IMPROVING THE METHODS OF PROVIDING GEO-INFORMATION FOR THE MONITORING OF TERRITORIES AND DEVELOPING THE BASIS OF WEB-MAPS

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ABSTRACT

Geo-information technologies have become increasingly important for the management and analysis of spatial data. Web-maps have emerged as an effective tool for presenting geo-information to users in an interactive and engaging manner. This article discusses methods for providing geo-information for monitoring of territories, including interactive maps, analytical reports, and geospatial analysis tools. It also outlines the key steps involved in developing a web-map, such as selecting a platform, defining goals and objectives, displaying data, preparing data, and designing the user interface.

Keywords: Geo-information, spatial data, web-maps, interactive maps, analytical reports, geospatial analysis, monitoring, territories, data display, data preparation, user interface design.

АННОТАЦИЯ

Геоинформационные технологии приобретают все большее значение для управления и анализа пространственных данных. Веб-карты стали эффективным инструментом для представления геоинформации пользователям в интерактивной и увлекательной форме. В данной статье рассматриваются методы предоставления геоинформации для мониторинга территорий, в том числе интерактивные карты, аналитические отчеты и средства геопространственного анализа. В нем также описываются ключевые этапы разработки веб-карты, такие как выбор платформы, определение целей и задач, отображение данных, подготовка данных и разработка пользовательского интерфейса.

Ключевые слова: Геоинформация, пространственные данные, веб-карты, интерактивные карты, аналитические отчеты, геопространственный анализ, мониторинг, территории, отображение данных, подготовка данных, дизайн пользовательского интерфейса.

ANNOTATSIYA

Geoaxborot texnologiyalari fazoviy ma'lumotlarni boshqarish va tahlil qilish uchun tobora muhim ahamiyat kasb etmoqda. Veb-xaritalar geografik ma'lumotlarni foydalanuvchilarga interaktiv va qiziqarli tarzda taqdim etishning samarali vositasiga aylandi. Ushbu maqolada

hududlarni monitoring qilish uchun geo-ma'lumotni taqdim etish usullari, jumladan, interaktiv xaritalar, tahliliy hisobotlar va geofazoviy tahlil vositalari muhokama qilinadi. Shuningdek, u platformani tanlash, maqsad va vazifalarni belgilash, ma'lumotlarni ko'rsatish, ma'lumotlarni tayyorlash va foydalanuvchi interfeysini loyihalash kabi veb-xaritani ishlab chiqishning asosiy bosqichlarini tavsiflaydi.

Kalit so'zlar: Geoaxborot, fazoviy ma'lumotlar, veb-xaritalar, interaktiv xaritalar, analitik hisobotlar, geofazoviy tahlil, monitoring, hududlar, ma'lumotlarni ko'rsatish, ma'lumotlarni tayyorlash, foydalanuvchi interfeysi dizayni.

INTRODUCTION

The availability of geospatial information is crucial for monitoring and managing territories. The development of web-based mapping platforms has revolutionized the way we access and analyze geographic data. However, the traditional methods of providing geospatial information are often insufficient in meeting the demands of modern-day users. In this article, we will explore the ways in which the methods of providing geospatial information can be improved and the basis of web-maps can be developed.

