THE IMPORTANCE OF ORTHOPHOTOPLANS IN LAND CADASTRAL MANAGEMENT IN FOREIGN COUNTRIES

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Abstract: *special attention is paid to purposeful scientific research aimed at developing methods of geodetic, cartographic support for cadastral activities based on modern geographic information systems, as well as efficient technologies for designing and creating digital maps. One of the current issues in this regard, including the development of modern technologies for updating digital maps. This article is devoted to the use of remote sensing materials in land cadastre management.*

Keywords: *aerospace photography, orthophoto, photoscheme, photoplan, photomap, photo-block scheme, orthophotography, database, agricultural lands.*

One of the main factors in the economic development of many countries is the rational use of their natural resources. Land is one of the main sources. Using land information will help to create a plan to increase its productivity, and then to prevent a decrease in land quality.

In order to increase the efficiency of land resource use, it is expedient to collect the following information about them. Firstly, ownership rights to land, the right to use it, land valuation, and other real estate valuation, the amount of taxes levied on them, and even the creation of a development plan for the region where the land and real estate are located, are included.

The formation, maintenance, and continuous updating of the information system related to the work on remote sensing of state land cadastres is based on digital orthophotoplans.

Using modern resource-intensive technologies, aerosolization provides increased labor productivity in creating orthophotoplans, cost reduction, data accuracy of land cadastres, and resource conservation.

Orthophotoplan is an important source of quality information on the number of seating places and planar teachings. The results of the described inventory can be used as a cartographic basis and geographic information.

The increasing need for knowledge of geographic space has prompted the population to seek various ways of settling new territories. These methods attempt to describe the Earth's surface using precise data that modern technologies can obtain through aerospace photography. To achieve these goals, various systems, including orthophotoplans, have been created. This is a type of photogrammetric method based on the use of photographic images from aerial vehicles equipped with special photographic instruments. This type of instant snapshots forms the basis for the process of creating plans and maps of various scales used in the cadastral system.

This is done with aerial vehicles equipped with special equipment for photographing the Earth's surface. These aerospace images are used to create models of different scales and maps

for the cadastral system to work. The use of orthophotoplans is becoming more common in all land-related areas. The use of orthophotoplans in the socio-economic development of the country has a great effect. Thanks to such information, the needs in research, planning, and many specialists are satisfied.

Thus, with this transformation, all violations of the contour caused by the curvature of the camera lens can be eliminated. There are also various changes that occur as a result of relief displacement. This leads to errors in measurements. Changes present on the surface of the photographed Earth and in the cameras are related to slopes characteristic during shooting.

Thanks to this method of obtaining information, uniform and accurate measurements can be obtained for the entire surface of the orthophotoplan.

A land cadastre or real estate accounting system is created to collect a large amount of information about land and other real estate in one place, process it, store it, and, if necessary, solve problems of its use. The current cadastral system has its own specifics in each foreign country.

For example, the current tasks of the land cadastre of France include: drawing up cadastral plans, determining ownership rights to land plots, measuring their areas, evaluating land and other properties. Calculate the amount of tax considering this. The activities of the Committee for State Cadastral Documentation involve the preparation and maintenance of cadastral plans.

On the other hand, the regional tax administration deals with updating the existing information, maintaining it to the extent that it meets the time requirements, and, as such, property evaluation and taxation.

In general, the main task of an automated system is to collect, store, process information on the territory of all land plots, real estate objects.

United States. In the US, orthophotoplans are used for compiling, updating maps and obtaining additional information. They can also be used to obtain information about land ownership or other properties. In the US, aerospace photography is used to study soil composition in addition to agricultural, forestry, urban studies and other similar studies.

Among the orthophotoplans used in the United States, we can confidently see that harbors, which enhance public safety and road traffic control, protection of fire zones, assisting law enforcement agencies, serve various public purposes, land and property control, carried out in cases of real estate sales. Natural resources are used by information centers, forestry companies, and various corporations to obtain information on natural resources through aerospace images. It is also used to determine the history of land use, general land use, and agricultural crops. Many crop rotation systems are also defined by studies using orthophotoplans.

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Belarus. The Committee on Land Resources, Geodesy, and Cartography under the Council of Ministers of the country and its enterprises and regional structures are working on the use of modern measurement and verification methods in the cadastral system, as well as computer technologies to ensure the acquisition and storage of the necessary information at the level of modernity with minimal financial and labor costs. The use and study of aerospace images allow obtaining extensive information about the entire territory of the country in a short time and take into account current changes in the distribution, status, and use of land, which is considered very important for the proper formation of the state land cadastre. Belarus's Land Information System has a three-tiered structure (local, regional, and central). Important role in servicing these systems play orthophotoplans of various scales. For cadastral purposes, it is technologically acceptable to create land information systems based on topographic maps and plans, aerospace materials, made taking into account the requirements for updating cartographic materials.

In connection with this, flight planning is carried out within the nominal tables with a size of 1:50,000.

Digital orthophotoplans are created for the terrestrial information system when compiling digital maps, conducting field research work, resolving various disputes. In addition, until the digitization is completed, orthophotoplans are transmitted to the district for current accounting, and also to the State Geodetic and Cartographic Center for sale as a final product to third-party customers.

When creating orthophotoplans, the software products "Realistic Map" and "PhotoMod" are used. The considered software is used to create a digital terrain model, then vector topographic maps and put into operation as a final product through the State Geodetic and Cartographic Center of the Republic of Belarus.

Foreign analysis shows that in creating various cards in developed countries, public organizations have systematized the work on creating or updating cards based on a single geoportal. This, in turn, was obtained by various state institutions and organizations composing duplicates of cards. This work on systematization provides the following opportunities when compiling cards created by public organizations:

- forecasting geodetic coordinates, visualization of approximate coordinates and corresponding planning before sending to the study area;

- requesting the presence of weight cards of any type, if the card is compiled, the manufacturer can determine information about the public organization;

- you can find answers to requests and obtain detailed information, for example, when, where and how the maps were created, which public organizations;

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