



## Creating a 3d Model of Buddhist Monuments and Developing their Interactive Maps

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**Abstract:** In this article, scientific suggestions and recommendations have been developed for the development of today's developments in the field of tourism, opportunities for the development of religious tourism, the creation of a 3D model of Buddhist monuments and the development of their interactive maps, showing their characteristics.

**Keywords:** tourism industry, 3D model, religious tourism, Buddhist monuments.

**Introduction.** Determining the tourism sector as one of the country's priority directions requires paying special attention to the problems and prospects of tourism development in the regions of the country. Today, several programs aimed at the development of tourism are planned to be implemented in our country, more than 10 network strategies are being developed. A strategic approach to the development of tourism is regularly implemented in the regions, and as one of the main directions of the country's economy, it is becoming the most important area for the socio-economic development of the regions.

**Literature review.** At this point, it is worth noting that today in our country, we have enough potential tourist resources, which provide the opportunity to develop specific types of tourism and specific directions of tourism. As one of the main directions of the concept of tourism development in the Republic of Uzbekistan for 2021-2025 [1], "...the adoption of comprehensive measures to reduce the impact of seasonal factors by diversifying tourist products and services for different segments of the tourism market" is set. It is worth noting that in the development of these measures, one of the promising areas of the tourism industry, pilgrimage tourism, should be taken into account.

Our country has the potential of rich pilgrimage tourism resources that provide the opportunity to organize pilgrimages for representatives of different religions living in different parts of the world. In our country, the use of tourist monuments that attract representatives of the religion of Biddism is one of the directions of such promising pilgrimage tourism. Considering that currently Buddhism is the main religion of Sri Lanka, Myanmar (Burma), Thailand, Laos, Cambodia, Vietnam, Tibet, Bhutan and Japan, it is urgent to develop suggestions for increasing the flow of tourists from these countries. This requires the determination of priorities for increasing the tourist potential based on the scientific analysis of the social condition, infrastructure and economic potential of the regions where traces of Buddhist historical monuments are located.

Buddhism is the oldest of the three world religions. The Buddhist world covers many countries of South, Southeast and East Asia, as well as a number of regions of Russia. There are many Buddhist temples in Western Europe. According to some scholars, there are more than 325 million followers

of Buddhism in the world. This indicator does not take into account believers who followed Buddhism and other confessions at the same time. According to other statistics, there are about 500 million Buddhists in the modern world, of which about 320 million live in Asia, about 1.5 million in America, 1.6 million in Europe, and about 38,000 in Africa. Japan - 72 million, Thailand - 52 million, Myanmar - 37 million, Vietnam - 35 million, China - 34 million, Sri Lanka - 12 million, Korea - 12 million, Cambodia - 7 million, India - 82 million, Laos - 2,4 million, Nepal - 1.3 million, Malaysia - 3 million [2].

It is known that for thousands of years, the Great Silk Road served not only to ensure the movement of goods, but also to bring people's cultures, customs and traditions closer together. For thousands of years, important ethnic processes, active influence of cultures took place in Central Asia, large trade operations were carried out, diplomatic agreements and military alliances were formed. The peoples of this region served to ensure the spread of literacy and world religions, many cultural and technical achievements. Therefore, since ancient times in Central Asia, various civilizations - Buddhism, Judaism, Muslims, Christians and other ancient peoples - have been neighbors, complemented and enriched each other.

**Analysis and results.** Speaking about the heritage of Buddhism in the regions of Uzbekistan, according to the evidence of archeological findings in the south of our country, it was determined that the center of Buddhism and Buddhist culture during the Kushan period was the Termiz region. Many Buddhist monuments have been preserved throughout this region. Through this region, Buddhism reached Dunhuang, the center of Buddhism in China along the Great Silk Road. Historical sources about Central Asia left by Buddhist monks and priests at the beginning of the 20th century were found in this center of Buddhism. Among the most famous written sources are Chinese monk Xuanzang's "Notes on a Journey to the West", Chinese priest (of Korean origin) Hui Chao's "Notes on Pilgrimages to 5 Countries of India" and many other sources of tourists who passed through Uzbekistan on their way back from India.