STUDY AREA OR SUBJECT

The Fergana region is one of the most densely populated regions in Central Asia, and its economy largely relies on agriculture and industry. The region has been facing several challenges in terms of providing reliable geo-information for monitoring and analyzing the activities of industrial clusters in the region (fig.1).
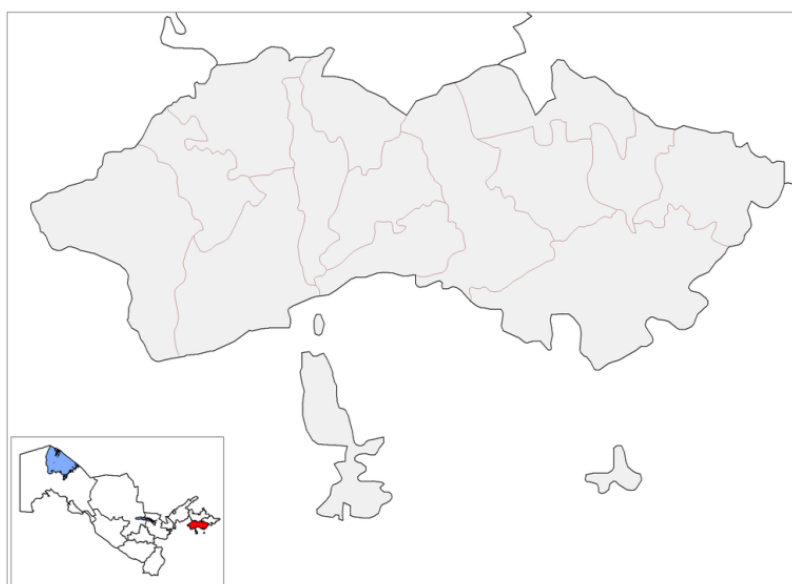
Figure 1. Study area, Fergana volley.

Fergana region is one of the industrially developed regions of the republic. There are 86 large industrial enterprises in the region. The leading branches of industry: fuel energy, chemistry, mechanical engineering, construction materials, cotton cleaning and processing, light and food industry and other. . All states are integrated into the unified energy system of Central Asia.

The largest enterprises of the chemical industry are located in the cities of Fargona and Ko'kan. "Azot" production association, chemical fibers, chemical plants of furan compounds, Kokan superphosphate plant and others are among them. Fergana oil refinery is located in the province. The building materials industry is developed. The cement plant in Kuvasoy produces more than a quarter of the cement produced in the republic. Factories of slate, brick and other building materials, glass and porcelain vessels are operating in Kuvasoi. Equipment and spare parts for other branches of industry are produced at "Elektromash", "Tekstilmash" and other metalworking factories in Kok. The food industry is developing every year. Various types of oils, flour, bread, macaroni, canned goods and other products are produced in the enterprises of this branch. 84 joint enterprises and more than 22 thousand small enterprises operate in the region. "Nodira", "PSMK3", "Polina" in Fergana;

METHODS

2.1.   To improve the methods of providing geospatial information, we propose the following strategies:

a)   **Integration of multiple data sources:** The integration of various geospatial data sources can provide a more comprehensive view of the territory. This can include data from remote sensing, ground-based sensors, and citizen science initiatives. By combining these sources, we can obtain a better understanding of the environmental and social conditions of an area.

b)   **Development of data standards:** The development of data standards for geospatial information can enhance its interoperability and ensure that it can be used across different platforms. This can help to address the issue of data silos and enable different stakeholders to access and analyze the same information (figure 1).

c)   **Improvement of data quality:** The quality of geospatial data can vary depending on the source and collection method. To improve the reliability and accuracy of the data, it is important to establish quality control measures and ensure that the data is up-to-date.

d)   **Enhancement of user experience:** The user experience of web-based mapping platforms can be improved by providing intuitive and interactive interfaces. This can include features such as zoom and pan, layer switching, and customization options. Additionally, the use of augmented reality and virtual reality technologies can provide a more immersive experience.

2.2.   Methods for Providing Geo-information.

There are several methods for providing geo-information, which are utilized for monitoring of territories:

- Interactive maps, which allow users to select and view different geographic features, as well as obtain information about them;
- Analytical reports, which provide information on various aspects of a territory, such as its economy, transportation, and demographics;
- Geospatial analysis tools, which enable users to perform spatial analyses and obtain results in the form of charts, diagrams, and other visual representations.

2.3. Developing the Basis of Web-Maps

Developing a web-map requires several key steps:

1. Selecting a platform for creating the map. There are a range of platforms available for creating web-maps, such as Google Maps, ArcGIS Online, and others;
2. Defining the goals and objectives of the map. It is essential to determine what data will be displayed on the map, what information it will contain, and how users will interact with it;
3. Selecting methods for displaying data. Web-maps can display data through various methods, such as point markers, lines or polygons;
4. Preparing data for display on the map. Data must be prepared for use on the map, meaning it must be geocoded and in the correct format;
5. Designing the user interface. The user interface should be intuitive and easy to use so that users can interact with the map effectively.
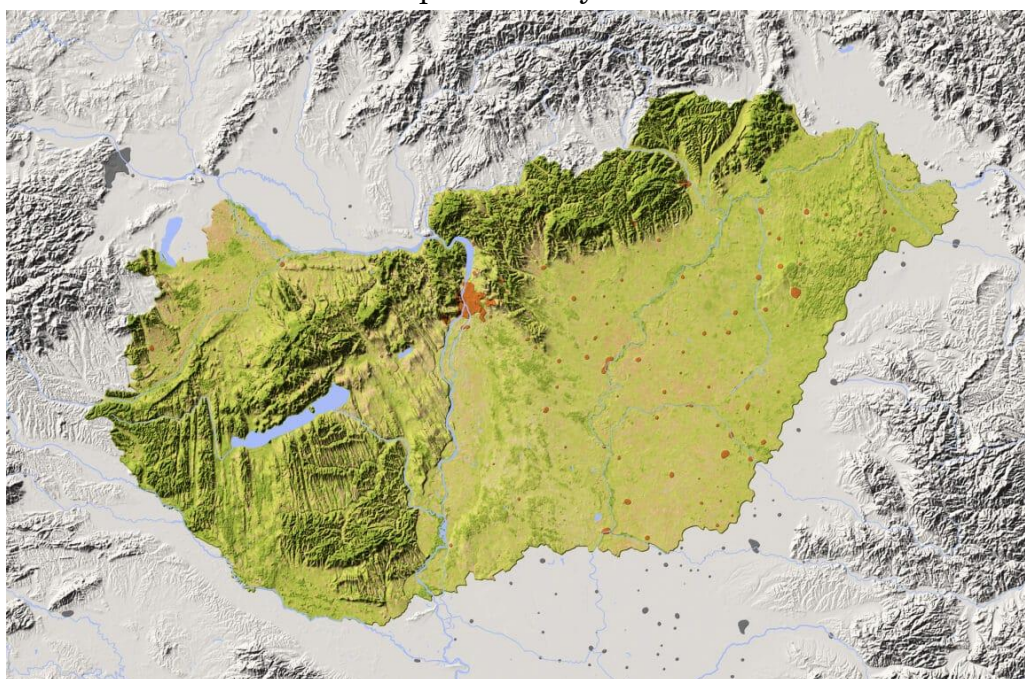
Figure 1. devided area and shows the territory with collors (picture is taken from net).

RESULTS

The implementation of these strategies can lead to numerous benefits, including:

