

USE OF GEO-INFORMATION SYSTEMS FOR MONITORING AND DEVELOPMENT OF THE BASIS OF WEB-MAPS

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ABSTRACT

The use of geo-information systems for monitoring and development of the basis of web-maps has become increasingly widespread in recent years. These systems provide a range of functionalities for creating, analyzing, and sharing geospatial data, and are used for a variety of purposes, including disaster response, climate resilience, and sustainable development. This article provides a brief overview of the current situation regarding the use of geo-information systems for web-mapping in Uzbekistan, as well as some of the popular software options and key players in the field.

Keywords: Geo-information systems, Web-maps, Uzbekistan, ArcGIS, QGIS, Google Earth, Mapbox, OpenLayers, Open Geospatial Consortium, UN-GGIM, Humanitarian OpenStreetMap Team, World Bank GFDRR, Global Forest Watch.

INTRODUCTION

Geo-information systems have become an important tool for monitoring and development of the basis of web-maps. With the increase in the amount of geospatial data, it has become essential to use geo-information systems to manage, analyze, and visualize this data. In this article, we explore the use of geo-information systems for monitoring and development of the basis of web-maps, and discuss their potential benefits and limitations.

Uzbekistan has made significant progress in the development and implementation of geospatial information systems in recent years. The government has recognized the importance of geospatial data for effective decision-making and has invested in the development and modernization of geospatial infrastructure.

In 2018, the Uzbekistan State Committee of Land Resources, Geodesy, Cartography, and State Cadastre developed a new geospatial data infrastructure, which includes the creation of a national geo-portal and the implementation of a national geospatial data standard. This infrastructure is intended to provide open access to geospatial data and services for both government agencies and the public.

In addition, there has been a growing interest in the development of web-mapping applications and services in Uzbekistan. For example, the Uzbekistan Information Technology and Communications Development Agency has developed a web-mapping portal that provides

access to a range of geospatial data, including topographic maps, satellite imagery, and administrative boundaries.

However, despite these efforts, there are still challenges and limitations to the use of geo-information systems for monitoring and development of the basis of web-maps in Uzbekistan. These include the need for greater awareness and capacity building, the need for standardized data and metadata, and the need for improved data quality and accuracy.

Overall, while the situation regarding the use of geo-information systems for monitoring and development of the basis of web-maps in Uzbekistan is still evolving, there is a growing recognition of the importance of geospatial data for effective decision-making, and efforts are underway to develop and modernize the geospatial infrastructure in the country.

METHODS

To explore the use of geo-information systems for monitoring and development of the basis of web-maps, we conducted a literature review of relevant publications, including journal articles, conference proceedings, and technical reports. We also analyzed case studies and examples of the use of geo-information systems for web-mapping, and consulted with experts in the field. There are several popular software options for the use of geo-information systems for monitoring and development of the basis of web-maps. Some of the most widely used software includes:

1. ArcGIS: ArcGIS is a geographic information system (GIS) software suite developed by Esri. It is widely used for creating, analyzing, and sharing geospatial data, including the development of web-maps. ArcGIS provides a range of functionalities, including data management, data analysis, and visualization.

2. QGIS: QGIS is a free and open-source cross-platform desktop GIS software application that supports viewing, editing, and analysis of geospatial data. It can be used for creating customized web-maps and web-GIS applications.

3. Google Earth: Google Earth is a web-based mapping application that provides access to satellite imagery, aerial photography, and other geographic data. It is widely used for creating interactive web-maps and visualizations.

4. Mapbox: Mapbox is an open-source platform for creating custom maps and web-maps. It provides a range of APIs and tools for developers to create, manage, and publish maps and geospatial data.

5. OpenLayers: OpenLayers is an open-source JavaScript library for creating web-maps and web-GIS applications. It provides a range of functionalities, including support for multiple data sources, interactivity, and animation.

These are just a few examples of the popular software options for the use of geo-information systems for monitoring and development of the basis of web-maps. The choice of software will depend on the specific needs and requirements of the project.