Ancient Buddhist treasures have been found in the Surkhandarya Valley, most of them in Uzbekistan and some in neighboring Tajikistan. In these places, Buddhism developed under the influence of the northern region of India (present-day Peshawar Valley of Pakistan) and became known as Gandhara. Sages from northern India brought the teachings of Buddhism here. Later, the support of the ruling classes played an important role in its spread. An important aspect of the spread of Buddhism was the transliteration of Buddhist philosophy, which was expressed on stone scrolls, woodcut life stories, and Buddhist messages. This method of education proved to be very effective and soon many Buddhist settlements were formed in places from Gandhara to Surkhandarya valley. People saw Buddhist monasteries as art galleries and looked to them for inspiration. The best source of information for modern researchers is Chinese travelers, who noted the existence of hundreds of Buddhist monasteries and stupas in the region. From the 1st to the 7th century, these architectural structures were sponsored and protected by the state. Stray Kushan tribes came to the Surkhandarya region from the north-western part of China and found that Buddhism had developed here everywhere in the Bactrian region. Soon after, mainly for political reasons, the Kushans adopted Buddhism to strengthen the foundations of their empire. The Kushan dynasty is remembered in history for its great achievements in the spread of Buddhism. Most of the Kushan rulers were Buddhists, and the famous king Kanishka is often compared to King Ashoka, the second great patron of Buddhism. During his reign, he made peace treaties with the Roman empires, after which Buddhism expanded its borders and began to develop further. It was a golden age and economic growth for the entire region, thanks to active trade with China, the Persian Empire, and Rome.

Most of the ancient monuments of Uzbekistan are located in the Surkhandarya region. Among the most important are Khalchayan, Dalvarzintepa, Ayritam, Kyziltepa, Bandikhon, Kampirtepa and others. The first settlements also appeared here: in the river valleys of the Boisun ridge, among the mountain forests, with abundant harvests of wild fruits, various species of wild animals lived.

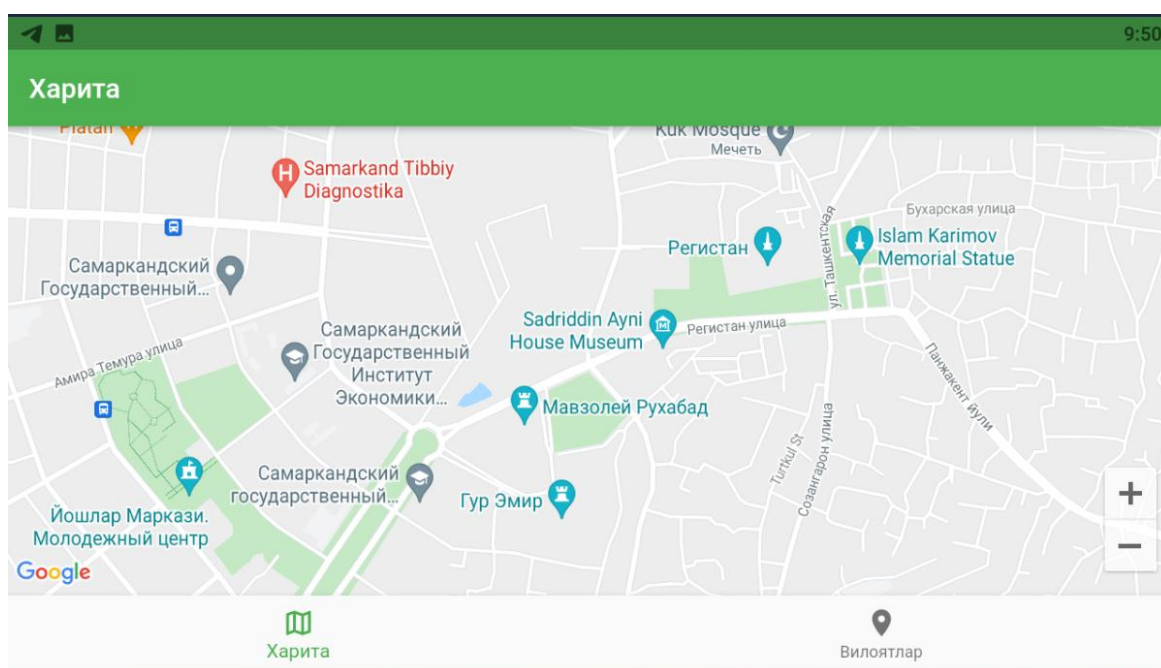
The ancient settlement of Termiz preserved unique Buddhist monuments. These are several Buddhist monasteries, including the Karatepa Cave Temple Complex and Fayaztepa Monastery. These included mausoleums, stupas to house the relics of the Buddha, and were decorated with paintings