- Improved decision-making: The integration of multiple data sources can provide decision-makers with a more holistic view of the territory, enabling them to make more informed decisions.
- Increased accessibility: The use of data standards can make geospatial information more accessible to different stakeholders, including researchers, policymakers, and the general public.
- Better planning and management: The enhancement of user experience can facilitate the planning and management of territories, enabling users to visualize and understand complex geospatial data more easily.
- Enhanced collaboration: The use of web-based mapping platforms can facilitate collaboration and information sharing between different stakeholders.
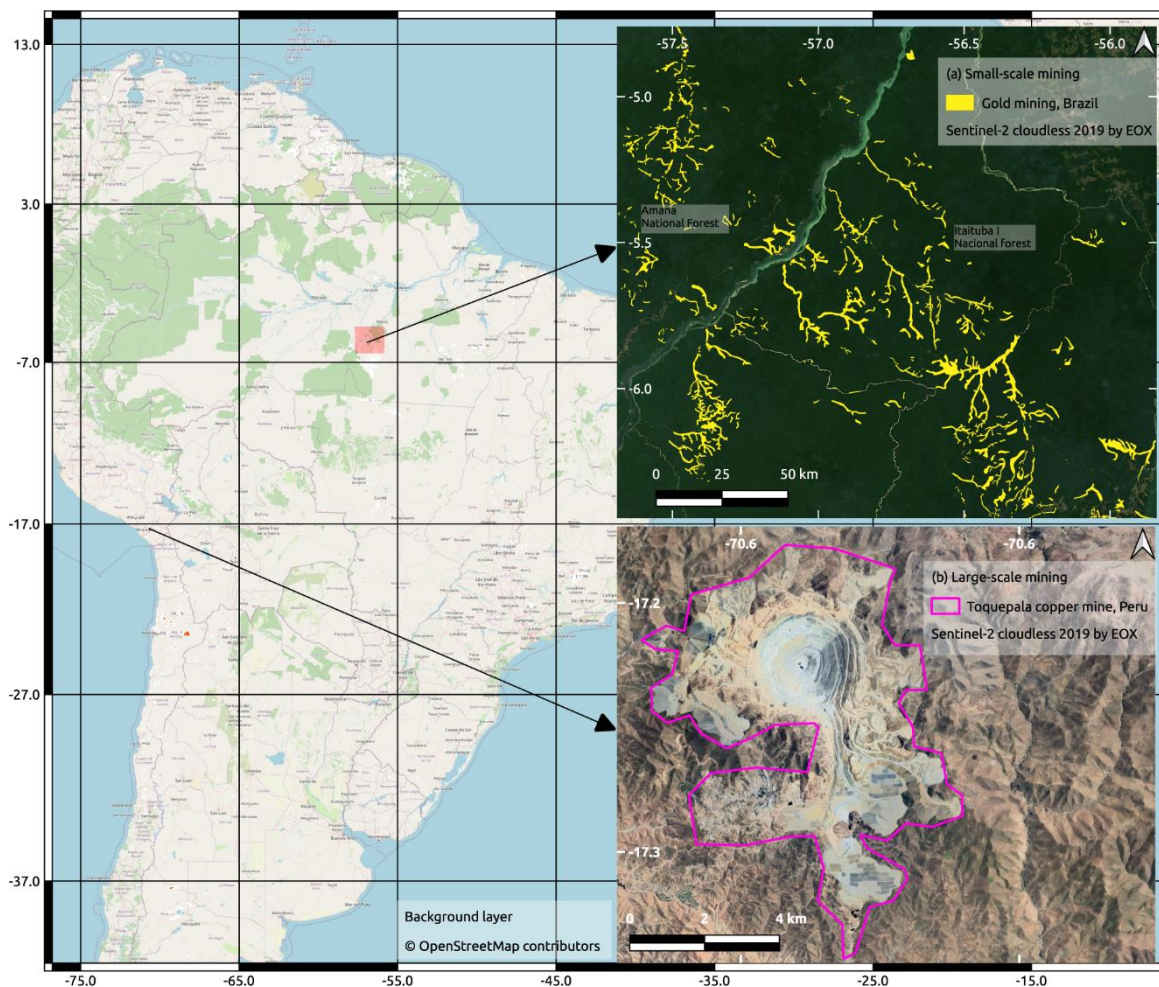
Figure 2. pictures show the situation on map and real position.

DISCUSSION

The improvement of the methods of providing geospatial information has the potential to revolutionize the way we monitor and manage territories. By enhancing the quality and accessibility of geospatial data, we can make more informed decisions and better plan for the future. The development of web-maps can provide a powerful tool for visualizing and analyzing geospatial data, enabling us to gain a more comprehensive understanding of the world around us. However, there are also challenges that need to be addressed, such as data privacy and security concerns. Overall, the development of web-maps and the improvement of geospatial data provision methods are critical for the sustainable management of territories and the protection of our planet.

The President of the Republic of Uzbekistan signed a resolution "On additional measures for the further development of the fruit and vegetable and viticulture industries and the creation of a value chain in the industry." In recent years, consistent measures have been taken to reform agriculture and introduce market mechanisms into the industry.

In particular, a cluster production method has been established in agriculture, the size of agricultural land, divided into clusters by types of crops, is 67 percent for cotton and textiles, 8 percent for animal husbandry, and 7 percent for horticulture. 5 percent. The processing of raw materials grown by the cluster method makes it possible to deliver it to the consumer in the form of a finished product [1].

Today, more than 80 types of agricultural products grown in our republic are exported to 66 countries of the world. If in 2010 cotton fiber accounted for 11.3 percent of exports, by 2018 this figure dropped to 1.6 percent.

