

**EFFECTIVE METHODS OF APPLYING DIGITAL TECHNOLOGIES IN CADASTRAL
ACTIVITIES**

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Abstract. This article analyzes modern methods of using digital technologies in cadastral activities and their effectiveness. The significance of geographic information systems (GIS), remote sensing, global navigation satellite systems (GNSS), digital cartography, and automated information systems in the cadastral sector is highlighted. It is substantiated that digital technologies enhance the accuracy, efficiency, and transparency of processes related to the registration, valuation, and monitoring of land parcels and real estate objects. In addition, the possibilities of improving management efficiency and reducing corruption through the digitalization of the cadastral system are discussed.

Keywords: cadastre, digital technologies, geographic information systems, remote sensing, GNSS.

Introduction

The Role of Digital Technologies in the Cadastral System

In the context of globalization and digital transformation, the cadastral system is considered an important component of public administration. Accurate, reliable, and timely management of information on land resources and real estate objects plays a significant role in economic development, improving the investment climate, and spatial planning processes. Traditional cadastral systems were often based on paper documentation, which led to data obsolescence, loss, and errors. Digital technologies have emerged as an effective solution to overcome these challenges.

A digital cadastral system is an integrated information system that enables the collection, storage, processing, and updating of spatial, legal, and economic data related to land and real estate in electronic form. Through such systems, information exchange between government authorities, entrepreneurs, and the public becomes more efficient and simplified.

The Importance of Geographic Information Systems in Cadastral Activities

Geographic Information Systems (GIS) serve as the core technological foundation of cadastral activities. GIS allows land parcels, buildings, and structures to be represented on digital maps with precise coordinates, including their location, boundaries, and area. This ensures effective visual analysis of cadastral data.

Using GIS technologies expands opportunities for spatial planning, rational land use, and environmental monitoring. For example, land use compliance, cases of illegal occupation, and land degradation processes can be identified through GIS. Moreover, the automatic updating of cadastral maps ensures the continuous relevance and accuracy of information.

Application of Remote Sensing Technologies

Remote sensing technologies are among the most widely used modern methods in cadastral activities. Satellite imagery and aerial photographs provide accurate information about land surface conditions, territorial changes, and infrastructure objects. These technologies are particularly effective for analyzing large areas within a short period of time.

Through remote sensing, it is possible to refine land parcel boundaries, detect unauthorized constructions, and assess the condition of agricultural lands. This significantly increases the accuracy and reliability of cadastral activities. At the same time, it reduces the influence of the human factor and contributes to the formation of an objective data base.

Electronic Cadastre and Automated Information Systems

Electronic cadastral systems enable the storage of cadastral data in a unified and centralized information database. These systems integrate legal, technical, and economic information related to land and real estate objects. Automated information systems accelerate the processes of documentation, registration, and data updating.

The implementation of electronic cadastre improves the quality of public services. Citizens and entrepreneurs gain access to cadastral information online, which leads to savings in time and financial resources. In addition, electronic systems ensure data security and help prevent corruption and misuse.

Economic and Social Efficiency of Digital Technologies

The application of digital technologies in cadastral activities is also highly effective from an economic perspective. Accurate registration of land and real estate objects expands the tax base and increases state budget revenues. Furthermore, providing investors with reliable and transparent cadastral information improves the investment environment.

From a social perspective, digital cadastral systems enhance legal awareness among the population. Citizens gain a clearer understanding of their property rights, which leads to a reduction in disputes. Ensuring transparency and openness strengthens public trust in government institutions.

Challenges and Prospects of Digitalizing the Cadastral System

Despite these advantages, several challenges exist in the process of fully digitalizing the cadastral system. These include insufficient technical infrastructure, a shortage of qualified specialists, and high initial implementation costs. Addressing these issues requires professional training, phased implementation of modern technologies, and the study of international best practices.

In the future, the integration of artificial intelligence, blockchain, and “smart city” technologies into the cadastral system is expected. This will further enhance automation and increase the overall efficiency of cadastral activities.

Conclusion

In conclusion, the introduction of digital technologies in cadastral activities is a contemporary necessity that contributes to the comprehensive improvement of land and real estate management systems. The use of geographic information systems, remote sensing technologies, GNSS devices, and automated information systems significantly enhances the accuracy, efficiency, and reliability of cadastral operations. These technologies simplify the processes of registering land and real estate objects, ensure continuous data updates, and reduce errors associated with the human factor.

Moreover, storing cadastral data in a unified electronic database improves the effectiveness of management decision-making. Increased openness and transparency of cadastral information reduce land and property-related disputes, enhance the quality of public services, and create favorable conditions for citizens and entrepreneurs. Overall, digitalization of the cadastral system plays a crucial role in ensuring rational land use, improving the investment climate, and supporting sustainable socio-economic development.

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