and statues of the Buddha and Kushan rulers. One of the rare finds of these places is a terracotta statue of Buddha from the first half of the 2nd century AD. The relief image of the Buddha in the "Trinity" from Fayaztep, as well as the image of "Buddha-Mazda" in the wall painting of one of the cave temples of Karatepa, may be the closest similarity to this image. The heads of the Kushan prince and the warrior belong to the valuable objects of the Buddhist period found in the Surkhandarya area [3].

Due to this concentration of Buddhist monuments, this unique region became a pilgrimage site for Buddhist monks. Today, archaeological research is carried out here, because these ancient ruins are still rich in many historical discoveries.

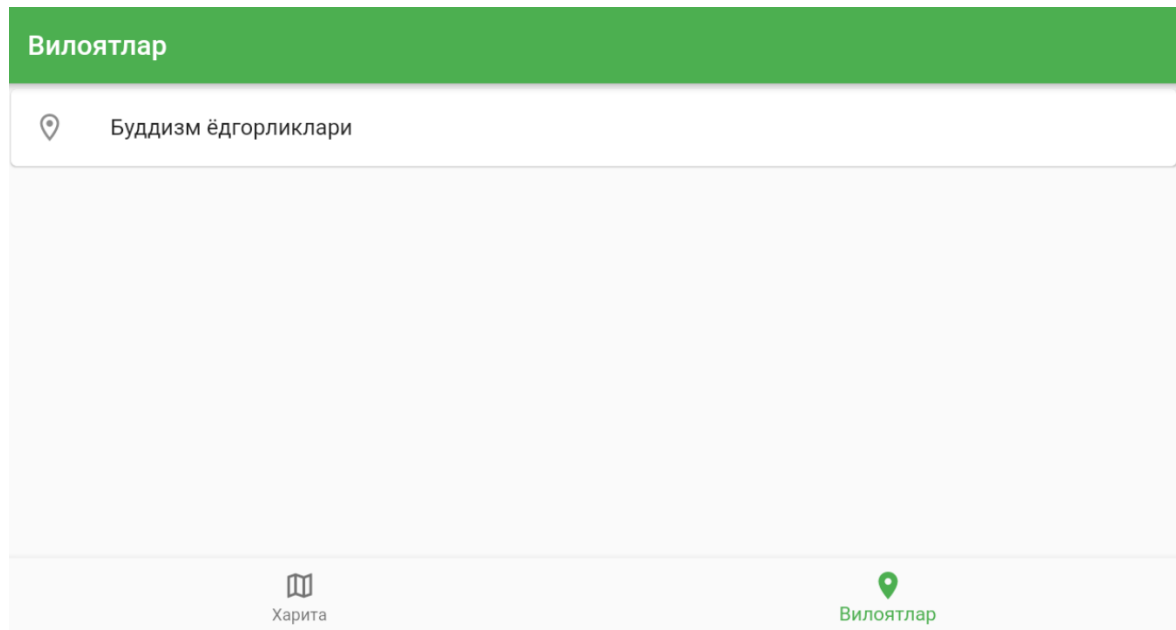
Attracting representatives of the Buddhist religion to Uzbekistan, increasing their interest in Buddhist monuments and remains, and developing ways to maximize the use of Buddhist monuments in the development of tourist routes are among the most urgent issues today.

Based on the above, within the framework of the project "Creation of 3D models of tour routes of Buddhist monuments in Uzbekistan", an interactive map of Buddhist monuments located in the territories of Uzbekistan is being prepared.



