# Online Cartographic Services Play a Key Role in the Digital Economy

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**Abstract:** Online cartographic services have long gone beyond a simple navigation tool and have become the foundation of the digital economy, providing logistics, passenger transportation, delivery and e-commerce. Uzbekistan business applications integrate different APIs: local (Yandex, 2GIS, Newmax), global (Google, Apple) and OpenSRS solutions (OpenStreetMap). The choice depends on the accuracy of the maps, the cost, and the specifics of the tasks. Below is an analysis of the development of cartography, as well as the relevance of the landscape, tariff models and a discussion about the creation of a national cartographic service in Uzbekistan.

**Keywords:** Online cartographic services, API, business applications, cartography, geoinformation technologies.

Cartography is a field of science, technology, and production that encompasses the study, creation, and use of cartographic works. First of all, cartography studies the connections between social and natural phenomena and reflects them on geographical maps, plans and other cartographic works. Cartographers played an important role in the development of geography and cartography. They used various methods and technologies to create maps and globes that helped us understand the world around us. The scientific and linguistic skills of cartographers were important tools for developing the first maps that reflected geographical features and cultural differences on the planet.

Cartography has many applications, from the use of maps for travel and navigation to their use in geology, architecture and urban planning, in the army, ecology, and even in passenger transportation, shipping, logistics, public transportation, and e-commerce. Especially important is the possibility of integration through the API, a software interface that allows you to display and process geodata inside mobile applications and web services. Maps can display not only geographical features, but also various aspects such as demographic data, economic and political information.

The history of cartography is inextricably linked with the economic development of mankind. The first schematic maps of Ancient Egypt and Greece served not only as a guide in space, but also helped in planning irrigation systems, managing land resources, and organizing trade caravans.

In the era of Great Geographical Discoveries and the expansion of trade routes, maps are becoming a key tool for commerce: accurate sea and land maps accelerated the delivery of goods, reduced the risk of losses along the way, and helped open up new markets.

During the industrialization of the 19th century, cartography received a powerful boost due to scientific methods: aerial photography and the first satellite images made it possible to optimize the construction of railways, the laying of canals and the extraction of minerals. The economic efficiency of these projects largely depended on the accuracy of geodata: reduction of excess costs and more rational use of natural and labor resources became possible thanks to new cartographic technologies.

In the 20th century, with the development of geographic information systems (GIS), maps became the basis for strategic planning in the mining, energy, agricultural, and logistics industries. Companies began analyzing territorial data to select optimal locations for the installation of production facilities, the distribution of warehouses and the laying of supply routes, which led to increased productivity and reduced costs.

Today, in the digital age, cartography is becoming an integral part of the platform economy: delivery, smart city, e–commerce, agrotech, and environmental monitoring - API maps are used everywhere to assess demand, model customer behavior, manage supply chains, and analyze market spaces. Highly accurate geodata allows companies to make informed investment decisions, predict real estate price fluctuations, and efficiently reallocate resources.

