, hydrometeorological and expeditionary data can be collected through GIS and used wherever necessary. International organizations (UN, UNEP, etc.), state institutions, ministries, cartographic, geological, land cadastral organizations, statistical organizations, private firms, scientific research institutes and universities participate in the organization of GIS. GIS is used in production, large-scale finance, calculation of monetary costs. In addition, geoinformation infrastructures are being established in various fields and are being connected to telecommunication networks.

As a result, the production of agricultural cards has risen to new levels: after manual labor has been replaced by computers, the period of creation of cards has shortened, and the quality of issued district agricultural cards has improved. Currently, work is being carried out using the Geoinformation System (GIS). Department of electronic cartography and design moved to modern methods of creating maps and mastered geo-information systems in cartography.

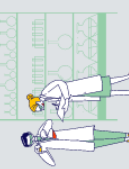
In fact, the land surveying service, which was working with old traditional methods and tools, now has the opportunity to quickly perform these tasks with the help of GIS (geographic information systems) technologies. GIS is a geographic information system, with the help of which the objects around us are presented in the form of maps, analyzed according to many factors and parameters, and based on this information, forecasts are prepared for various fields. GIS technologies can be effectively applied in various fields, in particular, land surveying, land cadastre, oil and gas industry, engineering communications, ecology, agriculture and several other sectors.

On the one hand, the need to speed up the design work is from the time of obtaining the land planning plan - map, land cadastre normative and other data, their analysis and use in the design, to the time of allocating land in places and issuing land construction documents confirming the rights of ownership or use of land. If it requires a sharp reduction of the time, on the other hand, it increases the demand for the quality of land preparation works, finding optimal solutions for the organization of land protection and its rational use.

The main link of the land development process is the planning of the land development, and its main purpose is to establish an order in the use of the land, to give and take back the land, to organize and protect its effective use in the sale and purchase, including the following land development works is achieved by executing:

- pre-project calculations in the district zoning drawings;
- working on inter-farm and intra-farm land development projects;
- preparation of working projects for the implementation of land preparation activities;
- author control over moving projects and their implementation.

The open portal "Yer axborot tizimi" YAT" was created and put into practice by the state scientific-design institute "O'ZDAVYERLOYIHA" within the Ministry of Agriculture of the Republic of Uzbekistan. Electronic digital maps are being created in land surveying by calculating the area and assigning a unique number by decoding and analyzing the space images using modern technical tools in the ArcGIS program.



Conclusion:

these technologies make it possible to shorten the duration of the project, raise the quality of the projects, and make the work of designers easier. In addition, with the help of modern computer technology, we can freely use economic-mathematical methods and models to predict, plan and design measures for the protection of land resources and the organization of their effective use, not only to solve technical and economic issues better.

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