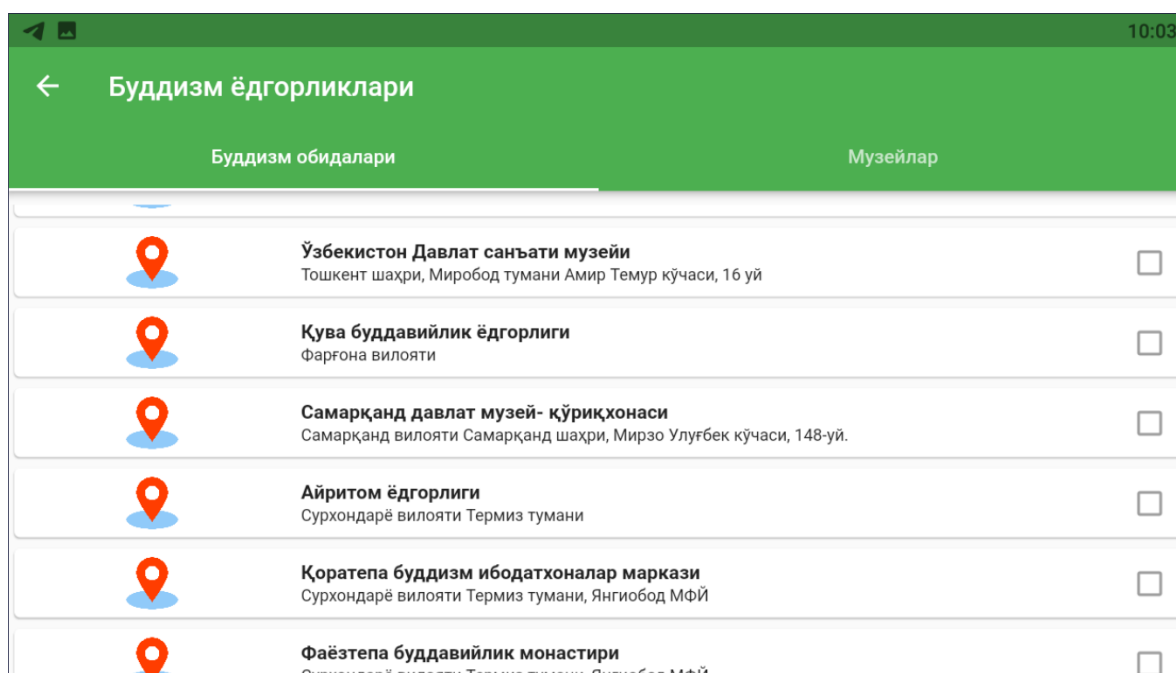
**Figure 1. Interactive map overview**

This is an overview of the map. There are buttons "Map" and "Provinces". The reason for the name "provinces" was that we originally intended to include all provinces. However, considering the fact that there are no Buddhist monuments in all regions, if we continue in this situation, the product will end up looking incomplete, we are making appropriate changes. Due to this, the word "Provinces" will be replaced by "Buddhist monuments".) Clicking the "Map" button will show the current state, pressing the "Provinces" button will change to the following state.