Thus, from simple drawings to modern interactive maps, the development of cartography reflects the needs of the economy in optimizing costs, expanding markets and improving the efficiency of infrastructure projects. Today, maps are not only a navigation tool, but also a platform for many business processes.
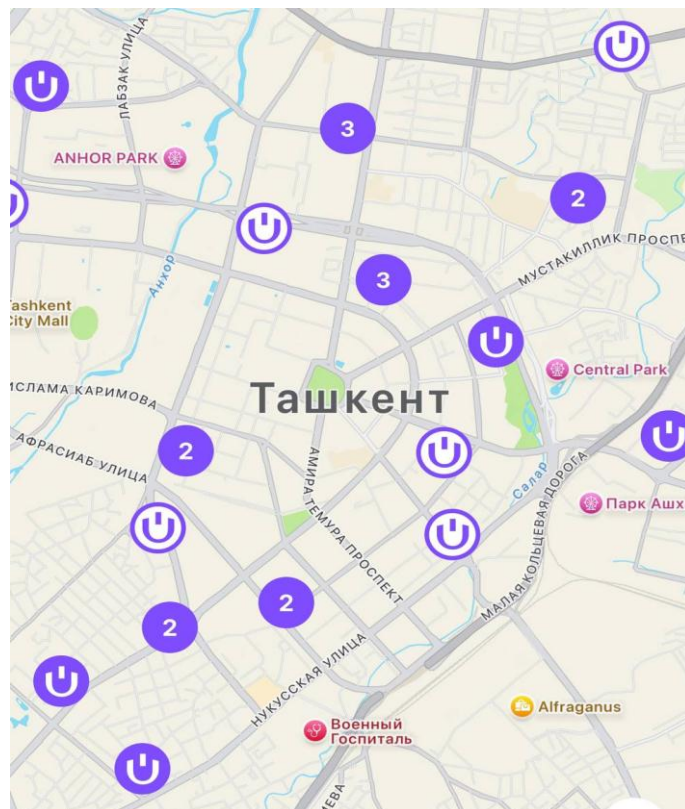
In Uzbekistan, companies and organizations use several online services with API for business. Yandex Maps are used in the Uzum Tezkor app, the 1Fit service, the q.watt app, Yoto and Kicker scooter sharing, Click and Humans superapps, and the Korzinka Go delivery service. In Yandex Navigator and Yandex Go, of course. Google Maps uses the Wolt delivery service, the Uklon and iTaxi taxi aggregators, Jet scooter sharing, and the Korzinka supermarket chain app. The Samarkand—based Taxi OK aggregator is one of the few that uses maps from 2GIS. The Uzum Market app, as well as this winter's most popular AirVisual app, uses native maps — Apple Maps and Google Maps, respectively. Telegram works on the same principle. The MyTaxi app is probably the only one that uses a domestic service. These are cards from Newmax Technologies, which owns the aggregator. The company has a staff of cartographers engaged in data mapping. Prior to the purchase by Yandex, the Maps API used another product of the company, the Express24 delivery service.

As for the tariffs, it all depends on the goals and objectives. A marketplace (website and application) with pick-up points across the country needs to display all points with addresses, opening hours, filtering and clustering on the map (see picture 1). In this case, the API Yandex cost from $317 per month[1] , Google Maps — from $140[2]. At the same time, for small and beginner projects, both companies provide free use of all the features of their cards. 2GIS does not publish tariffs in the public domain, but according to Habr users, 2 years ago an unlimited license cost $196 per month[3].

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[1] https://yandex.ru/maps-api/tariffs
[2] https://mapsplatform.google.com/intl/ru/pricing
[3] https://qna.habr.com/q/1137436

**Picture 1 Locations of uzum market pick-up points**

From the perspective of the elaboration of GEODATA and accuracy directories leaders in the Uzbek market are Yandex and 2GIS, while Google takes a second stage of the rating. This hierarchy is due to the fact that Yandex and 2GIS cartographic services in Uzbekistan are developed by local teams, while updating and maintaining Google maps is carried out centrally within the global infrastructure. It should also be noted the OpenStreetMap open source platform, which is being developed by the volunteer community. In practical use, it is in demand in the early stages of projects with a limited budget for commercial APIs, as well as in government information systems where local deployment of maps on a closed server is required.

The strategy of the Republic of Uzbekistan on "Digital Uzbekistan – 2030" implements comprehensive measures for the active development of the digital economy, as well as the widespread introduction of modern information and communication technologies in all industries and spheres, therefore, the creation of a national online card service in Uzbekistan is a strategically important step for the development of various sectors of the economy and strengthening the country's digital infrastructure. This direction corresponds to the goals of the Digital Uzbekistan 2030 program, aimed at introducing innovations and digital solutions into public administration and the economy. On the one hand, to compete with Yandex, Google and 2GIS — is extremely difficult. On the other hand, the lack of publicly available electronic directories and basic address data hinders the development of digital services. However, the development and provision of machine—readable basic geodata in the public domain — including an electronic address directory, postal codes, coordinates, information about socially significant objects, number of floors and functional purpose of buildings, as well as names of streets and intersections - could significantly improve the efficiency of software solutions in the field of geoinformation technologies.

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