At the same time, the lack of a systematic introduction of effective market mechanisms, especially in the development of horticulture and viticulture, and an insufficient scientific approach lead to underutilization of the industry's existing opportunities.
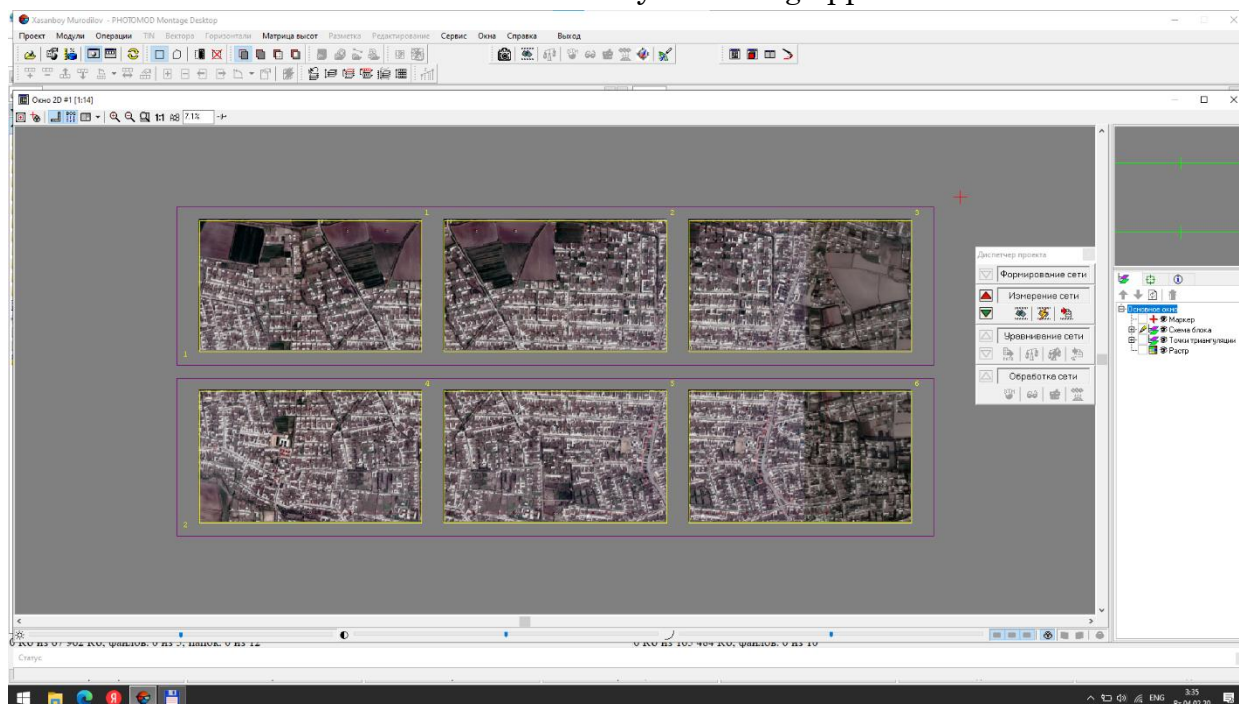

Figure 3. objects are found on the land and put mark there. .

CONCLUSION

In conclusion, the availability of geospatial information is increasingly important for monitoring and managing territories. The development of web-based mapping platforms has opened up new opportunities for accessing and analyzing geographic data. However, the traditional methods of providing geospatial information are often insufficient in meeting the demands of modern-day users. To address this challenge, we propose a set of strategies to improve the methods of providing geospatial information, including the integration of multiple data sources, the development of data standards, the improvement of data quality, and the enhancement of user experience. The implementation of these strategies can lead to numerous benefits, such as improved decision-making, increased accessibility, better planning and management, and enhanced collaboration. However, there are also challenges that need to be addressed, such as data privacy and security concerns. Overall, the development of web-maps and the improvement of geospatial data provision methods are critical for the sustainable management of territories and the protection of our planet. By enhancing the quality and accessibility of geospatial data, we can make more informed decisions and better plan for the future. We hope that this article has provided valuable insights into the ways in which the methods of providing geospatial information can be improved and the basis of web-maps can be developed, and we look forward to seeing the continued evolution of these technologies in the years to come.

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