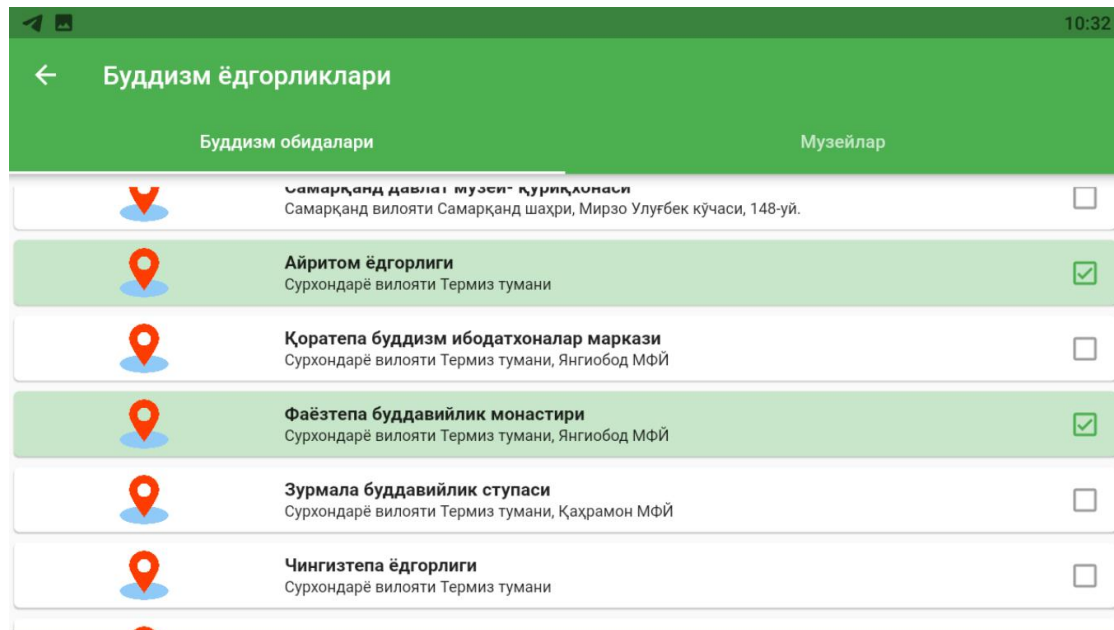
**Figure 2. Interactive map sections**

Here, 3 buttons are created: "Monuments of Buddhism", "Map" and "Provinces". In this case, if the "Map" button is pressed, it will return to its original state, and the "Regions" button will be green. So it represents the current state. If you press the button "Buddhist monuments" the following situation will occur.



**Figure 3. Interactive map database**

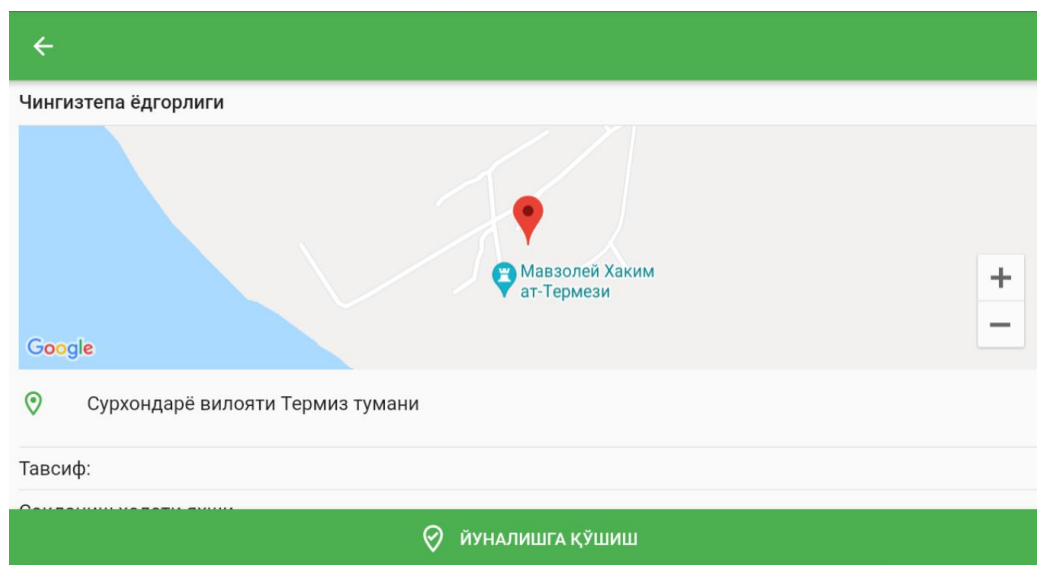
At the top of this window, there are buttons "Buddhist Monuments" and "Museums". The button "Buddhist monuments" is the current state, that is, a list of Buddhist objects, information about them is arranged according to their geolocations. The "Museums" section contains information about museums with Buddhist exhibits, such as "Monuments of Buddhism".



**Figure 4. Features of adding to the route by marking landmarks on the interactive map**

This object can be added to the route by ticking the boxes to the right of the image.

You can enter these objects and get acquainted with their location on the map, information about them and pictures (see the picture below).



**Figure 5. A function to get information before adding an object to a route**

**Conclusion.** Also, this situation is very convenient for future tourists. Because they have initial ideas about the places they will go and see. As can be seen in this picture, it has information about the object, and if the tourist likes it, he can add it to the route by clicking the "Add to Route" button.

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