The main point that many individuals and organizations working on the topic of the use of geo-information systems for monitoring and development of the basis of web-maps. Some of the key players and initiatives in this field include:

- **The Open Geospatial Consortium:** The Open Geospatial Consortium (OGC) is an international organization that develops open standards for geospatial data and services. They are involved in the development of web-mapping applications and services and work to ensure interoperability between different software and systems.

- **The United Nations Global Geospatial Information Management (UN-GGIM):** UN-GGIM is a UN initiative that aims to promote the use of geospatial information for sustainable development. They work to develop standards and best practices for the use of geospatial data and support the development of national geospatial data infrastructures.

- **The Humanitarian OpenStreetMap Team:** The Humanitarian OpenStreetMap Team (HOT) is a non-profit organization that uses open-source mapping tools to support disaster response and development projects around the world. They work to create accurate and up-to-date maps in areas that have little or no existing map data.

- **The World Bank Global Facility for Disaster Reduction and Recovery:** The World Bank's Global Facility for Disaster Reduction and Recovery (GFDRR) supports disaster risk management and climate resilience in developing countries. They use geospatial data and tools to support risk mapping and disaster preparedness planning.

- **The Global Forest Watch:** The Global Forest Watch is an initiative that uses satellite imagery and other geospatial data to monitor and track deforestation around the world. They provide interactive maps and tools for visualizing and analyzing forest cover change.

- These are just a few examples of the many individuals and organizations working on the topic of the use of geo-information systems for monitoring and development of the basis of web-maps. The field is constantly evolving, and there are many exciting developments and initiatives underway.

RESULTS

Our review of the literature and case studies revealed that geo-information systems are an essential tool for monitoring and development of the basis of web-maps. These systems provide a range of functionalities, including data management, data analysis, and visualization, and can be used to support a wide range of applications, including environmental monitoring, disaster management, and urban planning. We also found that the use of geo-information systems for web-mapping has several potential benefits, including the ability to integrate and analyze different data sources, the ability to create interactive and user-friendly maps, and the potential to improve decision-making and collaboration. However, we also identified some limitations and challenges associated with the use of geo-information systems for web-mapping. These include the need for specialized technical skills, the potential for data privacy and security issues, and the possibility of data overload or misinterpretation.

DISCUSSION

Overall, the use of geo-information systems for monitoring and development of the basis of web-maps has the potential to transform the way we manage and analyze geospatial data. By

providing a range of functionalities and supporting a wide range of applications, these systems can help us to make more informed decisions, collaborate more effectively, and increase our understanding of the world around us. However, it is important to be aware of the challenges and limitations associated with the use of these systems, and to ensure that we have the necessary technical skills, data privacy and security protocols, and quality control mechanisms in place.

CONCLUSION

In conclusion, the use of geo-information systems for monitoring and development of the basis of web-maps is a powerful tool for managing and analyzing geospatial data. By providing a range of functionalities and supporting a wide range of applications, these systems can help us to make more informed decisions, collaborate more effectively, and increase our understanding of the world around us. However, it is important to be aware of the challenges and limitations associated with the use of these systems, and to ensure that we have the necessary technical skills, data privacy and security protocols, and quality control mechanisms in place to make the most of this technology. One important aspect of the use of geo-information systems for monitoring and development of the basis of web-maps is their ability to provide a visual representation of geospatial data, which can help decision-makers to better understand and analyze complex information. Web-maps are particularly useful for presenting geospatial data in an interactive and user-friendly way, allowing users to explore and interact with the data in real-time. Another important aspect is the ability of geo-information systems to support data-driven decision-making. By providing access to a range of geospatial data and tools for analysis, these systems can support more informed and evidence-based decision-making in a variety of fields, from disaster response to urban planning to environmental monitoring. The use of geo-information systems for monitoring and development of the basis of web-maps is also important for promoting transparency and accountability. By providing open access to geospatial data and allowing users to visualize and analyze the data in real-time, these systems can help to promote greater transparency and encourage public participation in decision-making processes. Overall, the important side of this topic is the potential of geo-information systems for improving decision-making, promoting transparency, and supporting sustainable development.

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